

**KNOWLEDGE AUDIT PROCESS FRAMEWORK FOR INTER-AGENCIES
COLLABORATION**

NUR SYUFIZA AHMAD SHUKOR

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to infinity and beyond ~

Kerana Tuhan Untuk Manusia

dedikasi khas untuk ibunda & ayahanda tercinta

Hajah Zaleha Sulaiman & Haji Ahmad Shukor Talib;

PM Aisyah Ahmad@Taib dan buat para pecinta ilmu

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ABSTRACT

Knowledge audit is a process to determine an organization's knowledge asset. In the case of government inter-agencies special joint-operations, knowledge audit helps government agencies to better leverage knowledge for improving services and make better decisions based on what they know of their own knowledge. At present, there is no knowledge audit process specially catered for inter-agencies collaboration. This has hindered agencies from identifying their knowledge asset, and resulted in difficulties for agencies to collaborate efficiently. This research developed a Knowledge Audit Process for Inter-agencies (KAP-I) Framework. A Design Science Research methodology was carried out to ensure the rigor and relevance of the framework. Qualitative data were collected from a joint-operation of selected agencies involved in flood management as the case study. Data gathered from nineteen respondents of flood management agencies were analysed using knowledge sharing theory for inter-agencies. Theoretically, the technological, organizational and managerial, and political and policy perspectives were used to derive the knowledge audit elements. Using a deductive content analysis, twelve applicable knowledge audit elements for inter-agencies collaboration were discovered and later manifested in the framework. To ensure the efficacy and utility of the framework, formative and summative evaluations were conducted to iterate the artefact design. The framework was verified by practitioners who agreed with the logic and content, and they proposed suggestions for improvements. For verification, the framework was tested on the Independence Day Celebrations as a case study using structured walkthrough technique. Based on the findings, KAP-I Framework was formulated and it consists of three components: KAP-I Process, KAP-I Guide, and KAP-I Template that complement each other as a whole. The framework can be used to guide agencies through the inter-agencies knowledge audit process as it assists in the identification of special joint-operations related knowledge asset, as well as capture the experiential knowledge gained from the special joint-operations.

ABSTRAK

Audit pengetahuan merupakan satu proses yang membantu mengenal pasti aset pengetahuan organisasi. Dalam konteks penglibatan pelbagai agensi kerajaan dalam operasi bersepadu khas, audit pengetahuan membantu agensi kerajaan untuk memanfaatkan pengetahuan bagi tujuan menambah baik perkhidmatan dan membuat keputusan yang lebih baik berdasarkan pengetahuan yang mereka miliki. Pada masa kini tidak terdapat proses audit pengetahuan bagi kerjasama antara agensi. Ini menghalang agensi berkenaan dalam mengenal pasti aset pengetahuan yang menyebabkan kesukaran bagi kerjasama yang cekap. Kajian ini membangunkan Rangka Kerja Proses Audit Pengetahuan Antara Agensi (KAP-I). Metodologi Kajian Sains Rekabentuk telah dilaksanakan bagi memastikan kerapian dan keterterapan rangka kerja. Data kualitatif diperolehi daripada operasi bersepadu agensi pengurusan banjir terpilih yang dijadikan sebagai kajian kes. Data daripada sembilan belas responden yang melibatkan agensi pengurusan banjir telah dianalisis menggunakan teori perkongsian pengetahuan pelbagai agensi. Secara teorinya, perspektif teknologi, organisasi dan pengurusan, dan politik dan polisi telah diguna pakai bagi menerbitkan elemen audit pengetahuan. Menggunakan analisis kandungan deduktif, dua belas elemen audit pengetahuan boleh guna untuk kerjasama antara agensi telah ditemui dan kemudiannya dimanifestasi dalam rangka kerja. Bagi memastikan keberkesanan dan kebolegunaan rangka kerja, penilaian formatif dan sumatif telah dilaksanakan dan telah menjadikan reka bentuk artifak berulang. Rangka kerja ini telah disahkan oleh pakar yang bersetuju dengan logik dan isi kandungan rangka kerja tersebut dengan beberapa usul penambahbaikan. Bagi pengujian, rangka kerja tersebut telah diuji ke atas kajian kes Sambutan Hari Kemerdekaan menggunakan teknik lintas semak berstruktur. Berdasarkan penemuan kajian, Rangka Kerja KAP-I telah dirumus dan ia terdiri daripada tiga komponen: Proses KAP-I, Panduan KAP-I, dan Templat KAP-I yang melengkapkan keseluruhan rangka kerja. Rangka kerja ini boleh dijadikan sebagai panduan dalam proses audit pengetahuan antara agensi kerana ia dapat membantu mengenal pasti aset pengetahuan berkaitan operasi bersepadu khas, di samping mengumpul pengetahuan alami yang diperolehi daripada operasi bersepadu khas tersebut.

