QUACQUERELLI SYMONDS ASIA UNIVERSITY RANKINGS USING COBIT 5 FRAMEWORK

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ABSTRACT

Telkom University is one of the most private colleges in Bandung, which has participated in national and International University rankings. One of the international rankings followed by Telkom Universities is the rating of QS (Quacquarelli Symonds) Top Universities. QS is a leading global career and education network for ambitious professionals who want to develop their personal and professional development. Some of the indicators required for inputting are academic reputation, employee reputation, and number of domestic and international students, citation of scientific work, international research Network and several other indicators. To be able to follow QSAUR (QSAsia University Rankings), the university is required to be able to complete the data divided into several indicators. Some of these indicators are academic reputation, employee reputation, number of domestic and international students, citation of scientific work, international research Network and several other indicators. The amount of data and the number of indicators did not slightly make the University of Telkom decided to create an information system that can be used to support and manage the data needed for QS. It was built an information system called Dashboard QS AUR. To be able to assess the quality of the information system that the Dashboard QSAUR, it takes an audit process information system to increase the value of capability. Information system audits are implemented to be able to know the future development recommendations for the QS AUR Dashboard Information System. The method used is COBIT 5 that focuses on the Align, Plan, and Organize (APO) domains of the domain APO 01 upto APO13 and its sub-domains. Overall the result achieved for the QSAUR information system is level 4 (predictable process) which means that most of the activities are already done and have predictions for the future. Once obtained the capability value, proceed by providing recommendations for the future.

INTRODUCTION

The existence of an information system is considered capable of helping to carry out business activities that take place at a company so that many companies are implementing information systems to help run business processes in the company. Information systems are not only used by large companies but can also be used in an educational institution. One of the educational institutions that use information systems to carry out their business processes is Telkom University.

One of the international ranking participated by Telkom University is the ranking of QS (Quacquarelli Symonds) Top Universities. QS is a leading global career and education network for ambitious professionals who want to develop their personal and professional development. With extensive contacts in the field of high education, QS expertise, and industry experience provide flexibility to adapt to the needs of prospective clients [1]. QS ranking can be divided based on world ranking (QS WUR) and regional ranking, one of which is Asia (QS AUR), at present Telkom University is ranked 451-500 on QS AUR (Asian University Rankings) [2]. The amount of data and the number of indicators that are not small makes Telkom University decided to create an information system that can be used to support and manage the data needed for QS. So that, one form of implementation of information technology is applied at Telkom University, one of which is an information system named Dashboard QS AUR.

LITERATURE REVIEW

Information system

The system is a collection of people who cooperate with rules and regulations that are systematic and structured to form a single entity that carries out a function to achieve the goal. The system has several characteristics or characteristics consisting of system components, system boundaries, the environment outside the system, the system interface, system input, system output, system processing and system goals. While information is data that is processed to be more useful and meaningful to the recipient, as well as to reduce uncertainty in the decision making process regarding a situation. Information systems are a regular combination of people, hardware, software, communication networks and data resources that collect, change, and disseminate information within an organization [3].

Quacquarelli Symonds (QS)

Quacquarelli Symonds (QS) is a leading global higher education company, with more than 250 employees on 5 continents speaking more than 25 languages. The mission of Quacquarelli Symonds (QS) is to enable motivated people anywhere in the world to fulfill their potential through achieving

education, international mobility, and career development [1]-[2].

Audit information system

Definition of Information Systems Audit is The process of collecting and evaluating evidence to determine whether information systems and information technology environments adequately safeguard assets, maintain data and system integrity, provide relevant and reliable information, achieve organizational goals effectively, consume resources efficiently, and have in effect internal controls that provide reasonable assurance that operational and control objectives will be met." [4].

