

**THE MEASUREMENT OF INFORMATION TECHNOLOGY
PERFORMANCE IN INDONESIAN HIGHER EDUCATION
INSTITUTIONS IN THE CONTEXT OF ACHIEVING INSTITUTION
BUSINESS GOALS USING COBIT FRAMEWORK VERSION 4.1
(CASE STUDY : SATYA WACANA CHRISTIAN UNIVERSITY, SALATIGA)**

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ABSTRACT

IT management in higher education institutions is a Critical Success Factor (CSF) for University leaders and partners, but this IT management has not been done by using well structured method and approach. In addition, supervision and assessment of IT performance have not been carried out periodically, but only if there are complaints from the working unit. Therefore, the IT performance measurement will be done in order to achieve the business goals by measuring the maturity level of IT process using COBIT model framework version 4.1. The measurement was made in SWCU. The aim of this research is to see the IT management and provide recommendation for improvements in the IT management for service process to the stakeholders so that it can reduce the risk of problems in the future. The results showed that the IT has been managed well in which the processes of IT to support the business goals have been standardized, documented and well communicated, just for the service aspect for the users should receive more priority in improvements from the Bureau of Technology and information Systems (BTIS), because this aspect has the worst performance among the other aspects of the business goals.

Keywords: information technology, performance measurement, COBIT

INTRODUCTION:

Higher education institutions do not miss to make use of IT in carrying out its main activity in academic services for the demands of the stakeholders (Indrajit, 2006). The use of IT in higher education institutions should systematically be considered and planned, considering that generally the institution is a nonprofit organization, while the facts show that the IT implementation requires a relatively expensive cost (PWC, 2004, Applegate et.al, 2003). IT implementation needs to be well-managed in order to produce quality information for the stakeholders and give a competitive advantage for higher education institution (Maria, 2011)

IT management in Higher Education institution is a Critical Success Factor (CSF) for leaders and university partners (Henderi, 2010). However, the complexity of IT implementation makes the leaders of various levels in higher education institutions and also the stakeholders difficult to apply this IT management. The complexity of IT implementation happened because higher education institutions in Indonesia have not had a particular framework when they develop their information system (Mutyarini and Sembiring, 2006). As a result, the benefits of using the IT for Higher Education institutions are not comparable with the value of investments that have been issued.

In applying IT management, Higher education may use the COBIT (Control Objectives for Information and Related Technology) framework because generally, COBIT contains the control standard which can be accepted and applied internationally and can also be customized based on the business characteristics of the institution (Maria and Haryani, 2011; Jusuf, Heni, 2009). In addition, the COBIT framework also pays attention to the relationship between the business goals without ignoring the IT process as the focus of it (Maria, 2011). COBIT framework also provides benefits in the business architecture, information architecture, technology architecture and also solution architecture as a guideline for the development of information system in Higher Education institutions (Setyawan, 2008). COBIT framework can also be used to measure IT performance even though the organization measured, does not use the COBIT framework as its IT management standard (Anugrah, 2008).

The IT implementation in higher education institutions must be controlled, because the control gives sufficient assurance to the management that the implementation process has done well according to the institution's plan and goal. Any controlled IT process needs a measurement which indicates the IT performance in achieving the controlled objectives and facilitates the management in making an improvement on IT performance. The evaluation towards IT performance is the result of the IT performance measurement

Satya Wacana Christian University (SWCU) is one of higher education institutions in Salatiga which has applied IT as an infrastructure to provide services to students, lecturers and the entire staff as well as helping in carrying out all the activities throughout all units. In carrying out its main activity that is providing education services, SWCU has used IT program called Satya Wacana Academic Information System (SIASAT). IT management has been applied in SWCU, but it has not been applied using a well-structured method and approach (Maria, 2011). In addition, monitoring and evaluating towards SIASAT performance has not been done periodically, but only if there are complaints from the working units about the SIASAT service (Maria and Haryani, 2011)

Based on the reason above, SWCU needs to do a measurement towards the IT performance in order to achieve the institution's goal. Evaluation on IT performance will be done by measuring the level of achievement in IT process in SWCU. COBIT maturity models framework version 4.1 will be used in this process. The results of this measurement are expected to show the condition of IT management and provide recommendation in improving its IT management in giving services to the stakeholders, so it can reduce the problems in the future.

