

The Development of Helpdesk Governance Framework Using ITIL, COBIT and CMMI for University-setting

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Abstract:

This paper presents a study on the IT governance and an effective helpdesk framework to govern the IT processes and resources in the IT services provider in a university. It began by doing analysis on the current situation of helpdesk unit in the IT services department in the entire university. The information and data gathered from the research and analysis is used to form a transformation plan for the helpdesk unit in that IT department. The aim of the study is to construct an effective helpdesk governance framework for the operation of helpdesk for the university's IT department. The framework is based on the concept of Information Technology Infrastructure Library (ITIL) framework with the structure of Control Objective for Information and related Technology (COBIT).

Keywords: IT Governance, Service delivery, Decision-making, IT risks

I. INTRODUCTION

Information Technology (IT) governance comprises a set of formal and informal rules and practices. These rules and practices determine how decisions are made around IT investments, how decision execution is monitored and the results of these decisions are measured, how empowerment for decision making is exercised, and how those who make the decisions are held accountable. IT governance describes the distribution of IT decision-making rights and responsibilities among different shareholders in the organizations, and the rules and procedures for making and monitoring decisions on strategic IT concerns [1].

Although these definitions differ in some aspects, they emphasize two central aspects that will drive the development of this reference model

for effective IT governance implementations such as who makes the decisions (decision rights) and how the decisions are made (processes/procedures). Basically, every university engages in the use of information technology (IT). The role and impacts of IT on organizations have significantly changed since 1970s. IT has evolved from its traditional "back office" role toward a "strategic" role being able to support current business strategies and also to shape new business strategies. Nowadays, most of organizations' management agrees on necessity of considering IT as an "organizational strategic player". As organization's strategy changes over time, IT strategy and management has to change too [2].

IT governance's objective is to define structures and processes, as well as mechanisms to define

decision making rights and responsibility about main IT issues, to control and monitor the effectiveness of such decisions, and to mitigate IT-related risks in order to achieve organization's objectives. The objectives of having IT governance is for organizations to align their IT and organization's strategy and objectives, define decision making rights and responsibility about main IT issues. Governing of IT implementation help to provide control and mitigate IT risks, and also contribute to design of and to achieve the organization desired performance. This research investigates the importance of having proper IT governance in a university setting. IT environment is critical to a university or any academic institution as it supports the running of the university itself. The use of IT in a university setting is very diverse as it affects the way the lesson is delivered, how the business and academic processes is managed, and to support the interaction processes between students and staff in the university [3].

II. CASE STUDY OF IT INCIDENT IN THE UNIVERSITY-SETTING

IT environment is critical to every aspect of a universities and it always been characterized by its huge and costly investment. These investments come with a huge risk in ensuring good IT services are delivered to all the stakeholders, including the staffs and students. There are thousands of students and almost hundreds of staffs in the university that use IT services and application in delivering their work and assisting them in daily routine. These tasks may include downloading notes, sending and receiving an email, finding journals or articles from the digital databases or using all the internal information system to send complaints or even using the browser to searching the information as well as using social networking application and so on.

As IT has become so vital to a university, higher priority has been given in implementing IT

governance. Due to this high priority, an initiative has been started to introduce an IT governance framework in the university. There is no governance standard commonly used for university-setting except for the ISO 9001 that is used by the University for documentation of IT services and processes related to development of information systems. ISO 9001 was adapted for the university to have a better quality management system in terms of IT services documentation. The lack of a strong governance framework created an improper structure of governing bodies, which control the IT services delivery. This has led to a few cases of system downtime that affects the daily operations of the university.

The important mission in every university is to achieve an optimum and efficient delivery of IT services to staff and students. This goal can be achieved by ensuring two important elements in IT services delivery work well together; high performing IT staff and efficient delivery of IT services. The IT services need to be handled by IT staffs that will ensure that IT services can be delivered successfully efficiently and effectively, and the IT staffs need to do good job in delivering IT services to the users. The IT problems that happen in university is commonly due to the lack of good IT governance in University-setting that referring to the job done by the IT staff. By implementing IT governance, IT staff need to be aware with their roles and responsibilities in handling all incidents related to IT services delivery.