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LIST OF SYMBOLS

- f_c - Frequency of chance
 f_a - Frequency of agreement
 K - Kappa

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LIST OF ABBREVIATIONS

APMM	-	Agensi Penguatkuasa Maritim Malaysia
BNM	-	Bank Negara Malaysia
DBKL	-	Dewan Bandaraya Kuala Lumpur
JKKK	-	Jawatankuasa Kemajuan dan Keselamatan Kampung
JKM	-	Jabatan Kebajikan Masyarakat
JKMN	-	Jabatan Kebajikan Masyarakat Negeri
JKN	-	Jabatan Kesihatan Negeri
JKR	-	Jabatan Kerja Raya
JBPM	-	Jabatan Bomba dan Penyelamat Malaysia
JBPN	-	Jabatan Bomba dan Penyelamat Negeri
KA	-	Knowledge Audit
KAP-I	-	Knowledge Audit Process for Inter-agencies
KBS	-	Kementerian Belia dan Sukan
KLIA	-	Kuala Lumpur International Airport
KM	-	Knowledge Management
KKMM	-	Kementerian Komunikasi dan Multimedia Malaysia
KPDNKK	-	Kementerian Perdagangan Dalam Negeri, Koperasi dan Kepenggunaan
KPM	-	Kementerian Pelajaran Malaysia
KPT	-	Kementerian Pendidikan Tinggi
MAMPU	-	Malaysian Administrative Modernisation and Management Planning Unit
MKN	-	Majlis Keselamatan Negara
MSC	-	Multimedia Super Corridor
NDMRC	-	Malaysia National Disaster Management and Relief Committee
NFDRPC	-	National Flood Disaster Relief and Preparedness Committee
NSC	-	National Security Council
NSD	-	National Security Division

PETRONAS	-	Petroliam Nasional Berhad
SHK	-	Sambutan Hari Kemerdekaan
SOP	-	Standard Operating Procedures
TOR	-	Terms of References
UTM	-	Universiti Teknologi Malaysia

CHAPTER 1

INTRODUCTION

1.1 Introduction

Knowledge is an asset in modern organizations and it is critical for organizations to manage their knowledge. Before organizations can manage their knowledge, they must first identify what knowledge they have. Hylton (2002) and Cheung *et al.* (2007) agreed that knowledge audit preceded the KM activity as it helps to find out the status of knowledge inventories and distribution within the organization and inter-organizations. It is the most important process and step of all KM strategies for an organization and the basis of KM strategies planning. Knowledge audit is a dynamic, cyclic process (Wu and Li, 2008) and it provides accurate identification, qualification, measurement and assessment of the tacit and explicit knowledge in the organization. Knowledge audit also helps organization on how it should go about improving the management of its existing knowledge.

Knowledge audit supports the leaders of organization by providing accurate information, avoiding risks in order to help them to make correct decision; and could guarantee the organization knowledge management activities running on the right track and under the modern management mode. In the case study conducted for Special Children Communities, Sukiam *et al.* (2009) stated that the knowledge audit

processes helped to identify the available, required and missing knowledge and the subsequent recommendation of KM strategy that can be used for better managing the knowledge of Community of Practice.