When viewed from the definitions above, it can be concluded that the purpose of the information system audit is to assess whether the control of the information system has been able to provide adequate confidence in:
• Asset Security
• Data Integrity
• Effectivity
• Efficiency

COBIT 5

COBIT 5 is an information technology control tool issued by the Information System Audit and Control Association (ISACA), containing the control process in information technology governance [5]. COBIT 5 provides a comprehensive framework that helps companies create optimal value from IT by maintaining a balance between realizing benefits and optimizing the level of risk and resource use. COBIT 5 allows IT to be regulated and managed holistically for the entire company, taking full responsibility for the end-to-end business and IT functions, taking into account the IT-related interests of internal and external stakeholders. COBIT 5 is general and beneficial for companies of all sizes, whether commercial, nonprofit or in the public sector.
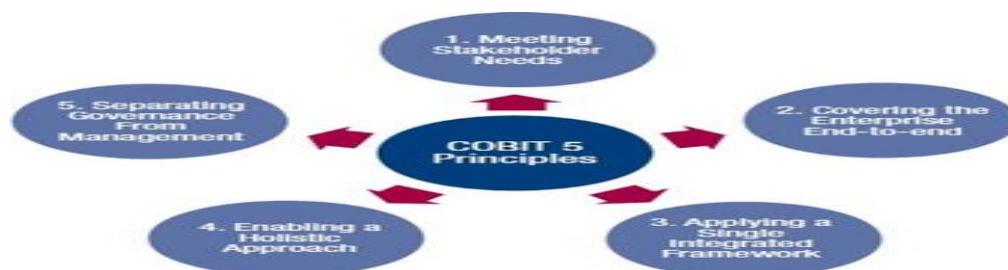

Figure 1 COBIT 5 Principles [6]

Figure 2 shows a complete set of 37 governance and management processes in COBIT 5. Details of all processes, according to the process model described earlier, are included in COBIT 5: Possible processes.
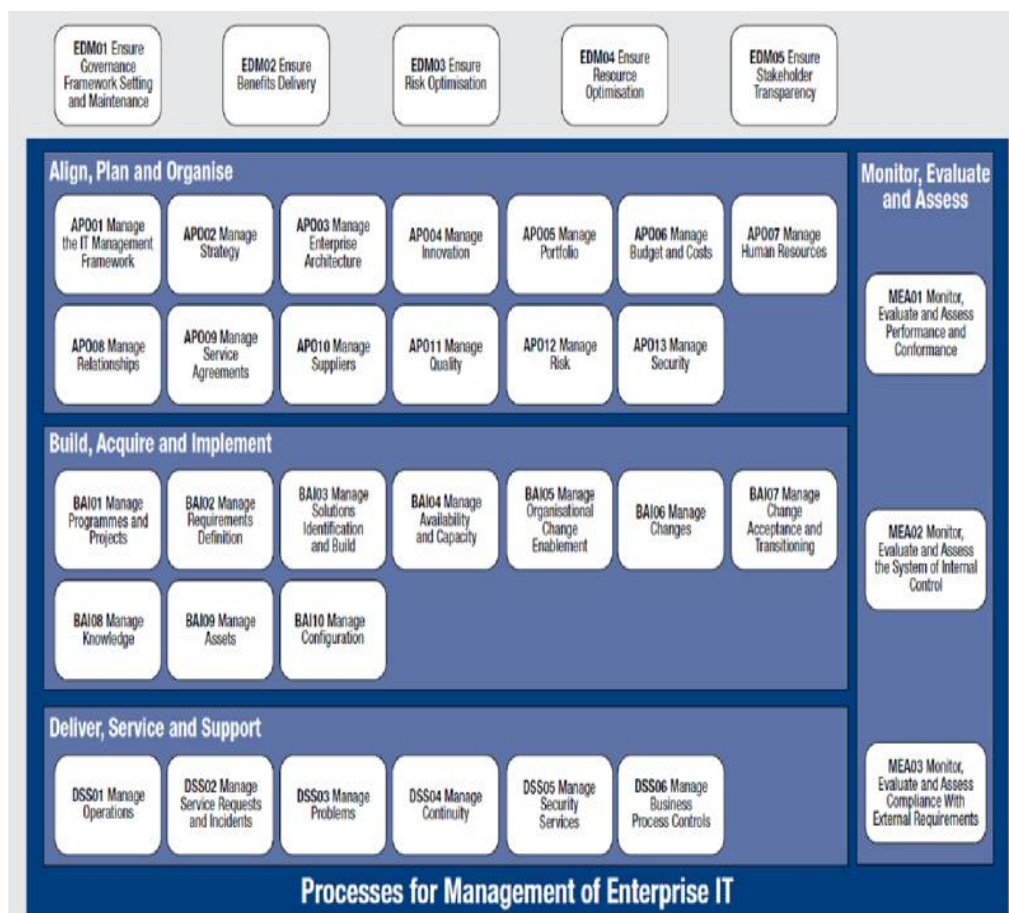
Figure 2 Processes for Governance of Enterprise IT [5]