LITERATURE REVIEW:

PERFORMANCE MEASUREMENT:

Mulyadi (2001) defines performance measurement as a process of assessment on the company operational activities in a particular period, whether it has been done based on the defined goals or not. The main purpose of the performance measurement is that the leader of the company has an objective basis in giving the compensation in accordance with the achievement which has been done by each department as a whole. It is expected that all of these will give motivation and stimulation in each section to work more effectively and efficiently.

THE CONCEPT OF COBIT:

Control Objective for Information and related Technology, abbreviated COBIT, is designed as a tool of IT Governance to help in understanding and managing of risks, benefits and evaluation related to IT. COBIT Standards has issued by the IT Governance Institute which is part of ISACA (Information System Audit and

Control Association). COBIT guidelines consist of several directives, which are Control Objectives, Audit Guidelines, and Management Guidelines. To provide information needed for companies to achieve organizational goals, the basic principles of COBIT describes business requirements, process orientation and IT resource. COBIT framework consists of 34 high-level control objectives in which each IT process is grouped into four main domains: Planning and Organization (PO), Acquisition and Implementation (AI), Delivery and Support (DS), and Monitoring (M) (Figure 1).

THE CONCEPT OF IT MATURITY MODEL:

IT Maturity Model is a model used to measure the maturity level of IT management in an organization. This measurement model adopted the Capability Maturity Model for software published by Software Engineering Institute, Carnegie Mellon University. IT Maturity Model consists of five maturity levels of IT management, including: level 0 (non-existent), level 1 (initial), level 2 (repeatable), level 3 (defined), level 4 (managed) and level 5 (optimized). The higher the maturity level, the better the IT management Process, which indirectly means more reliable the IT support in the process of achieving the organizational goal.

IT BALANCE SCORECARD:

The balanced scorecard can be applied to the IT function and its processes as Gold (1992, 1994) and Willcocks (1995) have conceptually described and has been further developed by Van Grembergen and Van Bruggen (1997) and Van Grembergen and Timmerman (1998). IT-BSC has four perspectives: (1) Corporate Contribution, contains a measure which indicates how the management (the manager) evaluates/views the IT organization; (2) User orientation contains a measure which indicates how users evaluates/sees the results of the IT organization, (3) Operational Excellence contains a measure of the effectiveness and efficiency of the IT process, and (4) Future orientation contains a measure which describes how IT position within the next challenge.