Knowledge audit plays important role and had contributed in many KM initiatives. For example knowledge audit helps to produce an expert directory, yellow pages, and enables organization to prioritize the knowledge apart from utilizing it for knowledge gap identification and knowledge subscription for knowledge portal. Knowledge audit process output can also be used as a measurement tool to assess organization's knowledge asset. In addition to that, it is also useful as a training needs analysis, a tool used to identify training required by staff.

In Malaysia, inter-agencies collaboration focuses on strategically improving the service delivery of public agencies through collaboration between multiple agencies (Jabatan Perdana Menteri Malaysia, 2015). It involves planning, designing, implementing, monitoring and reporting of the specific tasks based on their objectives and goals. Among the inter-agencies collaboration is the National Security Council that deals with disaster. Other examples on the joint-operation by multi agencies that based on specific goals are the 'Ops Bersepadu Total Enforcement' (a joint cooperation with police and various agencies focused on traffic, gangsterism, drugs, illegal immigrants and street traders who operate without licenses) and 'Ops Gelandangan' that aims to help the underprivileged and homeless people.

In the case of multiple government agencies that collaborate with each other or also known as inter-agencies collaboration, being able to collaborate with each other is deemed important in achieving their goals and objectives. However, it is not easy for these organizations to collaborate. When these agencies deal with joint-operation they will have to deal with challenges related to different working culture, mission, vision and values. Most importantly this type of collaboration requires coordination of resources which includes the experts and their expertise (knowledge).

They need to exchange their knowledge in order to enable them to work together as they could not work in silos. This makes the ability to manage their knowledge become important.

1.2 Research Background

Organizations could no longer stay in silo. With the advancement of technology and medium of communication, there are almost no borders in communication. This made collaborative work for inter-agencies possible, and even faster. Inter-agencies collaborative works create new opportunities, ideas and innovative creations. Inter-agencies collaborations according to Bardach (1998), refers to multiple organizations working together on a joint-operation to increase public value (efficiency, effectiveness or fairness in the defined operation). However, inter-organizations collaborative works are not always easy and straightforward, the problems arise with them are more complex and unstructured. Inter-organizational collaboration involves different working culture, drives, mission and vision, values and background (O'Leary and Vij, 2012). Having that in view, it is not easy for them to work hand in hand to meet their targets and goals, already set for them. One of the biggest challenge is how to manage a pool of knowledge that are so diversified due to inter-agencies' diverse background.

It is known that, knowledge has become an important commodity for organizations which has created the knowledge economy mantra. Knowledge would help to accelerate organizations' advancements technically and scientifically which resulted into good products of services (Powell and Snellman, 2004). The knowledge economy could also help in building learning organizations for continuous innovation (Nonaka and Takeuchi, 1995).

Knowledge could transform businesses for globalization and internationalization. In fact, knowledge sharing among organizations (inter-agencies) is recognised as a powerful strategy to improve public sector initiatives (Dawes and Pardo, 2002; Grant, 2003). However, in order for the organizations to be able to exploit their organizational knowledge, they must first manage their knowledge.

Managing knowledge in organizations involved the following processes: capturing, organizing, refining and transferring of knowledge (Awad and Ghaziri, 2004). However, in collaborative environment, especially involving inter-agencies, the processes mentioned above is not simple. Among the challenges inter-organizational collaborative work will have to face is to know what knowledge to be managed. Naturally, before an organization is able to manage its knowledge, it must first know its knowledge inventory. This is where the knowledge audit process plays its roles.

Knowledge audit is an act of examining and evaluating of explicit and tacit knowledge in a company, including what knowledge exists, where it is, how it is being created and who owns it (Cheung *et al.*, 2007; Yip *et al.*, 2015). In the end the knowledge audit process will produce a list of knowledge inventory.

