

The Information Technology Governance Analysis and Plan to Develop Service Effectiveness of Academic Information System at Tahfidzul Quran Amanah Smp in Kecamatan Sunggal

Novri Adi, Andysah Putra Utama Siahaan, Leni Marlina

Abstract

Academic Information System is one of the essential components in supporting administration process and academic service in a school. The information system service effectiveness is very affected by information technology governance application that appropriate with organization needs. This research aimed to analyse the condition of information technology governance, to identify the problem(s) that affects Service Effectiveness of Academic Information System, to analyse the characteristic of Information Technology Governance by using COBIT 2019 Design Factors, and to give recommendation of information technology governance at Tahfidzul Quran Amanah SMP in Kecamatan Sunggal. The research method that is applied in this research is Descriptive with Qualitative Approach by means of observation, interview, documentation and questionnaire. Analysing is carried out by using ten COBIT 2019 Design Factors which include Enterprise Strategy, Enterprise Goals, Risk Profile, I&T Related Issues, Threat Landscape, Compliance Requirements, Role of IT, Sourcing Model for IT, IT Implementation Methods, dan Technology Adoption Strategy. The result of the research points out that information technology governance has supported the implementation of Academic Information Service System, with the main orientation of the service development to the users. Nevertheless, still found some aspects that needed to be developed, for instance the development of human resource competence, information security reinforcement, documentation management enhancement, also validation of some Design Factors identification, so it will be appropriate with the real condition of the organization. This research delivers recommendation of the development of information technology management as a base for school in developing the effectiveness of Academic Information Service System continuously.

Keywords: *Information Technology Governance, COBIT 2019, Design Factors, Academic Information System, Service Effectivity*

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Introduction

Information Technology Development nowadays has given significant effect to many sectors, include education sector. (Fitri, 2023; Setyaningsih et al., 2023). The Utilization of information technology in education sector is not only as administration assistance tool, but also as strategic tool in increasing quality of education system. Information System of Education becomes one of essential component in supporting academic data management, such as students, teachers, schedule, score data and academic report integrally.

Information Technology Implementation which is not accompanied by good management, often causes many problems, such as inefficiency service, lack of system integration, and low information quality (Lestanti & Susana, 2016). According to many research in information technology management, the success of information system is not only determined by the technology itself, but also how the organization manages, guides and controls the usage of technology effectively.

The Information Technology Governance (IT Governance) is one of framework that ensures the usage of information technology accordance with the goal of the organization, be able to give additional value, and minimize the risk that can be happened (Sutabri et al., 2024). Some previous research showed that the good application of information Technology Governance could increase the service quality of information system, operational efficiency, and the users' satisfaction (Fikri et al., 2020).

SMP Tahfizul Quran Amanah is one of education organization for Junior High level that is located in Desa Sei Mencirim, also uses information system as administration and academic service support. Therefore, the research is needed to analyse the condition and plan of information technology governance to ensure the system that is used is able to support the school business process optimally. The research is also expected to give accurate recommendation for school in managing information technology and increasing quality of education service.

Literature Review

2.1 Information Technology Governance

Information Technology Governance is a framework that will be used to ensure the usage of information technology in an organization goes along with the goal of the strategy, supports the operational efficiency, and gives additional values to the organization. Information Technology Governance includes the process, structure and mechanism that planned to manage information technology effectively, to ensure the information safety, and mitigate the risk that relates to the usage. Basically, IT Governance is aimed to:

1. Harmonize IT with the business goal: to ensure that the strategy and IT Governance support the achievement of the organization goal entirely.
2. Optimize IT value: Maximize the benefit that is gained from IT investment through the usage of efficient and effective source.
3. Manage IT risk: Identify, evaluate and reduce the risk that relates to IT, includes the risk of security and the loss of data that caused by system failure.
4. Monitor IT performance: Scale and evaluate the performance of IT system through certain indicator to ensure the contribution to the organization.

2.2 Information System

Information System is a formal organization system, sociotechnique, that is planned to collect, process, store, and distribute information. From sociotechnique, information system is constructed by four components: task, human, structure (role), and technology. Information system could be defined as integral component to collect, store, and process data that will be

used to serve information, contributes to knowledge, and digital product that facilitates decision making. (Hartanti & Iswanti, 2018).