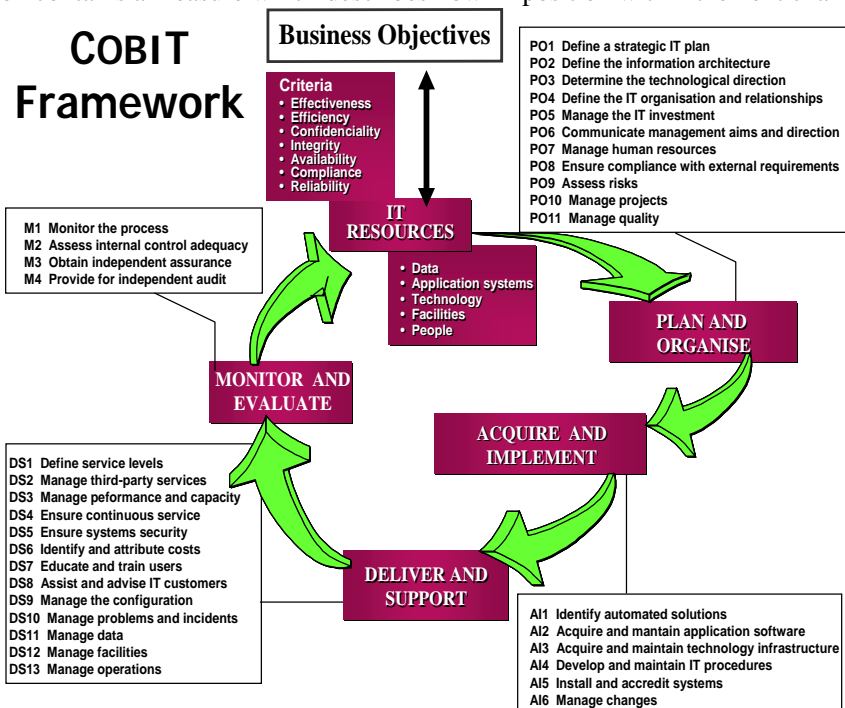


Figure1. COBIT Framework (Source: ISACA, 2004)

PREVIOUS RESEARCHES:

Indrajit (2006) stated that the use of technology in educational institution can not be separated due to the demands of stakeholders. Universities in Indonesia did not have a specific model of the framework when they build their academic information system (SI), so Mutyarini and Sembiring (2006) created an academic architecture Information system model by adapting the architecture of Monash University which used TOGAF in order to achieve the mission of Tri Dharma higher education. Whereas, COBIT is also used in building the Academic Information System because it fits with the characteristics of a higher education as a State Owned Legal Entity (BHMN). In addition, COBIT framework is not only used in designing the Information System

Architecture but also measuring the performance of the Information System architecture.

O'Donnell, E (2004) found that in order to build and measure the IT performance, we can adopt some standards such as ITIL, ISO/IEC 17799, COSO and COBIT. Anugrah's research (2008) stated that COBIT framework can be used to measure the process of IT maturity level, even though the organization does not use COBIT as its IT governance standards. Prior to the measurements, it is necessary to take the sampling of the IT process, and then do the translation process using ITIL in order to get the right IT COBIT process, and then be measured using IT Maturity Model. Setiawan (2008) found that IT implementation using COBIT framework can provide benefits in the business architecture, Information architecture, technology architecture, and also solution architecture as a guidelines in developing the Information system in private universities in Yogyakarta.

Suryani's research (2009) and Jusuf, Heni (2009) also used COBIT to develop an IT Governance Model in higher education with the argument that COBIT is made by using other IT standards as a reference so that the alignment between IT development and the institution goals will be more secured. In addition, Van Grembergen's research (2000) discussed about how the IT balanced scorecard (IT-BSC) can be linked to the business balanced scorecard (BU-BSC) and in this way support the IT/business governance and alignment processes. The considered aspects in the IT application in IT-BSC method are corporate contribution, customer (user) orientation, operational excellence and future orientation. Sa'adi and Suhardi's research (2006) created an IT-BSC Method to be used for measuring the performance of the Enterprise Resource Planning (ERP) system implementation in universities. This method is further developed to prepare a strategic plan in accordance with the mission of the educational institutions in order to survive in this competitive business.

While the previous research on IT in SWCU as the research object, include the study of Maria and Haryani (2011) who found that the supervision and the assessment towards the IT performance in SWCU has not been carried out periodically but only if there are complaints from the users (the working units) about the IT service. This research produced a model of information system audit which is developed using the COBIT framework especially for delivery and support (DS) domain. Maria's research (2011) also found that so far the IT management in SWCU has been done, but it has not been done using the structured method and approach. This research also choose to use COBIT framework in doing the comparison among the academic information systems because COBIT can notice the link between the business goals without neglecting the IT process as the focus.

RESEARCH METHODOLOGY:

This is a descriptive research, which means the results of the research are presented in the form of descriptions, whether it is qualitative or quantitative descriptions. The research was conducted through a case study where the location of the research is selected on purpose, that is Satya Wacana Christian University, Salatiga. This study measures the maturity of controlling the IT process which occurs in the institutions in order to achieve the institutional goals based on the COBIT framework version 4.1

Data used in this study consists of primary and secondary data. Primary data obtained from interviews with the management team, the system administrator and system operator which is based on the research instrument using questionnaires, survey and observation on the implemented IT. Completing the questionnaire was done by using a direct interview to the respondent and in the form of Focus Group Discussion (FGD). While the secondary data was obtained from various reports and publications which are relevant to the study.