In the inter-agencies collaboration environment, in order for these multiple organizations to be able to examine and evaluate their knowledge is by sharing their knowledge about the details of the knowledge inventory itself. Only by sharing this knowledge that these organizations can examine both the content and the pattern of their relationship in order to determine how and what knowledge existed (Gupta and Polonsky, 2014). To reflect the auditing process (the systematic process of examining and evaluating the knowledge), these inter-agencies must not escape the process of sharing the information among the agencies involved in the collaborative work, which include what knowledge they possess, who possess the knowledge, and how (through what business process) the knowledge is being created.

Inter-agencies collaboration involves special joint-operation that has specific mission and goals. As the set-up of the operation is not fixed (different target group, area or place) each operation conducted has different challenges and difficulties. While handling these situations, the agencies involved learned new knowledge through their experiences while solving the problems, known as experiential knowledge. This type of knowledge is very valuable and most of the time it is not codified into explicit knowledge. It will stay with the agencies and chances for the knowledge to be shared by the novice and inexperienced personnel is slim.

The experiential knowledge is important for learning process in inter-agencies collaboration. According to Stewart *et al.* (2010), experiential knowledge is something that you need to experience through practice. In the case of inter-agencies special joint-operation, experiential knowledge become very important especially in their exit meeting where the involved agencies will be deliberating on what they had experienced, challenges they faced and how to solve those challenges. Through this session more new knowledge could be discovered and identified. If the experiential knowledge is codified, it opens up more possibilities for them to access and learn from the knowledge.

Knowledge audit processes vary from expert to expert and there is no unify standard for knowledge audit which limit the development of knowledge audit (Wu and Li, 2008). Despite of the varieties of the steps involved in the process, those processes can be grouped into the following general steps as suggested by Perez-Soltero *et al.* (2007) which are: identifying of knowledge assets; developing of knowledge inventory; identifying where knowledge reside; identifying the repositories, used and relevancy; analyzing the knowledge flow; and reporting the knowledge gap.

In the inter-agencies context, knowledge audit process is challenging. These agencies come from different organizational background, values and workflows. To perform the knowledge audit for inter-agencies collaboration will involve elicitation of knowledge asset that involved multiple agencies. Coordination and guidelines are required in order for the knowledge audit processes mentioned above (i.e. identify where the knowledge reside, identify the type of knowledge whether it is in tacit or explicit form, and identify the knowledge owner) to be carried out. Various agencies with different background and workflow need to identify their knowledge pertaining to specific joint-operation's goals. Hence, if the process is not carefully administered, the knowledge inventories but not be accurate.

1.3 Problem Statement

Inter-agencies have a rather complex relationship among the involved parties and this complexity issue can lead to failure of collaborative works (NISG *et al.*, 2011). This complexity could be addressed by managing their knowledge sharing activities and strategies through a carefully facilitated inter-agencies collaboration and coordination works that will later improve public service delivery (Sayogo and Gil-Garcia, 2014).

However, before the knowledge strategies mentioned above could take place, organizations should have a complete inventory of their knowledge asset. Thus, knowledge audit must be first engaged. However, the current existing knowledge audit process and tool do not cater for inter-agencies and they could not visualize the processes needed to be carried out by different parties involved. There are no guidelines on how inter-agencies should audit their knowledge. Hence, it leads to the question of how a knowledge audit process could be devised to conduct knowledge inventory in inter-agencies collaboration.

The above elaboration could be summarised into one paragraph that describes the problem statement for this study:

There is a need to develop a knowledge audit process framework for inter-agencies collaboration that enables assessment of their knowledge gap in order to assist these agencies to carry out their operations and achieve their goals.

1.4 Research Questions

The problem statement was established with main research question for this study: **How can a knowledge audit process framework that supports inter-agencies operations be developed?**

This main question can be decomposed into several research questions:

1. What is the current process in the knowledge audit processes in inter-agencies?
2. What are the elements need to be considered in designing the knowledge audit process for inter-agencies?
3. How to conduct knowledge audit that support inter-agencies operation?

1.5 Research Objectives

There are four intended outcomes for this research. Thus they have the following objectives:

1. To understand the process of the knowledge audit in inter-agencies.

2. To explore the elements for inter-agencies knowledge audit that associated with the knowledge audit process.
3. To develop the knowledge audit framework that supports inter-agencies' operation.

