

# Performance Assessment of IT Governance with Balanced Score Card and COBIT 4.1 of Universitas Pendidikan Indonesia

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**Abstract.** Information technology's application has become an important daily support for all sectors. Educational institutions, including Universitas Pendidikan Indonesia (UPI), enable information technology as the main asset to increase its qualities and global's competitive power. By the importances of using information technology for almost every scope, measurement is needed to identify how optimal the IT governance is. Based on these facts, the purposes of this reaseacrh are identify the IT governance's performance assessment indicators, discover the scores based on the indicators, and analyse IT governance's performance in UPI. This research is using the combination of Balanced Score Card (BSC) and COBIT 4.1 as the framework to establish assessment indicators in questionnaire's form. By combining both methods, the final scores of IT governance's performance will represent UPI's business goals and objectives in all sectors. This research used 26 COBIT's processes as assessment indicator of IT performance from the mapping 15 IT and business goals of COBIT, and 17 UPI's strategic plans. The final score are 3.80 for financial perspective, 3.63 for customer perspective, 3.62 for internal business process perspective, and 3.72 for learning and growth perspective. With these scores, then the final result is each perspectives of Balanced Score Card's current maturity levels are at level 4, which is IT process criticality is regularly defined with full support and agreement from the relevant business process owners.

## 1. Introduction

Information technology or IT's application has become an important daily support for all sectors. IT ease and maximize target's achievements, both directly and indirectly. Including education institution, like university, enabling IT as the main asset to increase their qualities, both academic and non-academic such as financial, planning and developing, studenthood, and ICT (Information, Communication, and Technology). To have a global competitiveness, universities must have a significant excellence and not limited to academic sectors only.

Universitas Pendidikan Indonesia (UPI) has a vision to be a leading and outstanding university, also has strategies and goals to achieve its quality and Sglobal competitiveness that relevant to national education goals. IT's importance to UPI showed by the establishment of a directorate of IT's applications and supports, Direktorat TIK (ICT Directorate) on July 6<sup>th</sup> 2007. Also, based on UPI's 2011-2015 Strategic Plan, one of UPI's strategies to achieve goals and objectives is to leverage ICT on learning and management systems.



By knowing the IT's importance, it's necessary to have a measurement or assessment of IT governance's performance in UPI. Beside that, knowledge about the harmonization of strategies, business processes, an IT also affect the easeness of achieving business goals and objectives.

Balanced Score Card (BSC) is one of performance assessment and management system's approach [1]. BSC enables four perspectives at once in assessment, which are financial, customer, internal business process, and learning and growth. Control Objectives for Information and Related Technology (COBIT) is a comprehensive tool to measure IT governance's quality. COBIT unites and bridges the management's requirements of gap between business risks, control requirements, and IT's technical problems, and provide the references of best business practices that including all IT items and its connection with company's business process and explain it by logic activities' structures that can be managed and controlled effectively [2]. ISACA has been published five versions of COBIT, and this research use COBIT 4.1 that has four domains which are Plan and Organise (PO), Acquire and Implementation (AI), Deliver and Support (DS), and Monitor and Evaluate (ME).

Lot of companies have measured their IT governance, like PT Panin Sekuritas, Tbk and PT Pos Indonesia. PT Panin used IT BSC and gap analysis methods, but separatedly [3]. Otherwise, PT Pos Indonesia combines BSC and COBIT 4.1 methods, but specializing it to focus on performance indicators only [4]. Education institution, including Universitas Singaperbangsa Karawang also have measured information system's performance with COBIT 4.1, but only with the PO domain [5]. All three companies of above only measured the IT division, so that other sectors' IT performance haven't been measured yet.

Based on those facts, this research will use the combination of BSC and COBIT 4.1 methods with all BSC's perspectives and COBIT's domain by assessment indicators' mapping from vision, missions, and strategic plans of UPI. Then, those indicators will measure all of working areas, so that the scores of performance will represent business goals and objectives of UPI on all sectors.

## 2. Literatures

### 2.1. IT Governance

Weill dan Ross stated that IT governance is specialized by decision making side and accountable framework's implementation to increase IT use based on the desired condition [6]. Here are the elements and domains of IT governance.

- Elements, to implement a proper IT governance needs the framework of these three main elements are structure, process and communication as rational mechanism
- Domains, a long with the breadth of research, there are few forms of IT governance's objectives/domains, which are IT value and alignment, risk management, accountability and performance measurement

### 2.2. BSC (Balanced Score Card).

BSC is one of performance assessment and management system's approach [1]. The main element of BSC is scorecard, which is a record that illustrates key measurements with numbers that ease the company's executives to evaluate what happened on their work areas. And the balanced element reflects the concern about short term financial and budgetary issues only. A long with the developing, realized that both of those issues lead to more important issues such as customer development, customer development, changing markets, standards of service, and organisational learning, which never be payed attentionally or even be abandoned at all. Based on those thoughts, Kaplan and Norton formulated a model that consists of four quadrans/perspectives to represent key components, time span, and perspectives from organisation's

strategies [7]. Those four perspectives are financial, customer, internal business process, and learning and growth.