2.3 Academic Information System

Academic Information System is one of information technology implementations that is used by education institution to support integral academic process management (Meilani et al., 2020). The existence of Academic Information System facilitates in academic administration governance (Rahman & ETP, 2021), started with students enroll process, teachers and students data management, lesson schedule arrangement, score processing, study report printing, and academic information serving fast and accurately.

2.4 Service Effectiveness

According to (Delone & McLean, 2003), the success of an information system is affected by system quality, information quality, user level, user satisfaction and net benefits. The model becomes one of approaches that is often used to scale the implementation effectiveness of Information System. According to (Parasuraman et al., 2005) service is an every activity or benefit that is given by one party to other which is intangible and do not produce ownership of something.

In Information Technology, service is not only technical support, but also information supply, system maintenance, data safety, and available application that support organization business process. In Academic Information System, service is implemented through supplying academic information which is fast, accurate, easy access, and be able to fulfill all the user system need.

2.5 Information Technology Governance Framework

Information Technology Governance Framework is a batch of guidance, principle, process, and best practice which organization used in manage information technology to make accordance with business goal. This framework helps organization to ensure that information technology investment is able to give value, control risk, optimize the using of source, and increase service quality to the user. In applying Information Technology Governance, frameworks that can be used are Control Objectives for Information and Related Technology (COBIT), Information Technology Infrastructure Library (ITIL), ISO/IEC 38500, other TOGAF. Every framework has different focus and characteristic accordance with the organization need.

COBIT

Control Objectives for Information and Related Technology (COBIT) is governance framework and information technology management that developed by ISACA. This framework is planned to help organization to ensure that information technology is able to give value to an organization through resource management, risk control, obedience to regulation, and increasing service quality. The COBIT latest version, COBIT 2019 introduces Governance System and Governance Framework that makes an organization able to adjust governance with their own characteristic and need. Generally, COBIT is built based on six main principle:

1. Provide Stakeholder Value
2. Holistic Approach
3. Dynamic Governance System
4. Governance Distinct from Management
5. Tailored to Enterprise Needs
6. End-to-End Governance System

COBIT 2019 divides information technology governance into five main domain, which are one Governance Domain and four Management Domain. The five domain are:

1. Evaluate, Direct and Monitor (EDM)
2. Align, Plan and Organize (APO)

3. Build, Acquire and Implement (BAI)
4. Deliver, Service and Support (DSS)
5. Monitor, Evaluate and Assess (MEA)

Capability Level of COBIT 2019 refers to ISO/IEC 33000 standard and consists of six ability level. Level 0 – Incomplete Process, Level 1 – Performed Process, Level 2 – Managed Process, Level 3 – Established Process, Level 4 – Predictable Process, and Level 5 – Innovating Process.

Research Methodology

This research is a Descriptive Research with Case Study Approach. This descriptive research is aimed to give fully description systematically about the information technology governance condition of Academic Information System at SMP Tahfidzul Quran Amanah based on facts that is found during the research. Through this approach, the researcher is able to identify the happening problem, evaluate the running condition, and arrange the recommendation to fix the problem as what the organization need.

Data Collecting is done by direct interview, interview with related parties, documentation, and literature study. The data then analyzed to know the current condition of information technology governance, so that the recommendation can be formulated to support service effectiveness increase of the Academic Information System Service.

The research began by identifying the problem relates with Information Technology Governance of Academic Information System at SMP Tahfidzul Quran Amanah Kecamatan Sunggal. After that literature study was done to get theory base that relates with information technology governance, Academic Information System, Service Effectiveness, and COBIT 2019 Framework as guidance in research. Literature Study is done through book review, scientific journal, international standard, and the relevant previous research.

The next step is data collecting through observation, interview, documentary, and document study. The obtained data is used to describe actual condition of information technology governance of Academic Information System, after that the data analyzed. Analysis is done to define COBIT domain accordance with research scope. Then Capability Level Assessment was done to the process of evaluation object. The next assessment capability level was compared with to-be target so that gap analysis would be gained.

