

**FRAMEWORK FOR THE AUDIT PROCESS
IMPLEMENTATION ON PUBLIC BUILDINGS**

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DEDICATION

I would like to dedicate this thesis to my parents, Md Ariffin bin Md Nor and Mahfuzah binti Abdul Ghaffar for their continuous support throughout my studies. This thesis is also dedicated to my husband; Idris bin Marajas, who has been with me through this journey. To my children, Muhammad Irfan and 'Iffah Khairina, this is for the both of you.



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PTTA UTHM
PERPUSTAKAAN TUNKU TUN AMINAH

ABSTRACT

Audit of public buildings (PBs) is a relatively new phenomenon in the construction industry in Malaysia. Until 2006, there was no such audit conducted on PBs in Malaysia. In 2007, the government, through the Public Works Department (PWD) introduced audit on all buildings owned by the federal government. However, no formal studies have been conducted to explore the processes involved in the audit performed by PWD. An exploratory study was conducted to identify the processes involved in the audit of PBs by PWD. The exploratory study conducted concluded that full phase of audit was not implemented by PWD. Research findings from the exploratory study identified that PWD is the only agency in Malaysia which conducts technical audit on PBs. The finding has stimulated this study to refine research questions; justify a single and holistic case study as a research approach and identify the stakeholders involved in the audit process. A framework for identifying the stakeholders involved and their tasks and expectations which lead to the requirements needed to implement full phase of audit is further developed and applied for the Batu Pahat District Health Clinic (The Clinic Building). Hence, the study aims to investigate other requirements that are needed for full phase of audit being implemented for the Clinic Building by PWD. This study explores the key stakeholders involved, and their level of involvement in the audit process; barriers for full engagement of the audit process; and the stakeholders' expectations for the audit process that lead to the barriers and issues that arises from the audit process by PWD. This study applies qualitative research methodology with a case study design, and adopts rigorous data collection and analysis. Interviews and focus group were used as the main data collection method in obtaining the right data for the study. The data were then analysed using NVivo 2 as a tool. Research findings from the case study lead to the introduction of a framework for implementing full phase of audit on PBs for PWD. This leads to the identification of additional requirements needed for the full phase of audit on PBs by PWD. It generates new knowledge on the requirements of the full phase of an audit process on PBs in Malaysia.

ABSTRAK

Audit bangunan awam merupakan satu fenomena baru dalam industri pembinaan di Malaysia. Sehingga tahun 2006, tiada audit seumpama dijalankan ke atas bangunan awam di Malaysia. Pada tahun 2007, kerajaan melalui Jabatan Kerja Raya (JKR) telah memperkenalkan audit ke atas semua bangunan milik kerajaan persekutuan. Walau bagaimanapun, tiada kajian formal dijalankan bagi mengkaji proses yang terlibat dalam audit bangunan oleh JKR. Satu kajian rintis telah dijalankan bagi mengenalpasti proses yang terlibat dalam audit ke atas bangunan awam oleh JKR. Kajian rintis tersebut merumuskan bahawa fasa audit tidak dijalankan sepenuhnya oleh JKR. Dapatan kajian dari kajian rintis tersebut mengenalpasti JKR sebagai satu-satunya agensi di Malaysia yang menjalankan audit teknikal ke atas bangunan awam. Dapatan kajian tersebut telah membantu pemurnian soalan-soalan kajian; mewajarkan pemilihan pendekatan kajian kes tunggal dan holistik serta mengenalpasti pihak berkepentingan di dalam proses audit penilaian. Satu rangka kerja bagi mengenalpasti pihak berkepentingan yang terlibat dan tugas serta jangkaan yang membawa kepada keperluan lain bagi melaksanakan fasa penuh audit telah disediakan dan digunakan bagi Klinik Kesihatan Daerah Batu Pahat (Bangunan Klinik). Oleh yang demikian, kajian ini bertujuan untuk mengenalpasti keperluan-keperluan lain yang diperlukan bagi memastikan fasa penuh audit dijalankan ke atas Bangunan Klinik oleh JKR. Kajian ini mengenalpasti pihak berkepentingan yang terlibat; tahap keterlibatan pihak berkepentingan dalam proses audit; halangan penggunaan fasa penuh proses audit; dan jangkaan pihak berkepentingan ke atas proses audit yang membawa kepada halangan dan isu berbangkit dari proses audit oleh JKR. Kajian ini menggunakan metodologi kajian secara kualitatif dengan rekabentuk kajian kes, menggunakan pengumpulan dan analisis data yang padu. Kaedah temubual dan kumpulan fokus digunakan sebagai metod utama pengumpulan data bagi memperolehi data yang bertepatan bagi kajian ini. Data tersebut kemudiannya dianalisis menggunakan NVivo2. Dapatan dari kajian kes membawa kepada pengenalan rangka kerja bagi melaksanakan fasa penuh audit ke atas bangunan awam oleh JKR. Kajian ini mengenalpasti keperluan lain yang diperlukan bagi melaksanakan fasa penuh audit. Ia menjana pengetahuan baru ke atas keperluan bagi fasa penuh proses audit oleh JKR.

