

IDENTIFICATION OF MOTIVATION, CHALLENGES, IMPACT AND
CRITICAL SUCCESS FACTORS OF ASSET MANAGEMENT SYSTEM IN
MULTIPLE ORGANISATIONS IN MALAYSIA

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DEDICATION

*To my beautiful children, Azureen Sofia, Arif Imran, Aryssa Khadija and Aisyah Zahraa
My husband, Onny Iriawan Othman, the rest of my family & friends for giving me support
in completing this master project*

ABSTRACT

The International Standard Organization launched the first version of the ISO 55000 series on asset management in 2014 clearly describes the significant benefits for organizations in implementing the asset management system, but there are very few empirical researches to support these claims. This research endeavors to answer the questions of what are the motivation, challenges, effects as well as the critical success factors in asset management system implementation besides filling the gap of the lack of empirical data on the impact of the systems, by analysing experiences of multiple organizations in Malaysia. More than 300 questionnaires distributed to high asset based and capital-intensive organisations like oil & gas, airlines, property development banking etc. The respondents who are from various level in organisations, they were carefully selected from various disciplines like asset management, finance, risk management, and operations in order to form holistic view on the asset management system. From the research, organisations are motivated to implement the system to improve control and professionalize internal process and risk management. Additionally, improvement in the performance of existing assets, regulations, ease of top-down management decision and reduction or costs optimization are also the relevant motivation factors for the implementation of the system. The most relevant positive effects inspired the organizational effectiveness by articulation of roles and responsibilities, enhanced transparency apart from improved risk management. Negative effects are the unforeseen amount of time and effort and the resistance amongst and double-work for the employees' due to departmental restructuring. Obtaining high quality data on assets along with fathoming the essential cultural changes have been the most relevant challenges for organization and consequently effective leadership and securing commitment from all employees concerned have shown to be the most relevant critical success factors. Generally, organizations are satisfied with the impact of the asset management system implementation. Regardless of the perceived challenges and negative effects from the implementation, these are regarded by the organizations as short terms. The motivations and positive effects of the implementation of asset management system outweigh the negativity and challenges in the long run, thus benefiting the organizations.

ABSTRAK

Pertubuhan Piawaian Antarabangsa, ISO55000 berkaitan pengurusan aset menerangkan kriteria-kriteria penting sistem pengurusan aset. Ia juga menerangkan pelbagai manfaat kepada organisasi dalam pelaksanaan sistem ini. Namun, terdapat kekurangan kajian empirikal yang menyokong dakwaan ini. Kertas kerja ini menerangkan motivasi, cabaran, kesan positif /negatif dan faktor-faktor kejayaan kritikal di dalam pelaksanaan sistem pengurusan aset selain daripada memenuhi jeda bukti empirikal dengan mengkaji pengalaman beberapa organisasi di Malaysia. Lebih 300 kaji selidik diedarkan kepada pelbagai organisasi yang beraset dan bermodal tinggi seperti syarikat minyak & gas, penerbangan, utiliti, pembangunan hartanah, perbankan, dan lain-lain. Para responden dipilih dari pelbagai jenis disiplin seperti pengurusan aset, kewangan, risiko, dan operasi bagi memberi keputusan yang holistik mengenai sistem ini. Faktor motivasi yang berkaitan bertumpu pada peningkatan kawalan dan profesionalisme, proses dalaman serta pengurusan risiko. Selain itu, peningkatan prestasi aset sedia ada, peraturan-peraturan, memudahkan komunikasi pihak pengurusan dan pengurangan atau pengoptimuman kos merupakan factor motivasi yang berkaitan. Kesan positif yang paling relevan ialah keberkesanan organisasi, artikulasi peranan dan tanggungjawab, ketelusan selain pengurusan risiko yang lebih baik. Kesan negatif pula adalah pertindihan masa dan kerja disebabkan oleh penyusunan semula jabatan. Perolehan data aset sedia ada yang bermutu tinggi selain memahami perubahan budaya merupakan cabaran yang paling relevan untuk organisasi. Kepimpinan yang berkesan serta komitmen daripada semua kakitangan adalah faktor kejayaan kritikal yang paling relevan. Umumnya, organisasi berpuas hati dengan kesan pelaksanaan sistem ini. Walaupun terdapat pelbagai cabaran dan kesan negatif, organisasi menganggap ia sebagai isu jangka pendek. Motivasi dan kesan positif daripada pelaksanaan sistem ini melebihi kesan negatif dan cabaran dalam jangka masa yang panjang, sekali gus memberi manfaat kepada organisasi.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Across all organizations, physical assets are critical as they form as one of the building blocks for success and future growth and the effectiveness of asset management is crucial to the overall success of the organizations. Around the world, regardless of the types of organizations, hundreds of billions of dollars are spent on managing assets. However, along with monetary significance, the rising importance of asset management is being fueled by other factors, such as: the general ageing of assets; changing stakeholder and service level requirements; augmented emphasis on public health and safety; and increasingly stringent requirements set by regulating bodies (Frolov, Ma, Sun, & Bandara, 2010).