1.6 Significance of Research

This study provides inter-agencies an insight towards knowledge audit process pertaining to inter-agencies collaborative work. It helps to elicit and record the inter-agencies knowledge which would later help them in making decision especially when these agencies working in a special operation that deals with non-structured and critical situation

The new knowledge audit process framework is designed to cater especially the special joint-operation that involves multiple agencies collaboration. It is deemed to be important as inter-agencies collaborative works are complex and require high coordination. The proposed framework caters for the coordination of the activities and it helps agencies to clearly identify their process chain through the thorough step by step process.

By implementing the framework, the agencies will have a smooth agencies' chains of processes catered for. The possibility of leaving a process behind will be minimized. Engaging the knowledge audit process will help these agencies to identify their knowledge inventory by producing the agencies' knowledge asset, expert directories and training needs analysis. These outputs will help the management and the KM department to proceed with their next KM interventions, suitable to the reports produced. The output can also be used by the agencies to improve the government's service delivery.

The knowledge audit process framework also considers the possibility of auditing inter-agencies knowledge through elicitation of their experiential knowledge. It is well known that after each special joint-operation, a post-mortem will be conducted to deliberate on their achievements and shortfalls. This type of knowledge is in fact valuable for the team as it may be useful for them to be able to learn from each other based on their past experiences. This is another contribution made from this study that would really benefit these agencies.

1.7 Scope of Research

In the organizational knowledge creation theory, Cook and Brown (1999), stressed on four elements that makes an organization learns. The interaction between explicit knowledge, tacit knowledge, individual knowledge and group knowledge make it possible for the organization to learn. Thus this research will cover the explicit and tacit knowledge owned by the agencies related to the core business process of that particular operation. A part from that, experiential knowledge owned by the involved agencies would also be audited. Experiential knowledge is the knowledge gained after one have gone through a practice, not by merely looking at the evident, without having to experience it (Stewart *et al.*, 2010).

Inter-agencies collaborative work could happen either in day-to-day operational tasks of those particular agencies or meant for a special joint-operation. The focus of this study is on the collaborative work between government inter-agencies for special joint-operation.

1.8 Thesis Outlines

This thesis consists of seven chapters. Chapter 1 of this thesis provides an overview of the knowledge audit process and its set-up in the organization, the background of the problem with regards of the knowledge audit activities, the research questions and objectives. Chapter 2 of this thesis contains literature on knowledge audit processes and inter-agencies collaborative works, and will provide some understanding on the theoretical framework. It also discusses on the knowledge management landscape in Malaysian public sector.

Chapter 3 demonstrates research strategies in terms of its research design, methodology used and the operational research framework. It discusses how Design Science Research (DSR) methodology is adopted by the author. It also details out the methods utilised to collect and to complete the data analysis undertaken in this research. Chapter 4 presents the preliminary findings and suggestion for solution of the identified problem. The conceptual framework of the proposed solution is discussed and justification of the proposed solution is also presented in this chapter followed by the initial knowledge audit process framework.

In accordance to that, discussion on the knowledge sharing factors for inter-agencies follows in Chapter 5. The inter-agencies case study that is particularly in the flood management domain is discussed in this chapter. It helps to uncover the factors needed to design the knowledge audit framework that fit the inter-agencies collaboration. This chapter presents the framework design and development. It covers the discussion of how the knowledge sharing factors are associated were discovered and how the factors identified could be mapped into the proposed framework. This chapter is important as it elaborates the process of designing and developing the artefact. The formative evaluation is also covered in this chapter.

This is followed by the explanation on the summative evaluation in a form of a structured walkthrough simulation in Chapter 6. At this point a different inter-agencies case study is engaged for the summative evaluation. It also presents the suggestions from the experts and modifications made to the framework. The final knowledge audit is presented in this chapter.

The last chapter, Chapter 7 of this thesis concludes and presents some limitations and future works. The main contributions of this study are highlighted and the achievements are discussed. Organization of the chapters is shown in Appendix A.

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