COBIT 5 *Domain Align, Plan and Organize (APO)*

Domain Align, Plan, and Organize cover the use of information & technology and the best ways that can be used within a company to help achieve the company's goals and objectives. It also highlights the form of organization and infrastructure that IT must take to achieve optimal results and to produce the most benefits from using IT [7].

The following are the processes and sub-processes in the align, plan and organize domain:

1.   APO01 – Manage the IT Management Framework
2.   APO02 – Manage Strategy
3.   APO03 – Manage Enterprise Architecture
4.   APO04 – Manage Innovation
5.   APO05 – Manage Portfolio
6.   APO06 - Manage Budget and Costs
7.   APO07-ManageHumanResources
8.   APO08 – Manage Relationships

9. APO09 – Manage Service Agreements
10. APO10 – Manage Suppliers
11. APO11 – Manage Quality
12. APO12 – Manage Risk
13. APO13 – Manage Security

Diagram RACI

Following is an example of the RACI diagram on APO01 [8]:

APO01 RACI Chart

Key Management Practice	Board	Chief Executive Officer	Chief Financial Officer	Chief Operating Officer	Business Executives	Business Process Owners	Strategy Executive Committee	Steering (Programmes/Projects) Committee	Project Management Office	Value Management Office	Chief Risk Officer	Chief Information Security Officer	Architecture Board	Enterprise Risk Committee	Head Human Resources	Compliance	Audit	Chief Information Officer	Head Architect	Head Development	Head IT Operations	Head IT Administration	Service Manager	Information Security Manager	Business Continuity Manager	Privacy Officer
APO01.01 Define the organisational structure.		C	C	C	C		I			C					R	I	I	A	C	C	C	R	C	C	C	
APO01.02 Establish roles and responsibilities.					I	C				C					C	C	C	A	C	C	C	R	C	C	C	C
APO01.03 Maintain the enablers of the management system.	C	A	C	R	C	C	I				C	C	C	C		C	C	R					R			
APO01.04 Communicate management objectives and direction.		A	R	R	R	I	R	I	I	I	R	R	I	I	I	I	I	R	I	I	I	I	I	I	I	I
APO01.05 Optimise the placement of the IT function.		C	C	C	C		A			C					C	C	C	R	C	C	C	R	C	C	C	
APO01.06 Define information (data) and system ownership.		I	I	C	A	R									C	C	C	C	C						C	C
APO01.07 Manage continual improvement of processes.				A		R			R					C		I	C	C	R	R	R	R	R	R	R	R
APO01.08 Maintain compliance with policies and procedures.		A				R			R					R		R	C	I	R	R	R	R	R	R	R	R

Figure 3 APO01 RACI chart [8]

The level of involvement in RACI is as follows:

• R (Responsible) referring to the role that the part is were the ones who must be responsible for acting as the main supporting role in fulfilling, carry out, and finish activities under their responsibility.

• A (Accountable) referring to the role that those passages were the ones that must be able to direct the course the implementation of the activity or activities.

• C (*Consulted*) is responsible that the department has a role as the party that will be the place of consultation during the implementation of the activity.

• I (*Informed*) provides a role as a party who is given information about the implementation of activities [8].