The COBIT IT processes measured in this study consists of four domains, namely Planning & Organization (PO), Acquisition & Implementation (AI), Delivery & Support (DS) and Monitoring (ME). Each domain is measured using the adopted statement of the activity of each sub-domain of COBIT version 4.1. The Number of statements used to measure the level of maturity is presented in Table 1. Testing on the validity and reliability was done for any statement of the questionnaire in order to be able to use it as a research instrument. Corrected item to Total Correlation Coefficient is used to test the validity of the indicators (Ihalaw, 2004), while Cronbach's Alpha is used in testing the reliability of the indicators (Supramono 2003).

Table 1. The number of statements to measure the COBIT IT process

Domain	Sub Domain	Number of statements	Domain	Sub Domain	Number of statements	Domain	Sub Domain	Number of statements
PO	PO1	5	AI	AI1	8	DS	DS1	8
	PO2	5		AI2	8		DS2	6
	PO3	5		AI3	4		DS3	6
	PO4	5		AI4	6		DS4	11
	PO5	5		AI5	5		DS5	7
	PO6	3		AI6	5		DS6	4

	PO7	2		AI7	6		DS7	5
	PO8	5			42		DS8	6
	PO9	10					DS9	4
	PO10	7					DS10	6
		52	ME	ME1	6		DS11	5
				ME2	7		DS12	5
				ME3	5		DS13	7
				ME4	5			
					23			80

Description of maturity levels can be described as sets of atomic statements which each description of the level of maturity contains an appropriate or not appropriate statement and part of the statement is appropriate or not appropriate. Description of maturity level consists of six level (0 to 5) which describes the level of reliability of the controlled activities on IT systems which classified by ISACA from the consensus of opinions of many experts and best practices in generic information technology and it also has been used as an international standard (table 2). The steps of this study are presented in Figure 2.

Table 2 IT Maturity Model

Level	Category	Description of maturity level
0	Non Existent	Management processes are not applied at all
1	Initial/Adhoc	Processes are ad hoc and disorganised
2	Repeatable but intuitive	Processes/allow a regular pattern
3	Defined	Processes are standardized, documented and well communicated
4	Managed and Measured	Processes are monitored and measured
5	Optimised	Best Practices are followed and automated

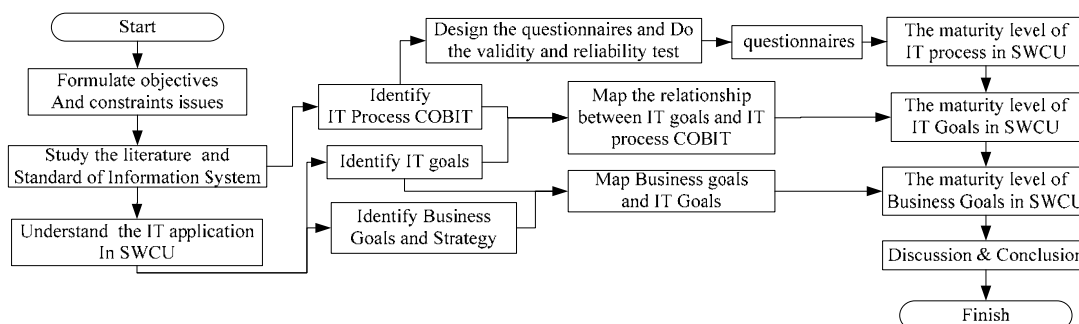


Figure 2. Steps of the study

RESULT AND DISCUSSION:

BRIEF DESCRIPTION OF SATYA WACANA CHRISTIAN UNIVERSITY, SALATIGA:

Satya Wacana Christian University (SWCU), Salatiga is a private university that implemented information technology (IT) by using information system and IT infrastructure. The IT used in this university consist of (1) Satya Wacana Finance and Accounting information System, (2) Payroll and Personnel System, (3) Satya Wacana Academic information system, (4) Research and Publication information system, (5) Inventory and Logistic information system. The IT application supports the business process in SWCU where business process is classified into two parts, namely the main process and supporting process. Like the other education organizations, the main process focuses on the implementation of Tri Dharma in higher education institution such as lectures, practical work, the implementation of the final project, research and training, and the implementation of community service. Besides the main process, there is also supporting process such as academic administration, student affairs and alumni, financial administration, data processing, library, and centre of quality assurance. In general, the responsibility for academic data management and utilization of information technology is under the Bureau of Technology and information Systems (BTSI).

VALIDITY AND RELIABILITY TEST:

Corrected Item to Total Correlation Coefficient is used in testing the validity of the indicators, while Crobach's

Alpha is used in testing the Reliability of the indicators. Based on the results of each statement of IT process COBIT, it can be concluded that all indicators pass the validity and reliability test. This can be seen from the P-value of t, where the indicators which pass the validity and reliability test are the indicators which have P-value below 0.05 and Cronbach's Alpha > 0.6. Thus, the research instrument can be used for doing the measurement of the maturity level of IT process in SWCU, Salatiga.

RESEARCH RESPONDENT:

The research respondents are grouped based on the task of each position in running their IT process COBIT. Questionnaires of PO domain are addressed to the rector, and the vice rectors as the leaders of the university whose job is to make the planning and organization of IT in the institution they lead, while questionnaires of AI domain are addressed to the Dean, vice Dean and Head of the Bureau. Questionnaires of DS domain are addressed to lecturers and employees as the users of the information system, while for ME domain, the questionnaires are addressed to the head of the study programs. The recapitulation of the respondents is presented in table below:

Table 3 Recapitulation of the Research Respondents

IT Process COBIT	Respondent	Total
PO Domain	Rector and Vice rectors	7
AI Domain	Dean, Vice Dean and Head of the Bureau	25
DS Domain	Lecturers and employees	79
ME Domain	Head of the study programs	19
Total		130

THE MEASUREMENT OF INFORMATION TECHNOLOGY PERFORMANCE IN SATYA WACANA CHRISTIAN UNIVERSITY USING COBIT FRAMEWORK VERSION 4.1:

Business goals in SWCU are set by the university using the 4 Balanced Scorecard (BSC) perspectives. The financial perspective of SWCU goals is having a good and transparent financial management which influenced in profit improvement, while the goals that associated with the improvement of the service and ensure that the service given is always punctual and reliable, and make the consumer/user satisfied are the goals set out from the customer perspectives. SWCU goals from the internal perspective are having a commitment in doing the correction and maintenance functions of the business process and ensuring that the service given will follow the external law and internal policies so that the service quality is maintained. While the goals of the learning and growth perspective are always innovating and developing the human resources in order to become a leader in a similar business. In terms of efficiency and effectiveness of the existing business process, SWCU require the TI implementation. Therefore the right business strategy is needed in order to achieve the defined business goals. Due to the use of IT, the defined business strategy used the 4 IT-BSC perspectives. The business goals and the SWCU business strategy are presented in table 4 below.

Table 4. SWCU business goals and business strategy

BSC Perspective	SWCU Business Goals		IT-BSC Perspective	SWCU Business Strategy
Financial	1	Provide a good return on investment of IT-enabled business investments	Business Contribution	Control costs, increase revenue and improve service coverage.
	2	Manage IT-related business risk		
	3	Improve corporate governance and transparency.		
Customer	1	Improve customer orientation and service	User Orientation	Customer value proposition that includes the rates, quality, service provided, service and partnerships.
	2	Offer competitive products and services		
	3	Establish service continuity and availability		
	4	Create agility in responding to changing business requirements		
	5	Achieve cost optimisation of service delivery		
Internal	1	Improve and maintain business process functionality	Operational Excellence	improvement of internal processes by implementing the operations management, customer management and
	2	Lower process costs		
	3	Provide compliance with external laws,		