Organisations recognise the rising importance of asset management especially to the day-to-day operations and continuously seek for difference ways or methodology to improve the asset management practices. According to Frolov, Ma, Sun & Bandara, Asset management is a systematic, structured process that covers the entire physical assets life cycle of which the fundamental belief is that assets exist to support the organisation's strategies and objectives. Although the organisation have common objectives, diverse needs arise when it comes to assets utilisation.

The effective and optimal management of assets require a definite level of management awareness and expertise from various organisational disciplines.

Whereby, asset management can no longer be regarded as merely as asset maintenance. Instead, it is very much of a holistic approach to the management of assets, integrating elements such as finance, risk management, strategy, safety, environment and human expertise.

1.2 Research Background

Continuously fading borders, rapid access to information sharing resulting in broader market access and stronger competition. Together with scarce resources and ever increasing economic, social, and environmental demands from stakeholders, organizations are constantly in search of more efficient and effective processes to better realize value from asset (Frankell, 2008b).

Oil and gas is an example of the most asset-intensive industries in the world. Organizations in these industries continuously facing increasing pressures to develop business objectives to meet their strategic plans while simultaneously managing massive physical portfolios of assets efficiently. To a considerable extent, success hinges on whether or not asset-related risks to the value stream are adequately identified and managed in such a way that minimizes the total cost of ownership throughout an asset's lifetime. By aligning both corporate culture with an integrated systems approach to managing assets from Concept to Decommissioning, organizations will not only uncover practical processes for getting the most out of capital investments but will realize immediate benefits after applying an asset management standard (Life Cycle Engineering Incorporated, 2013).

Operational complexity has increased tremendously nowadays involving a series of complex interactions between different stakeholders. There are new needs with regards to the identification of effective yet efficient operations have arisen. Efficiencies have become one of the measuring scale across all multi discipline department in the organization in order to mitigate lower revenue and higher operating cost resulting from higher competition in the industry as well as scarcity of resources.

In turn, the multi disciplines stakeholders will have to be more flexible and receptive gearing towards a more efficient asset management.

In embracing flexibility towards a more efficient asset management, multi disciplines stakeholders and decision makers must change their mind set from the conventional way of implementing a particular task to a more structured and holistic way that enable to increase efficiencies, reduced costs and improved asset utilisation.

For an organisation that intends to become or retain a leadership position in the industry apart from obtaining competitive advantages, a sturdy focus on emerging trends besides considering which steps must commence first in managing assets in the organizations.

1.3 Problem Statement

Asset management is a tool that can be used to deal with the increased revenues and costs pressure. The asset management fraternity itself is developing the infrastructure system in order to face these pressures. Asset management now requires a more professional method of which organisational who are directly working with physical assets are seeking for techniques to develop better asset manager whilst some organisations have already commenced the implementation of asset management procedures and practices.

Optimising return on investment of physical assets, whilst operating safely and in an environmentally responsible approach at the same time is now more crucial than ever for organizations within the oil and gas industry. Although most of these facilities can successfully achieve these goals independently, most of the time these struggles to sustain uptime, improve safety, and ensure conformance lack alignment with each other. This in turn can be a waste of time, funds and resources due to the absence of collective decision making in accomplishing the tasks. By aligning these efforts under

a common, comprehensive asset management system, facilities can experience greater return on asset investment (Sanford & Pinnacleart, 2015).

The international standardisation organisation (ISO) answered to this need for guidance and in 2014 it came up with the ISO 55000:2014 standard. This International Standard specifies the requirements for the establishment, implementation, maintenance and improvement of a management system for asset management, referred to as “an asset management system” (Botha, n.d.).