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LIST OF ABBREVIATIONS

<i>AG</i>	AUDITOR GENERAL
<i>AO</i>	AUTHORITY OFFICER
<i>APM</i>	AUDIT PLANNING MEMORANDUM
<i>CAB</i>	CHIEF OF AUDIT BRANCH
<i>DID</i>	DRAINAGE AND IRRIGATION DEPARTMENT
<i>HQ</i>	HEADQUARTERS
<i>IKRAM</i>	INSTITUT KERJA RAYA MALAYSIA SDN. BHD.
<i>MECD</i>	MINISTRY OF ENTREPRENEUR CO-OPERATIVE AND DEVELOPMENT
<i>NAD</i>	NATIONAL AUDIT DEPARTMENT
<i>NAFAM</i>	THE NATIONAL ASSETS AND FACILITIES MANAGEMENT
<i>PBs</i>	PUBLIC BUILDINGS
<i>PWD</i>	PUBLIC WORKS DEPARTMENT
<i>QAS</i>	QUALITY SYSTEM
<i>SKALA</i>	<i>SISTEM PENGURUSAN PROJEK</i> (PROJECT MANAGEMENT SYSTEM)
<i>SO</i>	SITE OFFICER
<i>SOC</i>	SENIOR OFFICERS CONFERENCE
<i>TI</i>	TREASURY INSTRUCTION
<i>TQM</i>	TOTAL QUALITY MANAGEMENT

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CHAPTER 1

INTRODUCTION

1.1 Research background

As Malaysia progressively marches towards industrialisation, the role of the construction industry is greatly enhanced (Wa'el *et.al.*, 2007). The construction industry is one of the most important industries contributing to Malaysian economic growth (Mastura *et. al.*, 2007). The Prime Minister, Datuk Seri Najib Tun Abdul Razak announced a budget of RM230 billion for the first roll-out in the Malaysian Tenth Plan (RMK10) for construction. These include, among others, the construction of 8 hospitals which include specialist hospitals, 197 clinics and additional 50 '1Malaysia' clinics to be executed during the first term of RMK10.

With the rising expectations of the people and economic growth, there is a growing awareness of the need among building owners, professionals and authorities to raise the standard of property management practice. The greater complexity in today's building facilities also demands a more professional approach to managing and maintaining these physical assets (Chin *et. al.*, 1999). Ayman (2010) claimed that construction investments are sensitive to time and cost escalation. These elements are considered as threats to a project's success. A building that is properly maintained can boost the building's life cycle as building structures, materials and services will deteriorate over time (Chew, 2004). Low and Wee (2011) concluded that all buildings would eventually develop defects thus with proper maintenance and the avoidance of human error, the process may be delayed. It is vital to ensure that minimum hiccups and deficiencies arise during the entire process of construction.

In Malaysia, under Treasury Instruction (TI) 182, all non-technical departments of the government are required to refer construction work contracts to

the technical departments for implementation. According to the TI, the technical departments of the government are the Public Works Department (PWD) and the Drainage and Irrigation Department (DID) (Pollapat *et. al.*, 2007). These two departments generally act as the government's technical advisors for public construction projects. Their major role is to provide services in technical consultancy, project management and maintenance management. PWD was given the responsibility, among others, to develop a monitoring system on the government's assets through a two day convention on The National Assets and Facilities Management (NAFAM) in August 2007.

1.2 Problem statement

Audit of public buildings (PBs) is a relatively new phenomenon for the construction industry in Malaysia. Until 2007, there was no such audit conducted on buildings in Malaysia by PWD (PWD, 2009). The government, through PWD introduced audit on buildings in 2007 on all buildings owned by the federal government.