Based on the gap analysis result, the recommendation correction arrangement of information technology governance was conducted. The recommendation is expected can increase the effectiveness of academic information service system through governance reinforcing, the increasing of information technology service system, and the optimalization of information technology governance source at school environment.

The final step of the research is formulating the conclusion and suggestion based on analysis result that was done. The conclusion was formulated to answer the research formulation problem, meanwhile recommendation is given to the school to develop information technology governance sustainably.

Result

The data collection is obtained from data collection technique such as; observation, interview, documentation, and questionnaire to obtain description about the condition of information technology governance of Academic Information System at SMP Tahfidzul Quran Amanah Kecamatan Sunggal. The result of observation can be describe as follow:

Tabel 1. Observation Result

No	Observation Aspect	Observation Result
1	Academic Information System Utilization	Used in academic administration governance
2	Academic Data Governance	Done computerize
3	System Governance Duty Distribution	Hasn't been documented completely
4	Standard Operational Procedure (SOP)	Need more improvement
5	Monitoring and Evaluation System	Conducted but unscheduled

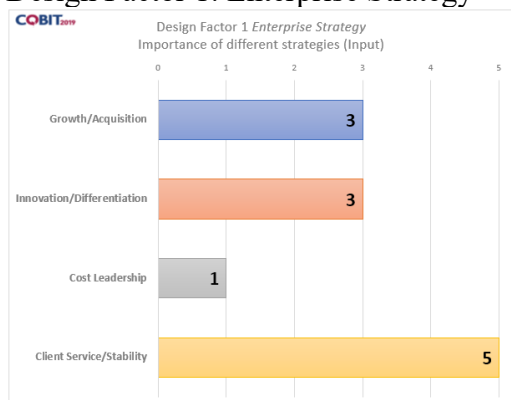
Interview was conducted to the Headmaster, School Operator, Academic Information System Operator, and Teacher. The result is as follow:

Table 2. Interview Conclusion Result

Informant	Interview Result
Head Master	Academic Information System helps to increase academic administration efficiency, but governance evaluation is needed periodically.
School Operator	The system is used daily to manage academic data, but procedure documentation is still limited.
System Administrator	System Management runs well, but monitoring and risk management need to be improved
Teacher	The system eases score and absence filling, but some features need to be refined for easy usage.

COBIT 2019 Framework identification result is obtained by using ten Design Factors that is found in COBIT 2019 Design Guide.