		regulations and contracts		innovation..
	4	Provide compliance with internal policies		
	5	Improve corporate governance and transparency		
	6	Manage business change		
	7	Improve and maintain operational and staff productivity		
Learning and Growth	1	Manage product and business innovation	Future Orientation	Enhanced capabilities and skills through the strengthening of human capital, strengthening of information capital, and strengthening of organization capital
	2	Acquire and maintain skilled and motivated people		
	3	Obtain reliable and useful information for strategic decision making		

The measurement of IT performance in this research includes the use of Information system and Internet technology to conduct the operational activities. IT resources such as infrastructure, people, information and application should be managed and controlled in order to achieve the IT goals. When IT will be implemented and developed in a certain university, the IT goals are set by the university. The IT goals of the IT implementation in SWCU are presented in Table 5. In order to achieve the IT goals, the control of the IT processes in SWCU is done. Control over the IT processes in SWCU used COBIT framework version 4.1 as the baseline. The IT processes in SWCU consists of four domains, namely planning and organization (PO), Acquisition and implementation (AI), Delivery and Support (DS) and Monitoring (ME) for the total of 34 sub domains. Table 5 also presented the results of mapping the relationship between the IT goals and the COBIT IT process.

Table 5. Linking IT goals to IT process COBIT

No	IT Goals	IT Process COBIT
1	Respond to business requirements in alignment with the business strategy	PO1, PO2, PO4, PO10, AI1, AI6, AI7, DS1, DS3, ME1
2	Respond to governance requirements in line with board direction	PO1, PO4, PO10, ME1, ME4
3	Ensure satisfaction of end users with service offerings and service levels	PO8, AI4, DS1, DS2, DS7, DS8, DS10, DS13
4	Optimise the use of information	PO2, DS11
5	Create IT agility	PO2, PO4, PO7, AI3
6	Define how business functional and control requirements are translated in effective and efficient automated solutions	AI1, AI2, AI6
7	Acquire and maintain integrated and standardised application systems	PO3, AI2, AI5
8	Acquire and maintain an integrated and standardised IT infrastructure	AI3, AI5
9	Acquire and maintain IT skills that respond to the IT strategy	PO7, AI5
10	Ensure mutual satisfaction of third-party relationships	DS2
11	Ensure seamless integration of applications into business processes	PO2, AI4, AI7
12	Ensure transparency and understanding of IT cost, benefits, strategy, policies and service levels	PO5, PO6, DS1, DS2, DS6, ME1, ME4
13	Ensure proper use and performance of the applications and technology solutions.	PO6, AI4, AI7, DS7, DS8
14	Account for and protect all IT assets.	PO9, DS5, DS9, DS12, ME2
15	Optimise the IT infrastructure, resources and capabilities.	PO3, AI3, DS3, DS7, DS9
16	Reduce solution and service delivery defects and rework	PO8, AI4, AI6, AI7, DS10
17	Protect the achievement of IT objectives	PO9, DS10, ME2
18	Establish clarity of business impact of risks to IT objectives and resources	PO9
19	Ensure that critical and confidential information is withheld from those who should not have access to it.	PO6, DS5, DS11, DS12
20	Ensure that automated business transactions and information exchanges can be trusted	PO6, AI7, DS5
21	Ensure that IT services and infrastructure can properly resist and recover from failures due to error, deliberate attack or disaster	PO6, AI7, DS4, DS5, DS12, DS13, ME2
22	Ensure minimum business impact in the event of an IT service	PO6, AI6, DS4, DS12

	disruption or change.	
23	Make sure that IT services are available as required..	DS3, DS4, DS8, DS13
24	Improve IT's cost-efficiency and its contribution to business profitability.	PO5, DS6
25	Deliver projects on time and on budget, meeting quality standards	PO8, PO10
26	Maintain the integrity of information and processing infrastructure	AI6, DS5
27	Ensure IT compliance with laws, regulations and contracts	DS11, ME2, ME3, ME4
28	Ensure that IT demonstrates cost-efficient service quality, continuous improvement and readiness for future change.	PO5, DS6, ME1, ME4