### 2.3. COBIT (Control Objectives for Information and Related Technology) Version 4.1

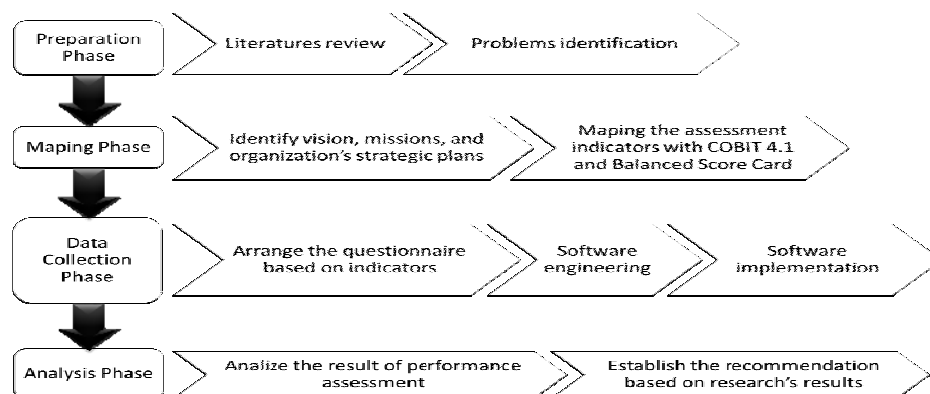
COBIT 4.1 is a Process Reference Model (PRM) of self-assessment programme. COBIT 4.1 provide the definition of processes with a life cycle form that describe the relationship between them, including the goals and achievements of each process. COBIT 4.1 has four domains and 34 processes. To conduct the IT governance performance's assessment, one of the indicators is maturity level that regulated by maturity models. Maturity models will be mapped to questions form. Then, the scores of each maturity models will be represented by Sembiring (2013) with six levels of maturity level, which described in Table 1. BSC and COBIT 4.1 can be mapped according to the connections between the BSC's perspectives, COBIT's business and IT goals, and processes.

**Table 1.** Maturity models' representations.

Level	Meanings	Details
0	Non-existent	Management processes are not applied at all.
1	Initial	Processes are ad hoc and disorganised.
2	Repeatable but intuitive	Processes follow a regular pattern.
3	Defined process	Processes are documented and communicated.
4	Managed and Measureable	Processes are monitored and measured.
5	Optimized	Good practices are followed and automated

### 3. Methodology

This research consists four phase, which are preparation, mapping, data collection, and analysis phase. The details of research design is showed in Figure 1.

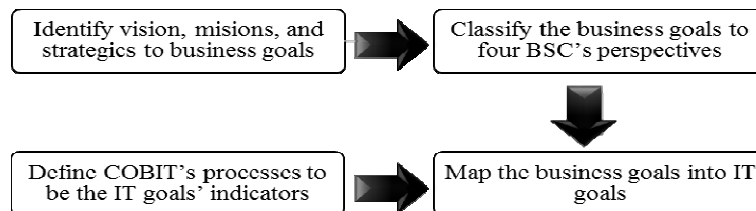


**Figure 1.** Research design.

Used method consists a few accurate data and information collection process, which are:

- Exploration and literatures review
- Observation
- Questionnaire

BSC and COBIT is used on this research as a framework to mapping the assessment indicators with a few steps showed in Figure [4].



**Figure 2.** Steps of mapping the assessment indicators.

## 4. Results

### 4.1. Mapping The Assessment Indicators with BSC and COBIT 4.1 Methods

**4.1.1. Mapping UPI's business goals to COBIT's business goals.** By selecting on priorities, there are 18 UPI's selected business goals based on vision, mission, and strategic plans. Then, map those business goals to COBIT's business goals. The result of mapping are:

- Improve corporate governance and transparency.
- Improve customer orientation and service.
- Offer competitive products and services.
- Achieve cost optimisation of service delivery.
- Improve and maintain business process functionality.
- Provide compliance with external laws, regulations and contracts.
- Manage product and business innovation.
- Acquire and maintain skilled and motivated personnel.

**4.1.2. COBIT's IT goals and processes.** From the mapping of UPI's business goals to COBIT's business goals, there are 8 business goals to be the assessment indicators. The grouping is showed on Table 2.