Capability Model COBIT 5

The COBIT 5 process capability approach can be summarized as shown in Figure 4.
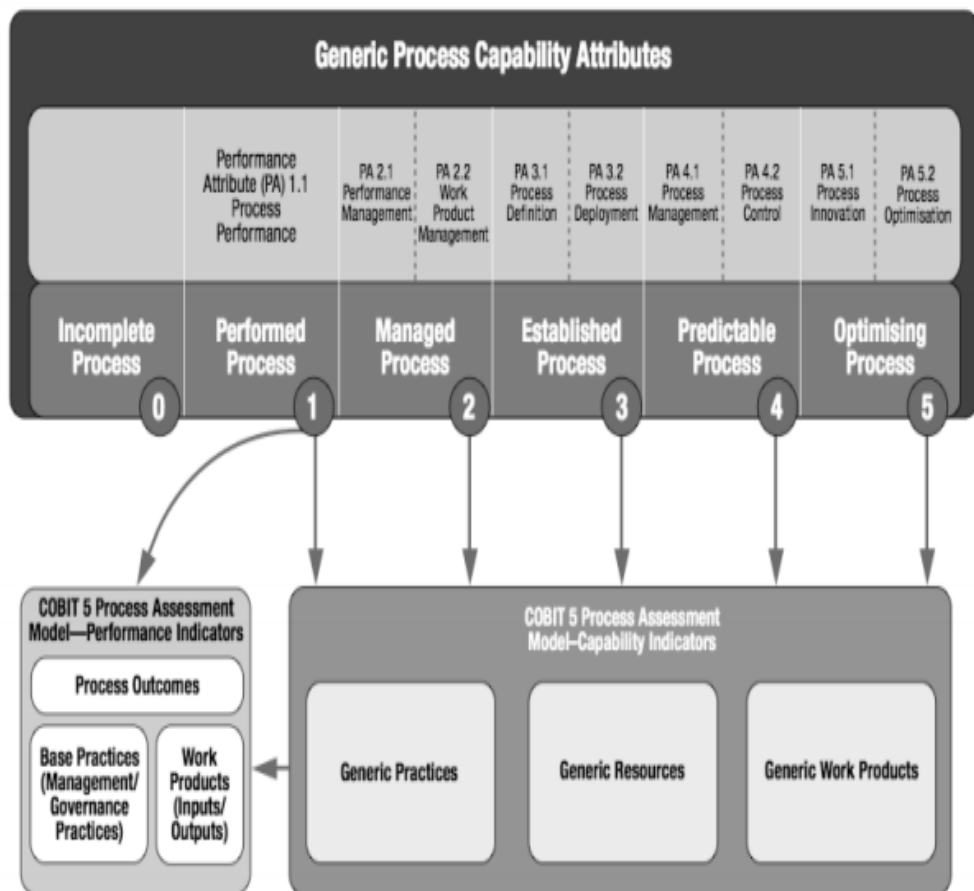
Figure 4 Attribute Process Capabilities [9]

There are six levels of capability that a process can achieve, including designating an 'incomplete process' if the practice does not achieve the intended process objectives:

0Processincomplete–Theprocess was not implemented or failed to achieve the objectives of the process. At this level, there is little or no evidence of systematic achievement of the objectives of the process.

1 Process carried out (one attribute) – The process implemented achieves the goal of the process.

2 Managed processes (two attributes) – The processes carried out previously described are now implemented in a managed mode (planned, monitored, and adjusted) and the work products are set, controlled, and maintained.

3 Established processes (two attributes) – The managed processes described previously are now implemented using defined processes that can achieve the results of the process.

4 Predictable processes (two attributes) – Predefined processes now operate within defined limits to achieve the results of the process.

5 Optimization process (two attributes) – The predicted process described previously continues to be improved to meet current and projected business goals [5].

RESULTS AND DISCUSSION

In determining the conditions at which levels the right activities are located, an analysis is carried out in the form of finding the right level on the questionnaire results form. Determination of the level of each activity is done by selecting the most values that appear in each activity. If the value that appears is on 2 or more levels, then the lowest level is chosen among them. The following is the recapitulation of *capability* values from the *Align, Plan, and Organize* (APO) domain.