Since the main purpose of this research is to measure the IT performance in order to support the business objective in SWCU, so mapping the relationship between business goals and IT goals should be done first. It aims to find out which IT goals support the process of achieving the business goals in SWCU. The relationship between business goals of SWCU and IT goals is presented in table 6.

Table 6. Linking business goals UKSW to IT goals

Perspective	Business Goals UKSW		IT Goals							
Financial	1	Provide a good return on investment of IT-enabled business investments	24							
	2	Manage IT-related business risk	2	14	17	18	19	20	21	22
	3	Improve corporate governance and transparency.	2	18						
Customer	1	Improve customer orientation and service	3	23						
	2	Offer competitive products and services	5	24						
	3	Establish service continuity and availability	10	16	22	23				
	4	Create agility in responding to changing business requirements	1	5	25					
	5	Achieve cost optimisation of service delivery	7	8	10	24				
Internal	1	Improve and maintain business process functionality	6	7	11					
	2	Lower process costs	7	8	13	15	24			
	3	Provide compliance with external laws, regulations and contracts	2	19	20	21	22	26	27	
	4	Provide compliance with internal policies	2	13						
	5	Improve corporate governance and transparency	2	18						
	6	Manage business change	1	5	6	11	28			
	7	Improve and maintain operational and staff productivity	7	8	11	13				
Learning and Growth	1	Manage product and business innovation	5	25	28					
	2	Acquire and maintain skilled and motivated people	9							
	3	Obtain reliable and useful information for strategic decision making	2	4	12	20	26			

IT performance in SWCU is measured by calculating the maturity level of controlling the IT process in 4 business perspectives goals in SWCU, those are financial perspective, customer perspective, internal perspective and learning and growth perspective. The IT performance measurement results for achieving the business goals set by the university using the COBIT framework version 4.1 is presented in Table 7. From table 7, it shows that IT has been used and managed by SWCU in order to achieve the business goals from the financial perspectives including providing a good return on investment of IT, enabling business investment, managing IT-related business risk, improving corporate governance and transparency. This is indicated by the value maturity 'defined' which means the IT process has been standardized, documented and communicated. Overall, the average of the whole IT process is at the maturity level of 2.79 (defined) which means that the IT processes for supporting the business goals in SWCU from the financial perspectives has been standardized, documented and well communicated. This measurement results show that IT has been used as tools to assist the management in providing a transparent and accurate report which will be used as a basis of the evaluation for the university leaders in making the university policies in order to make the university profit improved.

The IT performance measurement results in achieving the SWCU business goals from the customer perspective is presented in Table 7. The customer perspective can be divided into 2 aspects, namely service to the IT product users and investment on manufacturing the IT products. From Table 7, SWCU business goals viewed

from the service aspects to IT product users, such as improving customer orientation and service, establishing service continuity and availability that are at the value maturity '*repeatable*' which means that the IT processes are managed based on a certain pattern which is oriented on improving the service to the users and giving a continuous service, but it's just not been standardized and well documented. While business goals viewed from the investment aspect in manufacturing the IT products, such as offering competitive products and service, creating agility in responding to changing business requirements, achieving cost optimisation of service delivery that are at the value maturity '*defined*' which means the IT processes have been standardized, documented and well communicated. However, the overall average of the IT process is at the level of maturity 2.78 (defined) which means that the IT processes to support business goals in SWCU from the customer perspective has been standardized, documented and well communicated. The results of this measurement indicate that service aspect for the users should receive more priority improvement than other aspects of the business goals for these aspects have the worst performance among the other aspects.

