



Faculty of Technology Management and Technopreneurship

**FACTORS INFLUENCING INTEGRATED MANAGEMENT SYSTEM
PRACTICES**

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Master of Science in Technology Management

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PRACTICES**

MOHD HAFIZZUDIN BIN MUZAIMI

**A thesis submitted
in fulfillment of the requirements for the degree of Master of Science
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DECLARATION

I declare that this thesis entitled “Factors Influencing Integrated Management System Practices” is the result of my own research except as cited in the references. The thesis has not been accepted for any degree and is not concurrently submitted in the candidature of any other degree.

Signature :

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Date :

APPROVAL

I hereby declare that I have read this thesis and in my opinion this thesis is sufficient in terms of scope and quality for the award of Master of Science in Technology Management.

Signature :

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Date :

DEDICATION

To my beloved mother and father; my family, my wife, supervisors, lecturers as well as my best friends Franky, Heoyshin, James, Jess, Suharni, Saif, Azfar, Din, Yusri and Farahin.

Thank you for love, guidance, understanding and support.

ABSTRACT

The implementation and certification of quality, environmental and occupational health and safety management systems have become a preference for many organisations. In fact, most current practice in the area of quality standard, each organisation needs to spend a huge amount of money in order to gain the certification for each quality management standard such as ISO 9001, ISO 14001 and OHSAS 18001. Hence, the combination of these management systems that lead to the formation of Integrated Management System (IMS) was established. There is a trend for the organisation to implement an IMS in order to overcome any problems resulting from multiple management systems. Besides, there are connections between quality management and risk management system – ISO 31000 that need to be identified in order to enhance the effectiveness of IMS. This research focuses on identifying the factors of IMS implementation, investigating the converged and diverged components in management system, studying the implementation of IMS and investigating the possible integration of ISO 31000 into current IMS practices. The research was based on social constructivism under an exploratory study. Multiple case studies and in-depth literature review were employed as the research design approach. Three methods of key data collection (qualitative methods) were used: (1) Primary data from face-to-face interview (2) Primary data from expert opinion survey via e-mail (electronic mail survey) and (3) Secondary data from official documents. Also, two methods of analysis were used, namely: (1) Time series/chronology/historical analysis and (2) Explanation building. The literature review on quality management and IMS implementation identifies the need of understanding the results of IMS implementation and the components that could converge and diverge and also how the organisation would implement it. Accordingly, the review on the previous study allows the researcher to establish the theoretical framework. Thus, the researcher has gained the information on how IMS would change the way to manage quality management in an organisation with respect to gain continuous improvement of it. As a result, this study has identified the 16 factors of IMS implementation, the converged and diverged components from case studies, the implementation approach and the proposed integration of ISO 31000, Risk Management System. This research gives a new insight on the importance of IMS and the potentials of bringing an effective management that takes all four quality standards into consideration. Moreover, the study has provided the extended version of framework that embedded the combination of different ISO series. In turn, this research further underlines and suggested on the integration of four management systems-ISO 9001, ISO 14001, OHSAS 18001 and ISO 31000 for an effective implementation of IMS which are presented and could be expanded for future research.