1. Design Factor 1: Enterprise Strategy

**Figure 1. Enterprise Strategy Identification Result**

2. Design Factor 2: Enterprise Goals

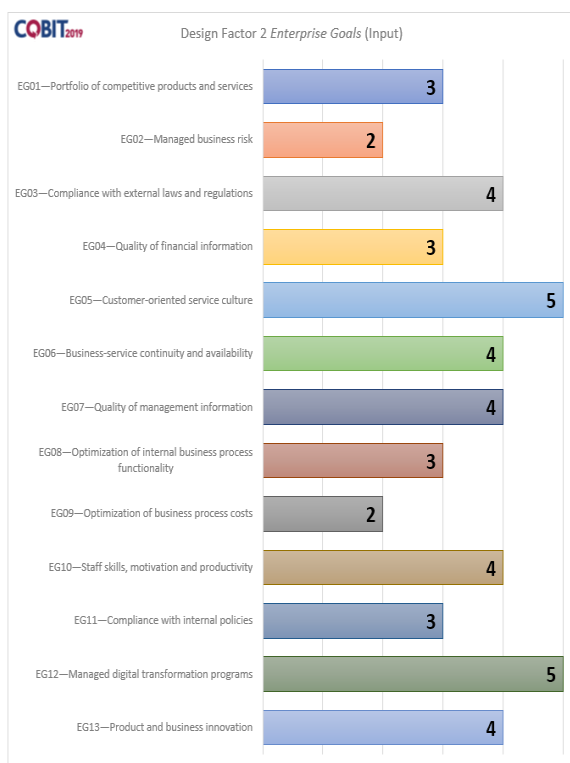


Figure 2. Enterprise Goal Identification Result

3. Design Factor 3: Risk Profile

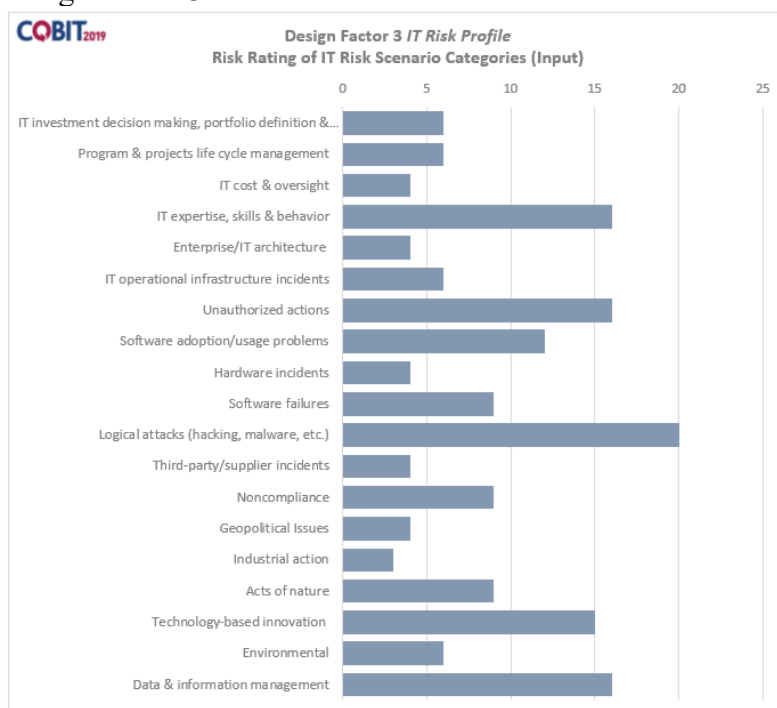


Figure 3. Risk Profile Identification Result

4. Design Factor 3 4: I&T Related Issues

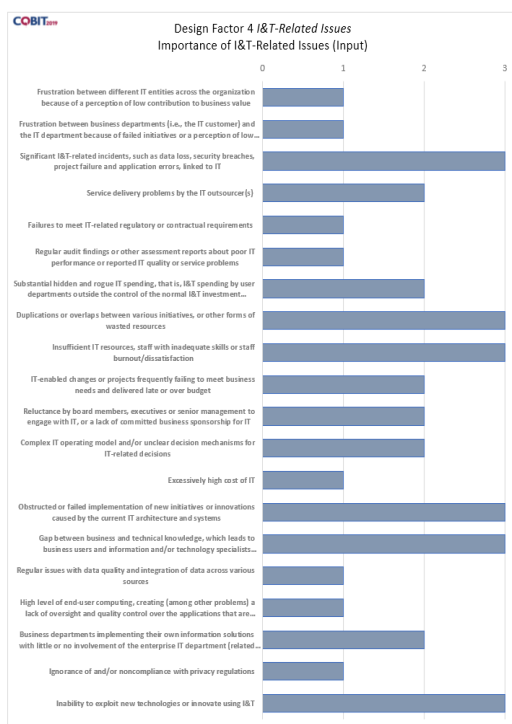


Figure 4. I&T Related Issues Identification Result

5. Design Factor 5: Threat Landscape

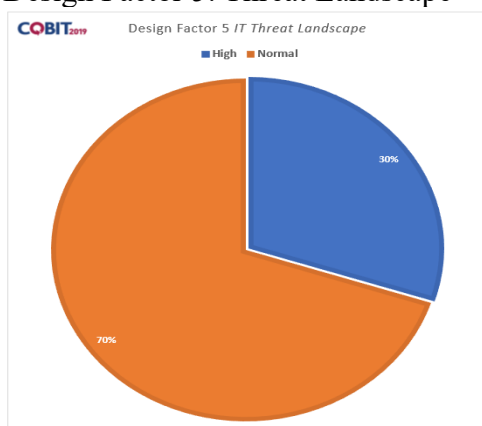


Figure 5. Threat Landscape Identification Result

6. Design Factor 6: Compliance Requirements

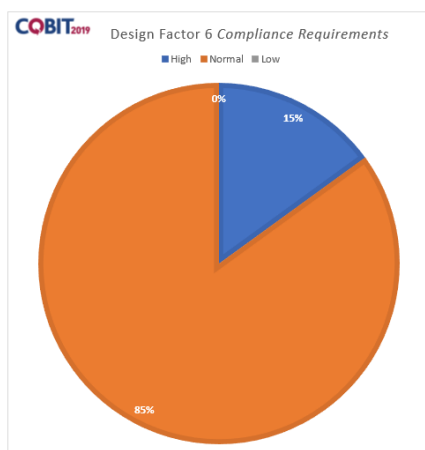


Figure 6. Compliance Requirements Identification Result

7. Design Factor 7: Role of IT

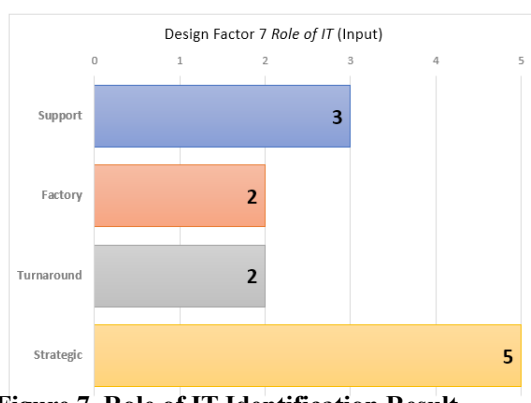


Figure 7. Role of IT Identification Result

8. Design Factor 8: Sourcing Model for IT

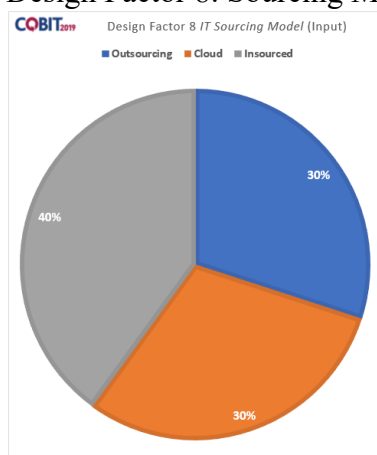


Figure 8. Sourcing Model for IT Identification Result

9. Design Factor 9: IT Implementation Methods

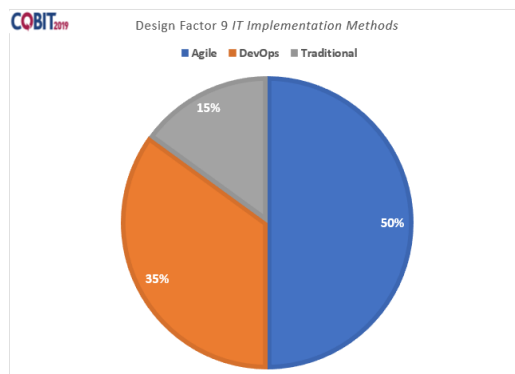