The IT performance measurement results in order to achieve SWCU business goals from the internal perspective are presented in table 7. From table 7, IT has been used and managed by SWCU in achieving the business goals from the internal perspective, such as improving and maintaining business process functionality, lowering process costs, providing compliance with external laws, regulations and contracts, providing compliance with internal policies, improving corporate governance and transparency, managing business change, improving and maintaining operational and staff productivity. This is indicated by the value maturity '*defined*' which means that the IT process has been standardized, documented and communicated. Overall, the average of the IT process is at the maturity level of 2.95 (defined) which means the IT processes to support business goals in SWCU from the internal perspective have been standardized, documented and has been well communicated. These results indicate that the business process in SWCU is supported by IT products, those are information system which has been matched with the policies made by the university and also follow the rules that made by other parties outside the university, but are obliged to apply in SWCU, such as regulation of Satya Wacana Christian higher Education Foundation (YPTKSW) or from the government, so that SWCU survival is assured, because the risk of penalties due to violations of the regulations made by a higher authority can be minimized.

The IT performance measurement results in order to achieve SWCU business goals from the learning and growth perspective are presented in table 7. From table 7, IT has been used and managed by SWCU to achieve the business goals from the learning and growth perspective, such as managing product and business innovation, acquiring and maintaining skilled and motivated people, obtaining reliable and useful information for strategic decision making. This is indicated by the value maturity '*defined*' which means that the IT process has been standardized, documented and communicated. Overall, the average of the IT process is at the maturity level of 3.03 (defined) which means the IT processes to support business goals in SWCU from the learning and growth perspective have been standardized, documented and well communicated. The results of these measurements show that SWCU always do the innovation both in IT products and in human resource development in order to become a leader in a similar business.

Overall, the IT performance in SWCU to achieve the defined business goals, have an average of maturity level at 2.89 (defined) which means the IT processes to support the business goals in SWCU have been standardized, documented and well communicated. Just only in order to support the performance of SWCU in the future, there should be a continuous monitoring and evaluation of the IT in SWCU, so day by day, the quality of IT service in SWCU will be more and more improved as what it is expected.

Table 7. The IT performance measurement results in SWCU

Perspective	Business Goals UKSW		Maturity Level	Overall Maturity Level
Financial	1	Provide a good return on investment of IT-enabled business investments	2.94	2.79
	2	Manage IT-related business risk	2.64	
	3	Improve corporate governance and transparency.	2.78	
Customer	1	Improve customer orientation and service	2.26	2.78
	2	Offer competitive products and services	3.16	
	3	Establish service continuity and availability	2.48	
	4	Create agility in responding to changing business requirements	3.22	
	5	Achieve cost optimisation of service delivery	2.77	
Internal	1	Improve and maintain business process functionality	3.18	2.95

	2	Lower process costs	2.85	
	3	Provide compliance with external laws, regulations and contracts	2.75	
	4	Provide compliance with internal policies	2.89	
	5	Improve corporate governance and transparency	2.78	
	6	Manage business change	3.12	
	7	Improve and maintain operational and staff productivity	3.05	
Learning and Growth	1	Manage product and business innovation	3.32	3.03
	2	Acquire and maintain skilled and motivated people	2.82	
	3	Obtain reliable and useful information for strategic decision making	2.95	
The average of the Maturity Level for the whole perspectives of the business goal				2.89

CONCLUSION:

Information technology (IT) can improve the competitive advantage of an organization. Each IT process requires measurements to indicate the IT performance in order to achieve the organization goals. Evaluation on IT performance uses maturity model COBIT framework version 4.1. The evaluation is done by measuring the maturity level of IT process control in the context of achieving business goals. The IT performance measurement results show that the IT in SWCU has been well managed, where IT processes to support the business goals have been standardized, documented and well communicated. Just for the service aspect for the users, more priority improvements should be given by BTSI because this aspect has the worst performance among the other aspects of the business goals. To improve the performance in SWCU in the future, there should be a continuous monitoring and evaluation of the IT in SWCU, so the quality of IT services will be more and more improved day by day as what it is expected.

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