ABSTRAK

Pelaksanaan dan pensijilan kualiti, alam sekitar dan pengurusan kesihatan dan keselamatan telah menjadi keutamaan bagi banyak organisasi. Menurut fakta, sebahagian besar amalan semasa dalam bidang piawaian kualiti, setiap organisasi perlu menghabiskan sejumlah besar wang untuk mendapatkan pensijilan bagi setiap standard pengurusan kualiti seperti ISO 9001, ISO 14001 dan OHSAS 18001. Oleh itu, gabungan sistem pengurusan ini yang membawa kepada pembentukan Sistem Pengurusan Bersepadu (SPB) telah ditubuhkan. Terdapat kecenderungan untuk organisasi melaksanakan SPB untuk mengatasi sebarang masalah yang timbul daripada pelbagai sistem pengurusan. Di samping itu, terdapat hubungan antara pengurusan kualiti dan sistem pengurusan risiko - ISO 31000 yang perlu dikenali untuk meningkatkan keberkesanan SPB. Penyelidikan ini menumpukan kepada mengenal pasti faktor-faktor pelaksanaan SPB, menyiasat komponen-komponen yang berkumpul dan berpisah dalam sistem pengurusan, mengkaji pelaksanaan SPB dan menyiasat kemungkinan integrasi ISO 31000 ke dalam amalan SPB semasa. Kajian ini berdasarkan konstruktivisme sosial di bawah kajian penerokaan. Pelbagai kajian kes dan kajian literatur mendalam digunakan sebagai pendekatan rekabentuk penyelidikan. Tiga kaedah pengumpulan data utama (kaedah kualitatif) digunakan: (1) Data utama dari temu bual secara bersemuka (2) Data utama dari kaji selidik pakar melalui e-mel (survei mel elektronik) dan (3) Data kedua dari dokumen rasmi. Selain itu, dua kaedah analisis telah digunakan, iaitu: (1) Siri masa / kronologi / analisis sejarah dan (2) Pembinaan Penjelasan. Kajian literatur mengenai pengurusan kualiti dan pelaksanaan SPB mengenalpasti keperluan untuk memahami hasil pelaksanaan SPB dan komponen-komponen yang berkumpul dan berpisah dan juga bagaimana organisasi akan menerapkannya. Oleh itu, berdasarkan kajian terdahulu membolehkan penyelidik untuk membentuk rangka kerja teori. Justeru, penyelidik telah memperoleh maklumat tentang bagaimana SPB akan mengubah cara untuk menguruskan pengurusan kualiti dalam organisasi yang bertujuan untuk mendapatkan peningkatan yang berterusan. Hasilnya, kajian ini telah mengenal pasti 16 faktor pelaksanaan SPB, komponen-komponen yang berkumpul dan berpisah dari kajian kes, pendekatan pelaksanaan dan cadangan integrasi ISO 31000, Sistem Pengurusan Risiko. Penyelidikan ini telah memberikan pandangan baru mengenai kepentingan SPB dan potensi membawa pengurusan yang berkesan yang mengambil kira kesemua empat piawaian kualiti. Selain itu, kajian ini telah menyediakan versi kerangka kerja yang melengkapkan kombinasi siri ISO yang berbeza. Kajian ini juga menggariskan dan mencadangkan kepada gabungan empat sistem pengurusan iaitu ISO 9001, ISO 14001, OHSAS 18001 dan ISO 31000 untuk pelaksanaan SPB yang berkesan dan boleh dikembangkan untuk penyelidikan masa depan.

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LIST OF ABBREVIATIONS/SYMBOLS

BSI	-	British Standard Institution
CQI	-	Chartered Quality Institute
DNV.GL	-	Det Norske Veritas. Germanischer Lloyd
IMS	-	Integrated Management System
ISO	-	International Organisation for Standardisation
PDCA	-	Plan-Do-Check-Act
SPC	-	Statistical Process Control
AUSP	-	AUO SunPower

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CHAPTER 1

INTRODUCTION

1.1 Introduction

This chapter presents the overview of the Chapter 1. The chapter starts with the research background, problem statement, followed by research questions and research objectives. Moreover, this chapter also explains the significant of study and scope of research that outlined the quality management, ISO international standards and integrated management system. Finally, a summary of this chapter is presented to synthesise the main point of the chapter.

1.2 Research Background

The management system and standard have become the main part of the organisation's operation and as a requirement for operation. The increasing pressure and demands from stakeholders are the main point which caused the improvement of the management system to become more flexible, effective and more competitive in the industry. Moreover, the organisational should efficiently and effectively integrate their competencies and resources in order to compete in a global economy because it is important and become an established fact in the 21st century (Bititci et al., 2004). These factors also become one of the major challenges for the management in developing an efficient management system in the company. Besides, it is also necessary for the organisation to

adopt the new or different system applications in order to enhance the systems and procedure that were already established in the organisation.