Figure 9. IT Implementation Methods Identification Result

10. Design Factor 10: Technology Adoption Strategy

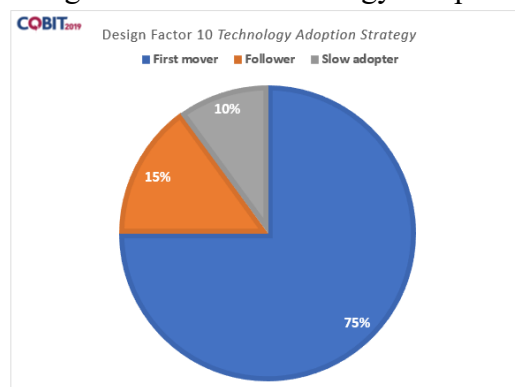


Figure 10. Technology Adoption Strategy Identification Result

Conclusion

Based on the ten COBIT 2019 design factor, can be concluded that most of the identification result has described the characteristic of SMP Tahfidzul Quran Amanah Kecamatan Sunggal in applying information technology governance. The result shows that the school has strong orientation to the increasing of academic service quality through academic information system utilization. Nevertheless, there are some identification results that need to be validated or adjusted further to the real condition of the organization. This is because the obtained result from COBIT 2019 Design Toolkit was affected by design factor that was given during identification process. Therefore result interpretation should consider the real condition of the organization so that the obtained governance recommendation can be applied effectively.

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