The university had witnessed the effect of lack of good IT governance when a series of cases of unavailability of IT services happened. This has signalled the university management to be more concerned on the management of IT services delivery. The interruption of the IT services has halted the delivery of information and IT, which also disabled users from using the information system in campus.

Based on the interviews that was conducted with the university's IT department, interruption of IT services was commonly caused by an extended power supply failure to the main server room. All present contingency plans failed although it was being assumed that power could be restored within minutes when the standby diesel generator comes online. However, due to unforeseen circumstances, the generator set was not able to supply power in timely manner. Since all the main computing assets are in the main server room (including internet connection), it resulted in unavailability of most IT services including e-mail, online applications, intranet and internet access. In a typical case of power failure of the server room, the earliest it has been restored was after almost 24 hours. This has caused major interruption to the university as no email can be accessed and students were unable to get their notes.

The cause of the major downtime was due to one of the generator set that was being maintained by IT department in a university but the maintenance of the generator set was not included in the disaster recovery plan. Due to this major incident, the IT department staffs are revising the existing disaster recovery plans with the aim of reducing the impact of a recurrence of a similar power failure to the main server room. Some improvements can be implemented relatively easily but some will require additional investment. From this sample case, it was due to lack of proper IT governance that caused the incident not to be properly handled and solved. If the disaster recovery plan was designed properly to include the entire related department, and if it is reviewed periodically, the power supply failure can be solved quickly and the university would not experience the unavailability of IT services.

III. THE NEED OF COBIT IN THE IMPLEMENTATION OF ITIL

ITIL is not stand alone and in fact, ITIL cannot be implemented without some form of governance where ITIL requires a framework of policy, processes, procedures, and metrics that can give direction to IT operation and ITIL activities. The ITIL primary focus is to bring a process-oriented approach to the delivery of the IT infrastructure as sets of services, and the direct support of those services. Issues of managing process deployment resources, quality and security require the integration of other frameworks and methods to enable the ITIL's IT service management processes to achieve its purpose. This is the main reason on why ITIL need COBIT 4.1, in establishing the governance framework for IT Service Management. COBIT is Control Objectives for Information and Related Technology that was developed by Information System Audit and Control Association (ISACA) to advance international thinking and standards in directing and controlling enterprise information technology. COBIT 4.1 support IT governance through its framework of 34 IT processes.

This framework ensures business and IT alignment, maximizes IT enablement of business processes, optimizes IT resource and manages risk. COBIT 4.1 framework accomplishes this by focusing on the business requirements of the actual activities that is performs. The framework utilizes a structured approach in describing each details of the process, what business requirements it is intended to fulfil, its focus area, how it is to be achieved, and how it will be measured. It also describes the assessment of each process's maturity in terms of capability, control and coverage. In effect, COBIT 4.1 framework establishes what needs to be done to provide the information enterprise needs in achieve its goal.

COBIT 4.1 helps to establish control objectives that link the business goals in a cascading set of IT

goals and metrics. These extend from the strategic alignment of business's IT capability requirements all the way down to the tactical management of those processes involved in achieving those goals. COBIT 4.1 addresses the need for an IT organization to unambiguously understand the need for technology enabled business change. It does this by tying the business use of information to the processes that relate to the delivery and support of IT services [4].

IV. USING CAPABILITY MATURITY MODEL INTEGRATION (CMMi) TO MEASURE THE LEVEL OF IT SERVICES

Capability Maturity Model Integration (CMMi) is a process improvement approach that helps organizations improve their performance. CMMi can be used to guide process improvement across a project, a division, or an entire organization. There are five levels of characteristics of the maturity levels as seen in Fig. 1 below [5].