Despite the introduction of audit on PBs by PWD, the number of audit performed each year is significantly low (discussed further in sub-section 4.4.2.1) This is due to the year 2007 having saw numerous catastrophes in Malaysia as one by one of its PBs collapses. In April 2007, it was reported by the local media of the burst pipe that brought down the Ministry of Entrepreneur Co-operative and Development (MECD) hall ceiling. Whereas, less than three weeks before, a burst pipe in the Immigration Department had already caused widespread damage to the department's building in Putrajaya. Even a month earlier, approximately 1,000 government servants living in three apartment blocks in Precinct 9 in Putrajaya were evacuated following a landslide in the area (New Sunday Times, 29 April 2007).

The local media in one of its reports questioned the quality of PBs in Malaysia, even after 50 years of independence (Utusan Malaysia, 2nd May 2007). Even the National Institute of Occupational Safety and Health (NIOSH) wanted the government departments and agencies apart from the private sectors to perform maintenance efficiently by taking into consideration the safety of their workers. Its Chairman, Tan Sri Lee Lam Thye said that some contractors are too absorbed of

completing a project not considering quality in their work (Berita Harian, 21st May 2007).

In the same month of April 2007, the ceiling of Sultan Abdul Halim Hospital in Sungai Petani, Kedah which was completed in July 2006 had collapsed (Utusan Malaysia, 28th May 2007). This was not the first construction failure in the building as on January the same year, the patients and visitors of the RM468 million worth hospital were shocked with the overflow of sewage in its cafeteria.

After the first two incidents in April, the former Prime Minister, Datuk Seri Abdullah Ahmad Badawi instructed PWD to conduct immediate check up on all government buildings. The MECD Minister, Datuk Seri Mohamed Khaled Nordin, suggested that the scope of maintenance for government buildings and offices should be expanded to cover not only the physical but also all hidden structure (New Straits Times, 30 April 2007). The Chief Secretary, Tan Sri Mohd Sidek Hassan, suggested a special committee to be formed led by the Auditor General to check all other similar premise in Putrajaya. He also informed that the evaluation itself will cost the government another RM22 million and completed in six months (Berita Harian, 10 May 2007).

PWD's former Minister, Datuk Seri S. Samy Vellu commented that PWD was not solely responsible to the catastrophe as in many cases, PWD officers were not allowed to enter the construction site by the elected contractor by the particular ministries. PWD's responsibility is only to conduct timely checks on the construction and may not be on-site all the time to ensure quality. Thus it is up to the Ministry to ensure that everything runs smoothly as stipulated in the contract (Berita Harian, 3 May 2007).

This is to name a few of the building failures reported in the media. Even though the exact amount of repair was not published to the public, the damages can be estimated as millions or even billions of Ringgit. Thus, it is vital for the government to find a solution on how to reduce these maintenance costs. One way to curb these fatalities in the future is to take preventive action and make considerable amount of supervision during the construction phase of the buildings. Based on the scenario, it is suggested that there is a need to ensure that all PBs and its facilities are in good order, achieved by having a systematic audit practice in place.

However, the exploratory study conducted concluded that despite the systematic audit performed on PBs by both NAD and PWD, a list of barriers were identified. The barriers identified concluded the need for more skilled workers, a more comprehensive audit report as well as the need to enforce the need for immediate rectification works on audit findings. At the same time, the findings also revealed that the full phase of audit process was not performed by PWD.

In view of the above, this research intends to examine the issues of audit on PBs by PWD. The study explores the audit process of PBs and the stakeholders involved in the process. The purpose is to identify the gap and provide suggestions for improvement.

1.3 Research aim

The aim of this research is to propose a framework to implement full phase of audit process on PBs. Thus, this study emphasizes on the processes and stakeholders involved and the stakeholders' various tasks and expectations from the process.

1.4 Research questions

This study of audit on PBs will allow a list of questions to be asked. It is hoped that the answers to these questions will extend the existing knowledge on audit in general and specifically the audit of PBs in Malaysia.

The research questions are presented by taking into consideration the exploratory study in Chapter 4. This research seeks to answer the following questions:

- RQ1 Who are the stakeholders involved and their task allocation for the audit process?
- RQ2 What are the phases of audit implemented by the different stakeholders involved in the audit process?
- RQ3 Why is full phase of audit process not implemented?
- RQ4 What are the different stakeholders' expectations from the audit process?
- RQ5 How can a full phase of the audit process be implemented?

