DEVELOPMENT AND IMPLEMENTATION OF

INFORMATION TECHNOLOGY KNOWLEDGE MANAGEMENT SYSTEM

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DEDICATION

To my lovely parents, wife, daughter, and son who always give me continuous moral support to me for my success.

To my lecturer and especially my supervisor who is very supportive in giving guidance, ideas, and knowledge.

To everyone who gave beautiful cooperation on this journey.

This study is dedicated to you.

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ABSTRACT

As of the year 2020, there are about sixty-four systems consisting of the application system and websites hosted in the MCMC Data Center, and the number is kept increasing from year to year. The general information of each system is maintained by the System Administrator using an Excel file and not consolidated with the others. This situation is seen as a weakness where each information is only updated by each system administrator or project manager for each project and there is no comprehensive collaboration as information for one division. This will indirectly create a silo operation atmosphere. This study focuses to improve the information technology knowledge management practice/platform in Strategic Information Technology Division (SITD). The aim of the study is to assess and determine the weaknesses associated with the current practice and platform in managing and sharing information in SITD, to develop a new information technology knowledge management system and to evaluate the user perception on the usage of the new system in terms of usefulness, ease of use, trust, personal initiative and characteristics, context and the intention to use before and after the intervention. A mixed-method approach was used where interview sessions and questionnaires survey was conducted to the respondents.

Keywords: Information Systems, System Administrator, knowledge management

ABSTRAK

Sehingga tahun 2020, terdapat kira-kira enam puluh empat sistem yang terdiri daripada sistem aplikasi dan laman web yang dihoskan di Pusat Data MCMC, dan bilangannya terus meningkat dari tahun ke tahun. Maklumat am bagi setiap sistem diselenggarakan oleh Pentadbir Sistem menggunakan fail Excel dan tidak disatukan dengan yang lain. Keadaan ini dilihat sebagai kelemahan di mana setiap maklumat hanya dikemaskini oleh setiap pentadbir sistem atau pengurus projek bagi setiap projek dan tiada kerjasama yang menyeluruh sebagai maklumat bagi satu bahagian. Ini secara tidak langsung akan mewujudkan suasana operasi silo. Kajian ini memfokuskan untuk menambah baik amalan/platform pengurusan pengetahuan teknologi maklumat di Bahagian Teknologi Maklumat Strategik (SITD). Matlamat kajian adalah untuk menilai dan menentukan kelemahan yang berkaitan dengan amalan dan platform semasa dalam mengurus dan berkongsi maklumat dalam SITD, untuk membangunkan sistem pengurusan pengetahuan teknologi maklumat baharu dan untuk menilai persepsi pengguna terhadap penggunaan sistem baharu dalam segi kebergunaan, kemudahan penggunaan, kepercayaan, inisiatif dan ciri peribadi, konteks dan niat untuk digunakan sebelum dan selepas intervensi. Pendekatan kaedah campuran telah digunakan di mana sesi temu bual dan tinjauan soal selidik telah dijalankan kepada responden.

Kata kunci: Sistem Maklumat, Pentadbir Sistem, Pengurusan Maklumat

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MCMC	-	Malaysian Communications and Multimedia Commission
SITD	-	Strategic Information Technology Division
IT	-	Information Technology
EISD	-	Enterprise Information Systems Department
MNSD	-	Managed Network Services Department
ITSMD	-	IT Service Management Department
ITGD	-	IT Governance Department
ERP	-	Enterprise resource planning
VPN	-	Virtual private network

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CHAPTER 1

INTRODUCTION

1.1 Introduction

This research focuses on the development and implementation of the information technology knowledge management system for the Malaysian Communications and Multimedia Commission (MCMC). The users for this system are staff in Strategic Information Technology Division (SITD) who are system administrators and project manager for several systems that are hosted in MCMC Data Center.

This chapter will describe and explain the background of the case company, problem statement, research questions, researcher's role, and the importance of this research.

1.2 Background of the case company

The Malaysian Communications and Multimedia Commission (MCMC) was established in 1998 as a regulatory body for the Malaysian Communications and Multimedia Commission Act (1998) and the Communications and Multimedia Act 1998 which set out the new regulatory licensing framework for the industry. The Communications and Multimedia Commission Act (1998) was enacted on 1 April 1999 and with this act, the Telecommunications Act (1950) and Broadcasting Act (1988) were

repealed. There are ten national policy objectives set by the Commission which among others are to make Malaysia the world's leading center and focus for communications and information and multimedia content services, to regulate for the long-term benefits of end users, promote high levels of consumer confidence in service delivery from the industry, creating a robust application environment for end users, ensure information security and network reliability and integrity.

Besides that, MCMC also took over the regulatory functions of the Postal Services Act 1991 and the Digital Signature Act 1997 on 1 November 2001. As of 2020, MCMC has one headquarter located in Cyberjaya, Selangor and thirteen state offices, and several branches offices over the country. There are more than eight hundred employees with various skills, especially in the field of telecommunications and technology where MCMC is committed to carrying out its responsibilities as prescribed.