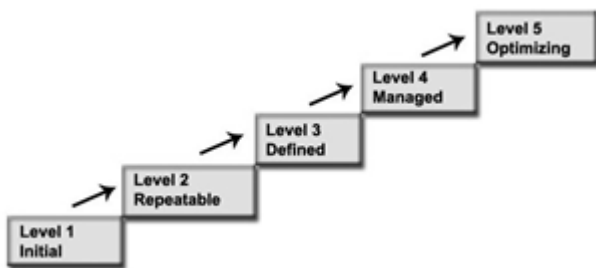


Fig. 1 Five levels of CMMi

As shown in figure above, there are five level of maturity in CMMi model. This is the description for each level of CMMi

- Level 1, Initial – Ad hoc processes.
- Level 2, Repeatable - Service commitment management, service delivery planning, service tracking and oversight, subcontract management, configuration management, service request and incident management, service quality assurance.
- Level 3, Defined – Integrated service management, organization service definition,

organization process definition, organization process focus, training pro-gram, intergroup coordination, resource management, problem management, service delivery.

- Level 4, Managed – Quantitative process management, financial service management, service quality management.
- Level 5, Optimizing – Technology change management, process change management, problem prevention.

V. THE METHODOLOGY OF THE DEVELOPMENT OF HELPDESK GOVERNANCE FRAMEWORK USING COBIT AND ITIL

There are some steps need to be taken in order to develop a good helpdesk governance framework for the university's IT department. The development of helpdesk framework was supported by the results obtained from an interview session. A group of IT staff were selected based on their roles and responsibilities in providing IT services in the university. The staff were selected from each level and each unit of the IT department, ranging from technician to manager.

Several questions were asked to the group in order to obtain the maturity level of the IT department. The sample of interview questions are shown in the Table 1 below. All questions were adapted from CMMi.

The current level of services in helpdesk operation will be measured using Capability Maturity Model (CMMi) structure. A level for the IT services will be identified that match the criteria in CMMi levels. It will be based on the target to be achieved in development of a suitable helpdesk framework for IT department using COBIT. The potential helpdesk framework was

designed by applying ITIL, supported by COBIT 4.1.

TABLE I
SAMPLE OF INTERVIEW QUESTIONS

No	Question
1	Is the service delivery plan developed according to a documented procedure?
2	Is the service delivery plan documented?
3	Are the service delivery activities to be performed identified and planned according to a documented procedure?
4	Are the software and hardware products that are needed to establish and maintain control of the service delivery identified?
5	Are estimates for the service delivery workload derived according to a documented procedure?
6	Are estimates for the service delivery effort and costs derived according to a documented procedure?
7	Is the service delivery schedule derived according to a documented procedure?
8	Are the risks associated with the cost, resource, schedule and technical aspects of the ICT services identified, assessed, and documented?
9	Are plans prepared for the service facilities and support tools?
10	Are services planning data recorded?
11	Is an incident management plan prepared for each service according to a documented procedure?
12	Is the documented and approved incident management plan used as the basis for performing the incident management

	activities?
13	Is an incident management database system created to store all the incident records?
14	Are incidents identified, recorded, analyzed, reviewed, and resolved according to a documented procedure?
15	Are affected groups and individuals informed of the status of incidents on both a periodic and incident-driven basis?
16	Are standard reports documenting the incident management activities and the contents of the incident management database developed and made available to affected groups and individuals?
17	Are incident management database audits conducted according to a documented procedure?

Based on the result of the interview, the current level of the IT services at the entire IT department was identified, which is guided with the measurement of maturity level in CMMi.

VI. FINDINGS

The informal oral interview was conducted with representative from each of the unit in the IT department. Information gathered mainly was about the current situation of working culture and the current level of services in each of the units.

In typical setting of an administration department, staff are required to perform administrative works such as tracking, filling and billing data. However, in the department, the administration staff are expected to develop systems and application as well doing ad-hoc job scope.

It was observed that there is no RACI chart used in the department as they do not have a formal schedule of roles and job scope for all the staff in the department. For example, if there is any incident or problem relating to IT infrastructure occurs, it will go directly to the department. There is no identification of incidents and unit responsible for the type of incidents.