ISO 55000:2014 is perceived as a mean to develop better asset managers, apart from improving the effectiveness of asset management in an organisation. It forms ‘the global consensus on what asset management is and what it can do to optimise value generated by all organisations’ (IAM, 2014). As a result, ISO 55000:2014 is very general and the aftermath of this can be that the standard is not easily implementable by most industry. Even though requirements for an asset management system are outlined in ISO 55000 but the requirements are too general, not for specific asset types.

Almost all the players in the industry already have developed their own practices to manage a specific asset portfolio. In fact, they did not realised that they are working with asset management for many years. Most of the organisations are keen to implement new asset management approaches as long as they appear to be beneficial for the entire organisation in the long run. Nevertheless, there are also many organisations who are not aware to whether how the ISO 55000:2014 standard can be valuable. One of the main problem is that many current practices are operating at tolerable level and the ISO 55000:2014 standard is not specifically designed for the industry. Therefore, organisations are unwilling to completely rebuild an asset management system as per the ISO 55000:2014 standard and discontinue all their current practices.

Many organizations are facing a challenging time with their asset management strategy. This is mainly because the so called “solution” that most software vendors position revolve around the system that supports asset management which are basically very IT and finance centric. Most asset managers, and the personnel operating and

maintaining the assets, do not have much knowledge and full capabilities of their software solution. As a result, they are not able to leverage the invaluable information contained within the software in order to manage their assets effectively and efficiently throughout their life cycle (Life Cycle Engineering Incorporated, 2013).

Even though the importance of asset management has increased and the standards for asset management systems bring many significant benefits and improvements to the organisation, the top-level decision makers of the organisations are still oblivious of the need for an asset management system. For example, according to Wijnia and Herder, many asset managers have difficulties and challenges in convincing top management of the strategic value of asset management apart from aligning the technical asset management standards with the organizational goals (Wijnia & Herder, 2010). Schipper & Dik also confirmed this finding of which they observe that top management will not commit or hesitate to commit to the implementation of an asset management system without having a solid business case (Schipper & Dik, 2013).

There is a necessity to have a research on the impact of asset management on organizations. The impact assessment is crucial to enable the organisation's top decision makers to make an informed decision on whether or not to invest in an asset management system. This need is acknowledged by Hodkiewicz, who, in a paper on where asset management is headed, stated that all asset management concepts have been based on subjective evidence and claims by consulting organizations and industry association and there is a demand for empirical research and multiorganization comparisons on what factors are crucial in the assessment of the impact of asset management (Hodkiewicz, 2014).

In conclusion, the problem statement is established by the lack of empirical research to substantiate the claims about the effect of asset management systems to the organizations made by the themselves and consulting organizations. In contrast, asset management system standards have existed slightly more than a decade, whereby empirical and comparable data from multiple organizations is hardly in existence. Most asset management experts concur that it takes minimum three years after the

implementation of an asset management system, before results on performance are coherent and can be assigned to the innovative approach (Hodkiewicz, 2014). Thus, this research aims to fill the gap of the lack of empirical data on the impact of asset management systems, by analysing the experiences of multiple organizations in the Malaysian context.

1.4 Research Questions

With regards to exploration the theory of asset management and the research problem, this research endeavors to answer the following questions:

- i) What are the motivation and challenges in implementing an asset management system in multiple organizations in Malaysia?
- ii) What are the effect of implementing asset management system in multiple organizations in Malaysia?
- iii) What are the critical success factors in implementing asset management system in multiple organizations in Malaysia?

1.5 Research Objectives

To address the problem statements in 1.5, the objectives of the research are

- i) To identify the motivation and challenges of asset management implementation.
- ii) To determine the effect of implementing an asset management system on organizations performance in Malaysia; and
- iii) To identify the critical success factors in asset management implementation.

1.6 Scope of Research

This study focuses on multi-organization analysis on the impact of asset management systems, a target group of organizations that has already developed asset management capabilities and implemented an asset management system must be sought.

Most scientific literature on asset management focuses on the impact on organizations owning and managing infrastructural assets (Gay & Sinha, 2013; Kostic, 2003; Vanier, 2001; Volker et al., 2012; Way, 2013). Therefore, in the search for a suitable context for this research, the researcher has considered the maturity of asset management in different sectors with large infrastructures.