1.2.1 SWOT Analysis

Strategic Information Technology Division (SITD) plays a big role in leading IT transformation, support, and services for MCMC. As the number of information systems in MCMC is increasing every year, there is no system used to manage general information of each system, and information sharing for this information has some limitations. Table 1 shows the SWOT analysis for the issue.

Table 1: SWOT analysis for the issue.

STRENGTH	WEAKNESS
• SITD have expertises to assist the development and implementation of information systems.	• There is no information system used in managing and sharing information such as the system's details, server details, and etcetera.

• MCMC have a Data Center which able to realize the implementation process of information systems. • The fundamental of data collection is taken in place using the current platform.	• Current practice and platform led to inaccurate information sharing. • Current practice and platform prone to time constraint for other staffs and management to obtain the information.
OPPORTUNITIES	**THREATS**
• The information related to information systems and project is useful to the management in SITD. • The knowledge and information sharing will increase the staff efficiency and productivity. • Increase the reliability of the information. • Reduce time in obtaining and sharing information.	• Some of the information that is managed by the system administrators are confidential. • Information Systems are open to vulnerability threats.

1.3 Problem Statement

Strategic Information Technology Division (SITD) plays a major role in supporting strategic initiatives for MCMC. The division that consists of four departments which are Enterprise Information Systems Department, IT Service Management Department, Managed Network Services Department, and IT Governance Department, work together in order to support the commission's strategic initiatives in solving business problems using information technology (IT), evaluating, deploying and supporting information systems application requirement and resources, and providing support to all internal users. There are new projects, information systems and websites that are hosted

in MCMC Data Center every year. As of the year 2020, there are about sixty-four systems consist of application systems and websites which are hosted in MCMC Data Center. The number of information system which is hosted in MCMC Data Center is increasing from year to year. Suprisingly, while the number of the system is increasing, there is no information system used to share general information related to IT and internal knowledge between departments at SITD. For instance, the information on the system, the details of the technology used for that system or website, the appointed vendor for that system which were outsourced to the vendor and other general information related to that information system. Furthermore, the information is not only limited to the information systems but also related to the new IT devices, security appliances and tools managed by SITD which need to be updated according to the evolvement of technology. This situation is seen as a weakness as each information is kept and updated by each system administrator or project manager and there is no comprehensive platform that provides a medium for collaboration and sharing as one division. This indirectly creates a silo operation atmosphere.

To support the understanding of the above problems, the following are some examples of information managed by the system administrator in order for them to administer the system or manage projects.

1. The details of the system, website or projects. For instance, system description, system purpose, business functions, business owner, the technology used by the system (PHP / .Net / Java and etc.).
2. The details of the infrastructure. For instance, server specification, server platform, URLs details, integration methods and type, and others.
3. The details of the system support and maintenance such as contract details and timeline, vendor details and others.

As mentioned above, lack of integration of the information, SITD's management often faces time constraints to obtain the latest information related to a system hosted in the MCMC Data Center. In the current practice, management will request the information from all system administrators using an email or request directly to the respective system

administrator. However, the information needed, for instance, the general information that is required by the management such as the purpose of a system, system functionalities, workflow of the system, the technology used by the system, the details of the system's provider may be delayed, especially when the system administrator is involved in more important tasks or activities. Other than that, the deep information might also be requested by the other departments within the SITD such as the details of server specification, whether the system has any integrations with the other systems and other technical information. Based on the current practice, all general information is shared through an Excel file maintained by each system administrator once the system is hosted in MCMC Data Center and known as support and maintenance phases. To understand more on this, the general process flow for IT project implementation is shown in Figure 2.