In a governed setting, staff need to review the incident and take action if it is related to the unit. If the incident is not related, it need to be escalated to the correct unit for the incident to be solved. This situation match with the need of having a proper helpdesk in the organization that able to identify and solve the issue, with proper review and escalation procedures.

The result of the interview indicated that the department does not perform their tasks according to a specific process or procedures. Action taken for each incident depend on the understanding of the staff that receive and acknowledge the incident. Staff prefer to solve incidents that they receive according to their own way or method as it will be faster. They do not prefer a formalized process as they assume it will take a longer time for the incidents to be solved. The assumption of these staff is work flows need to follow certain formalized steps or ways, and this will waste their time. For an issue that is considered simple and small, it can be solved faster without following the designed work flows.

The interview results and observation made on the department processes relating to incident and problems was analysed and compared to ITIL and COBIT 4.1. Assessment of level were made by applying the CMMi maturity model. The study identified the maturity level of the IT services of the IT department to be at “Level 2”, which is ‘repeatable’ and ‘managed’. The IT process in ITMS is characterized for projects and it is often reactive in nature. Solution to incidents are made without referring to any documented processes or

person, and no documentation was established for the solutions.

The study discovered that there was no proper identification of roles and responsibilities for the IT department staff. By having no clear job scopes, this will cause slow response among the staff to solve and close the incidents. It was also ascertained that there was no clear process of decision-making relating to the IT services delivery. If any incident was reported or any request for IT service delivery, without a clear decision-making, there will be no accountability of the IT staff in fulfilling the requests made by users or solving the incidents.

VII. RECOMMENDATION

The IT services delivery in the university can be improved by looking at three main entities, namely people, priority of the services and processes involved. The people is basically the staff of the department, which is imperative for the working culture to undergo a shift towards the betterment of the target. It involves changes in culture, attitude and mindset of all personnel in the department. The IT department must cate to the requests of IT services and prioritise requests that are coming in. Processes related to IT services need to be assessed and improved for a better delivery of IT services.

This study has identified two most important services that is considered to be vital to the university operation that are email application services and the operation of IT helpdesk. By measuring the level of these services using CMMi, the department can aim for a better service delivery by fulfilling criteria to move to the next level. As the study has identified the service delivery to be at Level 2, the department can review the criteria of Level 3, for them to improve their services and moving to an improved level.

The results of the study have identified three main processes that are in extreme need for

improvement. The processes involved are incident, problem and change management. These processes can be improved by measuring the current level, and moving for a better service delivery by integrating COBIT and ITIL.

To achieve a better IT services delivery, the study proposes a suitable framework for helpdesk in university setting that is illustrated in Figure 2 below. This framework consists of the management in ITIL (covering the service support and service delivery) that is suitable for helpdesk, with the support of the structure of COBIT.

The proposed framework was named COBIT, ITIL Retrofit Helpdesk Framework (CIRHF) that was developed based on the combination of ITIL framework, supported with the structure of COBIT. The CIRHF is proposed to be implemented by the staff in the IT department of the university. The framework consists of the objectives of the department, the ITIL framework that is applied, as well as the domain and processes of COBIT 4.1.