1.5 Research objectives

This study is neither comparing the current audit practice with ideal practice nor does it seek to test any hypothesis. The intention is merely to study the process of audit on PBs that is being practiced in Malaysia. Thus, parallel to the research questions above, this study seeks to achieve the objectives stated below:

- To identify the stakeholders involved and their task allocation for the audit process.
- To investigate the phase of audit that is implemented by the different stakeholders involved in the audit process.
- To examine the barriers for full phase of the audit process not implemented.
- To evaluate the different stakeholders' expectations from the audit process.
- To propose a framework for implementation of a full phase of the audit process.

1.6 Significance of the study

The significance of the study can be viewed in three areas as stated below:

1.6.1 The extension of knowledge

Through the research on past literatures, there was no particular study conducted on audit process of PBs in Malaysia. Thus this study contributes to the area of audit process in the context of PBs in Malaysia.

This study is useful as a benchmark for future study of audit on property.

1.6.2 The importance of property to organisations

The government apportioned large amount of capital yearly for physical development. Thus there is a need for effective and efficient management of these properties to extract the best value from them.

This study also contributes to the stakeholders' expectations who in majority occupy the buildings.

1.6.3 The significance of audit process to the public sector

There is inadequate focus on audit on property in Malaysia. A study on the audit is necessary to identify the current practice and its impact on the relevant stakeholders. Thus the public sector can benefit from the study and use the findings to further improve the practice on audit of buildings in general.

1.7 Research methodology

This research is primarily focused on the audit practice on PBs in Malaysia. It applies an exploratory study to investigate a relatively new area of study where an understanding of the practice is needed (Sekaran, 1992). The exploratory study is on the audit practiced by relevant departments on PBs in Malaysia.

This study is a non-experimental study, thus it makes use of a research design. The main purpose is to help avoid the situation in which the evidence does not address the initial research questions (Yin, 2009).

In the research design, the use of case study is thoroughly described. Case studies are tailor made for exploring the audit process. The purpose of this case study is to determine the audit practice for PBs by PWD in Malaysia. The research design is thoroughly explained in Chapter 3.

This study will employ qualitative method based on the nature of information that needs to be obtained.

1.8 Research scope

This research intends to achieve its objectives by answering the stated research questions. The main question on the audit practiced on PBs in Malaysia can be answered by investigating how PWD conducts audit on PBs.

Secondly, this research intends to examine the audit within the context of PBs. This means, the study will look at various aspects and methods of audit on PBs practiced in Malaysia generally and those applied by PWD specifically.

Thirdly, this study focuses on PBs that are owned by the federal government, state governments, local authorities as well as federal statutory bodies. However, since PWD is the only department practicing audit on buildings in Malaysia, the study is limited to buildings owned by the federal government only as this is the only type of building audited by PWD at the moment.

Finally, this study concentrates on the process of audit on the Batu Pahat District Health Clinic (The Clinic Building) as its case study. The justification of choosing the Clinic Building as the case study is explained further in sub-section 4.6.5 and sub-section 6.3.3.

1.9 Definitions

1.9.1 Public buildings (PBs)

For the purpose of this study, PBs is defined as the buildings that are owned by the federal government, state government and the federal statutory bodies. These buildings are used as operational building which are considered as a basic resource

for the related public organization's activities. These buildings include office buildings, hospitals, stadiums etc.

1. 10 Thesis structure

This study of audit on PBs will be arranged into 7 chapters as follows:

Chapter 1 introduces the subject matter and provides the background to the problem, the study objectives, scope, research questions, significance of the study and methodology.

Chapter 2 examines the various literatures on audit, audit, and other related literature.

Chapter 3 discusses the approaches to the study which is relevant in shaping the philosophical framework of the research study. This would determine the boundaries upon which a logical methodology can then be developed to resolve the issues arising from the study. It consists of the research design and methodology of the study. It also provides a detailed explanation of the approaches adopted, the data required, data sources, data set construction, sample design, the instruments used and the processes by which the data were collected and analyzed. The methodologies outlined in this chapter are commonly used in social science.

Chapter 4 discusses the exploratory studies done on both National Audit Department (NAD) and Public Works Department (PWD). This exploratory study will discuss on the role of the NAD and PWD on audit of PBs in Malaysia. Discussion on the depth and extend of audit will be included.

Chapter 5 discusses the research framework that helps answer the research questions listed in the previous chapter.

Chapter 6 discusses in depth on the case studies selected. This chapter will explore in detail extend to which audit on PBs are practiced by PWD on the case studies.

Chapter 7 concludes the study by reviewing the findings and procedures of the whole study. The conclusions will consider whether the findings answered the research questions, hence achieving the stated objectives of the study.

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