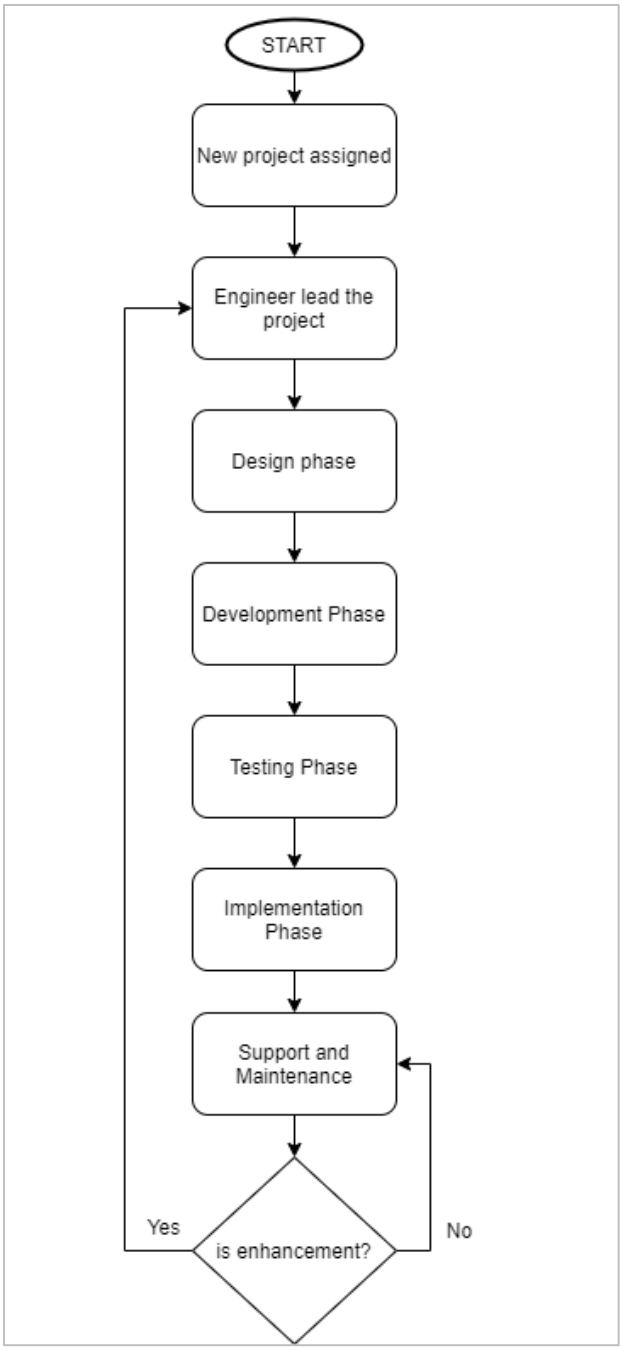

Figure 2: General Process Flow for IT Project Implementation.

As we know, technology such as information technology devices keeps evolving and the same goes for the technology of the information system. Generally, a system will have some enhancements in terms of its functionality such as additional modules, enhancement of system security and others, based on the need of current technology or

due to the changes of business requirements. For instance, the platform being used will also undergo changes according to the latest technological changes. All the changes need to be recorded and updated by the system administrator to facilitate the process of collecting information related to the system when required by the management. However, based on the current practice, as mentioned earlier, it is difficult for the system administrator to always update the latest information and the management might not be able to get the latest information related to the system hosted in MCMC Data Center. Looking at this situation, there is a need for the management to improve or use different platform and technology that will help everyone to obtain the updated and latest information related to the information technology in SITD quickly and easily without relying on the system administrator.

1.4 Research Questions

This study attempts to answer the following research questions:

i. What are the weaknesses associated with the current practice/platform?
ii. How a centralized system can improve the existing practice/platform in managing and sharing information related to IT matters?
iii. What is the user perception on the usage of the new system in terms of usefulness, ease of use, trust, personal initiative and characteristics, context and the intention to use?

1.5 Research Objectives

The objectives for this research includes:

i. To assess and determine the weaknesses associated with the current practice and platform in managing and sharing information in Strategic Information Technology Division (SITD).
ii. To develop and implement a new information technology knowledge management system.
iii. To evaluate the user perception on the usage of the new system in terms of usefulness, ease of use, trust, personal initiative and characteristics, context and the intention to use before and after the intervention.

1.6 Researchers role

The research focuses on assessing the effectiveness of the existing platform in managing the information related to the information technology, and developing and implementing the new information technology knowledge management system at SITD. In addition, this research also measure the effectiveness of using the new Information Technology Knowledge Management System. The targeted stakeholders in this research include the staff and management at SITD and other business owners of the information system which is hosted in MCMC Data Center.

1.7 Significance of the research

As mentioned, by leveraging the information system and technology infrastructure, the process of gathering information related to information technology can benefit the parties involved. The findings from this study are expected to improve the

existing platform by leveraging on the information system. For instance, with the new system, the system administrators can manage the general information related to the system under their custodian and everyone who is authorized to view the information will obtain the updated information. Apart from that, the system will ease the handover process among system administrators and new staff to expedite the process in understanding the system structure or other matters.

The new system introduced by this study would also empower and facilitate the authorized users to obtain and access the information related to information technology easily, up to date and reduce the risk to share inaccurate information due to multiple resources in the current practice. Through it, the management will manage to find the information without relying too much on the system administrators or project owners and it is expected to reduce the time in gathering the latest and accurate information.

By introducing the new approach and system in managing the information related to the information technology, this project would improve information technology's knowledge sharing within SITD and MCMC.

1.8 Definition of Terms

For better understanding, the following terms are defined in the context of this research.

Data Center. It is a large group of networked computer servers typically used by organizations for the remote storage, processing, or distribution of large amounts of data.

Shared folder. It is a folder on computer or server that has been made available for other people to use on the network.

Shared drive. It is a network drive that allows users to instantly grant access to shared files from one computer to another computer on a Local Area Network (LAN).

Information Technology. This refers to the use of computers, software, networking and devices to store, process, retrieve, and exchange all forms of electronic data.

System Administrator. This refers to the person who is responsible for managing and supporting the information systems to ensure the availability of the information systems.

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