**Table 2.** Assessment indicator's mapping

BSC's Perspectives	COBIT's Business Goals	COBIT's IT Goals	COBIT's Processes
Financial	1	ITG 2	PO10, ME1, ME4
		ITG 18	PO9
Customer	2	ITG 3	PO8, DS8, DS13
		ITG 23	DS3, DS4
	3	ITG 5	PO7, AI3
	4	ITG 24	PO5, DS6
	5	ITG 6	AI1
Internal Business Process	6	ITG 7	PO3
		ITG 11	AI4, AI7
	7	ITG 19	DS5
		ITG 21	DS12, ME2
		ITG 27	DS11, ME3
Learning and Growth	8	ITG 25	PO8
		ITG 28	ME3
		8	ITG 9
Amount of Processes of COBIT 4.1			26

#### 4.2. IT Governance's performance

4.2.1. *Performance's score*. Details of each COBIT's processes in financial perspective showed in Table 3.

**Table 3.** BSC's perspective scores.

Perspective	COBIT's Processes	Average	Sum
Financial	PO10	3.78	3.80
	ME1	4.11	
	ME4	3.63	
	PO9	3.67	
	PO8	3.89	
	DS8	3.74	
	DS13	3.59	
Customer	DS3	3.26	3.63
	DS4	4.04	
	PO7	3.93	
	AI3	3.30	
	PO5	3.48	
	DS6	3.48	
	AI1	3.81	
	PO3	3.78	
	AI4	3.56	
	AI7	3.85	
Internal Business Process	DS5	3.67	3.62
	DS12	3.19	
	ME2	3.56	
	DS11	3.93	
	ME2	3.26	
	PO8	3.74	
Learning & Growth	ME3	3.56	3.72
	PO7	4.00	
	AI5	3.59	

The final score is each perspectives of BSC's current maturity levels are at level 4, which is IT process criticality is regularly defined with full support and agreement from the relevant business process owners.

#### 4.2.2. Recommendations (*The IT Governance Institute, 2007*)

- The lowest score process on financial perspectives is ME4 (provide IT governance) which is 3.63, so that UPI needs to focus on preparing board reports on IT strategy, performance and risks, and responding to governance requirements in line with board directions. The achievement goals that can be tried are (1) stablishing an IT governance framework integrated into corporate governance and (2) obtaining independent assurance over the IT governance status
- The lowest score process on financial perspectives is DS3 (manage performance and capacity) which is 3.26, so that UPI needs to focus on meeting response time requirements of SLAs, minimising downtime, andmaking continuous IT performance and capacity improvements through monitoring and measurement. The achievement goals that can be tried are planning and providing

system capacity and availability, monitoring and reporting system performance, and modelling and forecasting system performance

- The lowest score process on financial perspectives is DS12 (manage the physical environment) which is 3.19, so that UPI needs to focus on providing and maintaining a suitable physical environment to protect IT assets from access, damage or theft. The achievement goals that can be tried are implementing physical security measures and electing and managing facilities
- The lowest score process on financial perspectives is ME3 (ensure compliance with external requirements) which is 3.56, so that UPI needs to focus on identifying all applicable laws, regulations and contracts and the corresponding level of IT compliance and optimising IT processes to reduce the risk of non-compliance. The achievement goals that can be tried are (1) identifying legal, regulatory and contractual requirements related to IT, (2) assessing the impact of compliance requirements, and (3) monitoring and reporting on compliance with these requirements.

## 5. Conclusions

- The assessment indicators to measure IT governance's performance on this research with BSC and COBIT 4.1 methods are mapped based on UPI's business goals. The results of mapping are four BSC's perspectives, 8 COBIT's business goals, 15 COBIT's IT goals, and 26 COBIT's processes.
- The calculation of each BSC's perspectives is obtained from the average scores from the 26 respondents' answers in UPI, which are 3.80 for financial perspective, 3.63 for customer perspective, 3.62 for internal business process perspective and 3.72 for learning and growth perspective.
- The final score is each perspectives of BSC's current maturity levels are at level 4, which is IT process criticality is regularly defined with full support and agreement from the relevant business process owners. These are improvement focus on each BSC's perspective in UPI based on the research's results are (1) ME4 (provide IT governance) process for financial perspective, (2) DS3 (manage performance and capacity) process for customer perspective, (3) DS12 (manage the physical environment) process for internal business process perspective and (4) ME3 (ensure compliance with external requirements) process for learning and growth perspective.

## 6. Recommendations

- The continued research must be done with a bigger populations and samples to represent wider areas and higher number of accuracy.
- Additional methods are needed to support the research's analysis, such as Key Performance Indicator (KPI), as is and to be scores, relative scores, gap analysis, etc.

## 7. References

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