Table 1: Recapitulation Capability Domain Align, Plan and Organize (APO)

Domain Process	Average Level	Rounding Level
APO01 Manage the IT management frameworks	4,13	4
APO02 Manage strategies	3,75	4
APO03 Manage enterprise architecture	3,5	4
APO04	4	4

Manage innovation		
APO05 Manage portfolio	4	4
APO07 Managing human resources	4	4
APO08 Manage relationships	3,5	4
APO09 Manage service agreements	3.65	4
APO11 Manage quality	3.4	3
APO12 Manage risk	3.8	4

The results of the capability level can be rounded off which is useful to be able to easily find the current conditions based on predetermined capability level criteria.

Table 2: Overall Gap Analysis

Process Name	Level Existing	Level Target	Gap
APO01 Manage the IT management frameworks	4	5	1
APO02 Manage strategies	4	5	1
APO03 Manage enterprise architecture	4	5	1
APO04 Manage innovation	4	5	1
APO05 Manage portfolio	4	5	1
APO07 Managing human resources	4	5	1
APO08 Manage relationships	4	5	1
APO09 Manage service agreements	4	5	1
APO11 Manage quality	3	5	2
APO12 Manage risk	4	5	1

CONCLUSION
The conclusions that the author can provide from the results of the research conducted are as follows:

1.   Based on the evaluation of the capability of the QS AUR information system based on COBIT 5 in the Align, Plan and Organize (APO) domains in the pre-audit stage, the QS AUR information system condition results in the use of processes only in the processes APO01, APO02, APO03, APO04, APO05, APO07, APO08, APO09, APO11, and APO12 only.

2.   From the audit results obtained 1 process that has a capability level 3 (established process), namely the APO11 process, and 9 processes that have a capability level 4 (predictable process), namely APO01, APO02, APO03, APO04, APO05, APO07, APO08, APO09, and APO12.

3.   If valued on average, the capability levelachievedasawholeis4,which shows that most of the existing activities have been carried out and have predictions going forward. While the capability level to be achieved is level 5 (optimizing process).

4.   Recommendations are given to the sub processes APO01.07, APO02.03, APO09.04 and APO11 processes. Recommendations are giventotheAPO11processbecause it has a capability level 3 (established process) so that it is necessary to carry out quality monitoring, control for each activity carried out and also provide a quality review of what has been improved or done. Recommendations are given to sub processes APO01.07, APO02.03, and APO09.04 because when viewed from the existing conditions and the evidence have no output.

RECOMMENDATIONS

Based on the Gap analysis obtained and compared with the target level to be achieved, the following are some recommendations for improving quality:

1.   Based on APO01.07 sub process Manage ongoing process improvement. Companies should manage to improve information systems, such as in the form of employment contracts. So that information systems can be adapted to developments needed by the company.

2.   Based on APO02.03 sub processes Determine IT capability targets. The information system that was built did not have a written target, so the information system was built to adapt to the current situation. Employment contracts should be carried out or explained in detail to determine the ability targets that must be applied in the information system so that the IT team can carry out the work following the targets to be achieved.

3.   Based on APO09.04 sub process Monitoring and service level reports. The absence of service level monitoring and reporting regarding the information system that was built. Monitoring and reporting of service levels should be carried out following procedures to maintain the quality of the information system that is being built.

4.   Based on APO11.04 sub processes perform quality monitoring, control, and review. The head of the department must always monitor the quality of each activity carried out by each of his employees, both in collecting data or building information systems. Section heads must be able to provide examples to their employees so that they can build awareness to carry out work by agreed quality standards. Can report every work result periodically. Record and discuss all processes that become obstacles, so that monitoring and decision-making improvements can be done.

5.   Based on sub process APO11.06 Maintain continuous improvement. Periodic monitoring must be carried out to sustain continuous improvement and can be evaluated and reviewed for improvement. Always identifies periodically to find the root problems that become obstacles and can be used as a new review in repair.

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