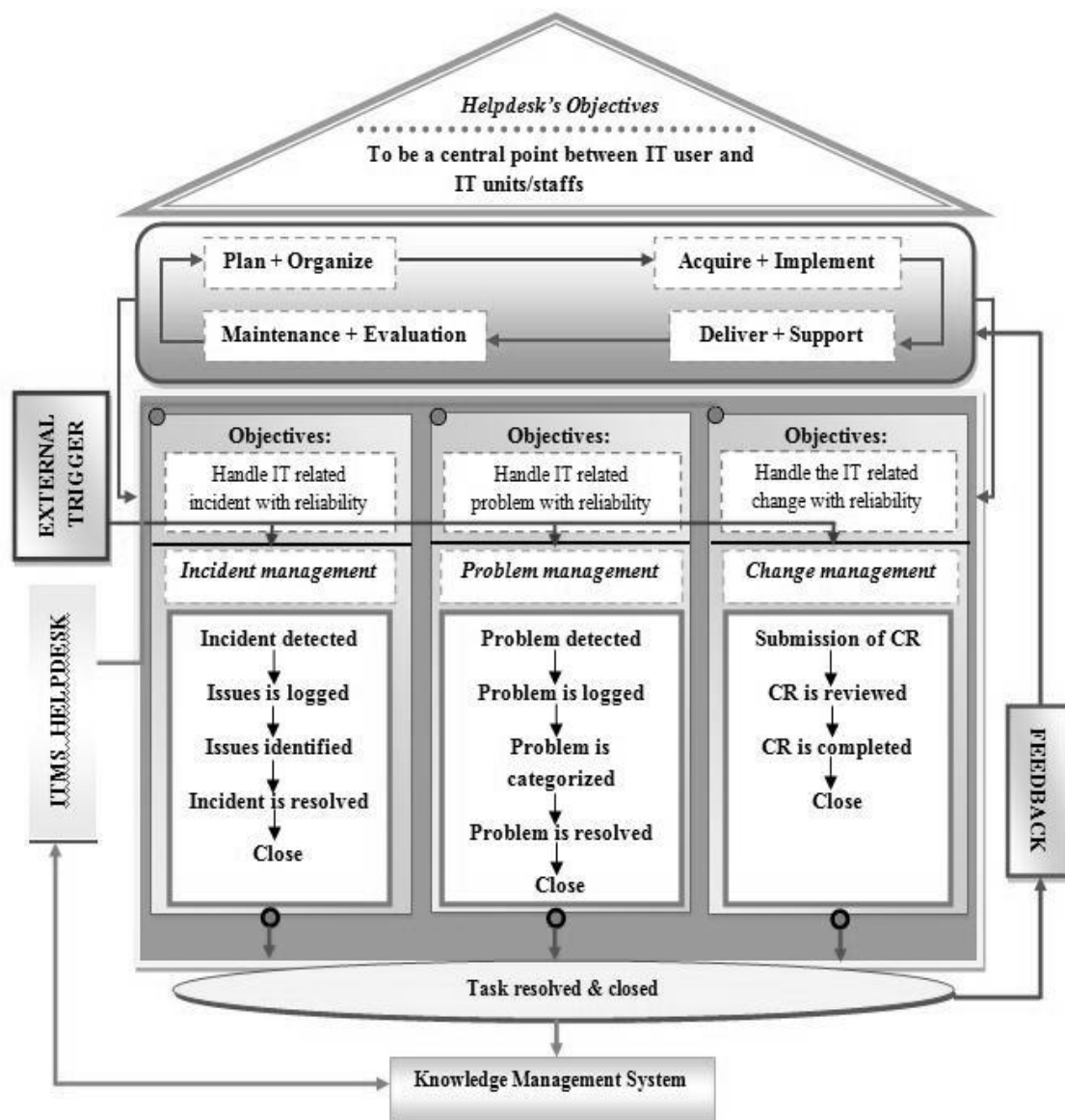


Fig. 2 The Proposed COBIT, ITIL Retrofit Helpdesk Framework

VIII. CONCLUSION

The helpdesk is an important thing in any university setting as it provides IT services to both staff and students. It exists to bring current and future information changes to customers. The study investigated the current practices of how IT service are being delivered to users using several established frameworks of COBIT 4.1, ITIL and CMMi. The IT department performance can be improved by understanding the processes they have to do in moving to the next level of IT services delivery. An established helpdesk team will probably communicate with every IT user in the university at one time or another. To have a smooth process of communication so that proper IT services can be delivered, the helpdesk person need to be well positioned to take the pulse and temperature of the university on a daily basis. Thus, the helpdesk team must be able to provide the foundation that keeps the university-setting

running smoothly. However, there are other things that need to be considered as well which is to identify the most suitable structure and framework of IT helpdesk. A good helpdesk can be established by adopting IT governance in its implementation to ensure that all the IT services and application can be delivered properly, more reliable and more effective.

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