1.7 Significance of Research

This research is conducted to fill the knowledge gap on the impact of asset management systems to the multi organisations in Malaysia. By combining the existing literature on the impact of management systems, the research intends to identify applicable positive and negative impact factors of an asset management system implementations using empirical methods and analyses.

This research also attempts to segregate which challenges an organization is likely to aspect during implementation and what are the critical factors for a successful implementation. Additionally, the research should identify the company values that are mostly likely to be influenced, positively or negatively, by the implementation of the asset management system.

1.8 Research Methodology

The work with this master project is based on a review of relevant academic literature on the subjects discussed, namely published books, articles, surveys, international standards and various publications. Additionally, organization/industry specific documents obtained from the organization/industry have been obtained and studied in relation to the master project. Relevant lecture notes and presentations given by the lecturers at the Universiti Teknologi Malaysia (UTM) throughout the education leading up to this master's degree master project serve as an academic basis for many of the considerations presented herein. Discussions with the master project's supervisor have been used for evaluation of the work during its progression, and to enlighten possibilities for studies related to the included topics. Lastly a series of questionnaires will be distributed to selected personnel who are directly or indirectly related to the asset management of the organization / industry will be used as an aid in order to be able to present the discussion and considerations of this masters project.

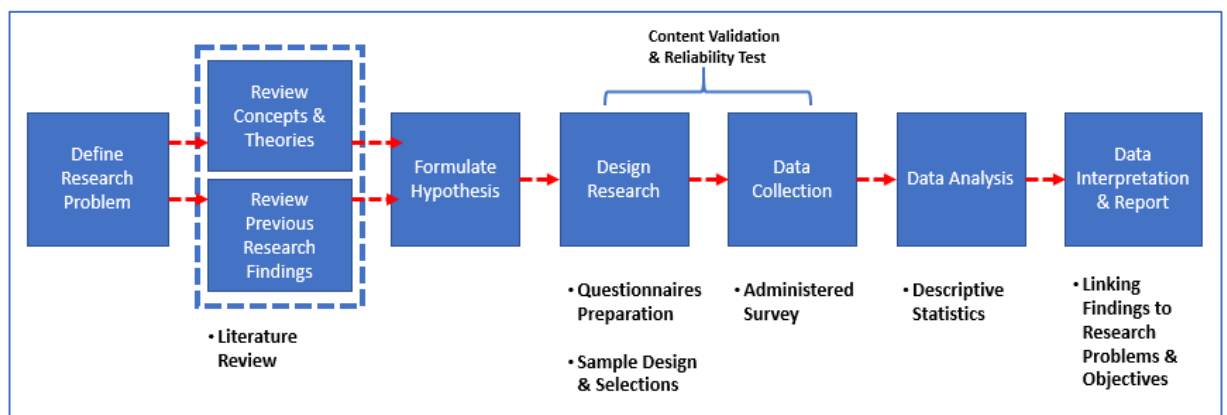


Figure 1: Research Methodology

1.9 Organization of Chapters

This study consists of seven chapters including Introduction, Literature Review, Research Methodology, Data Analysis, Result and Discussion, Conclusion and Recommendation. The summary of the sequences of the chapters are as follows:

Chapter 1 (Introduction): This chapter consist of the preliminary research background, problem statement, objectives of the research, scope of study, significance of study, a brief explanation of research methodology and the organisation of the study. In short, this chapter provides a general idea of the research.

Chapter 2 (Literature Review): In this chapter, literature review is made, giving an overview of development and fundamentals for the subject of ‘asset management system as well as the challenges faced by most organisations.

Chapter 3 (Research Methodology): In this chapter, methodology that will be used in this research. It also explains the content validation, design of the questionnaire which developed from the theoretical performance criteria and parameter established in Chapter 1. This chapter also discusses about respondents’ selection, data collection works and analysis methods used.

Chapter 4 (Discussion and Findings): This chapter discusses the main findings for the implementation of asset management system in the multi organisations in Malaysia. To sum up, this chapter focus on the detail findings of this research that include the achievement of the research objectives as well as the answers to the research questions.

Chapter 5 (Conclusion and Recommendation): This chapter concludes the findings and overall research result. The limitation of the study along with the potential future improvement will also be discussed further in this chapter.

1.10 Summary of Chapters

This chapter introduced the master project, the significance of research as well as the key objectives. The next chapter presents a review of the literature related to this master project.

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