According to Bernardo and Simon (2012), there are different types of standards and it is depending on several aspects: product, process, result and management systems. The latter is the most diffused aspect in worldwide. The standards are developed and published by different certification bodies or institutions (national and international), but the most famous and well recognised is International Organisation for Standardisation (ISO). During last few years, the ISO and the national standards institutes have developed management system standards that involve the quality, environment, occupational health and safety and others. Besides, the standards are generic in nature so that it can be applied to any organisation, large or small, whatever product or service or in any sector of activity (ISO, 2010). This research is to study about the management system that involving the International Organisation for Standardisation (ISO) and its integration. This is because the integration is able to lead the organisation towards the time, cost and resources savings.

The advantage to have the interconnection between the management systems is all main management systems are integrated to become one coherent system and it is known as Integrated Management System (IMS) (Cekanova, 2015). The IMS that focuses on quality, environmental and occupational health and safety management is becoming increasingly important as part of the organisation's management portfolio (Stamou, 2003; Patience, 2008; Poulida, 2010; Matias, 2002; Asif, 2008). Besides, Bernado et al. (2009) and Karapetrovic and Casadesús (2009) mention that integration is becoming more common than the stand-alone system, therefore, if the management systems have been integrated, the performances of the system can be maximised, and high risk can be reduced. Other than that, in order to achieve the maximised benefit from the management system, the existing management systems should be integrated to become one single system.

Furthermore, based on the ISO survey (2008), approximately about 983 thousand organisations were certified according to the ISO 9001 standard and 189 thousand organisations to the 14001 standards worldwide (ISO, 2008). According to the latest data by the International Organisation for Standardisation (ISO) in 2016, there are over one million companies and organisations in over 170 countries certified under ISO 9001 and more than 300,000 certifications under ISO 14001 in 171 countries around the world (ISO, 2016). Many organisations today are dealing with variety management standards and corresponding management systems, integration of such system is becoming more common and could be suggested to be mandatory to the organisation.

Besides, according to Zutshi and Sohal (2005), in order to achieve the full realisation of the potential benefits for each individual system it is imperative to integrate different management systems to become one system. In past few decades, the emergence of the management systems has started in order to meet the requirements for quality management, environmental management and occupational health and safety management. Karapetrovic and Casadesus (2009) agree that, the most effective way to manage them and to simultaneously benefit from the related synergies is the integration of these management systems under one IMS. Therefore, the IMS could be promoted to achieve the effective performance of the management system as it can become the total quality approach to the management.

1.3 Problem Statement

At the present time, most organisations management units are focusing on the strategic dimension to improve the organisation management especially in managing the management system and reducing any complexity. In order to create competitive advantages and achieve sustainable development, many organisations have implemented quality

management system (ISO 9001), environmental management system (ISO 14001) and occupational health and safety management systems (OHSAS 18001). Under these circumstances, an organisation may have multiple management systems implemented and has the option to manage them either separately or in an integrated manner. However, the separated management system nowadays resulting more work, time consuming and bigger expenses. Furthermore, the existing separated management system has the tendency that the management system documents are being double-checked, containing any redundancies or mismatched.

In most current practice in the area of quality standard, the organisation needs to spend a lot of cost in order to gain the certification for each quality management standard such as ISO 9001, ISO 14001 and OHSAS 18001. By now, these quality management can be integrated in order to becoming more systematic by using the Integrated Management System (IMS). According to Zutshi and Sohal (2005) and ISO (2016), instead of enhancing the effectiveness and efficiency in the management, the usage of IMS enables to give influence in cost, time and resources saving. Thus, there is a need for the management to look at the potentials and opportunity of using this system rather than separated management system.

As such, there is a trend for any organisation to implement an IMS to overcome the problem resulting from multiple management systems. In the case of SIRIM Bhd, which is a certification body that involved directly with Malaysian Standards, this organisation is move towards the combination of current separated quality standards (i.e. ISO 9001, ISO 14001, OHSAS 18001) into a systematic system that is integrated (i.e. IMS). By considering the important to have an IMS in the management, SIRIM Bhd has provided the training and audit for this integrated system. All the above indicate that the organisations in Malaysia are moving towards the implementation of IMS. Therefore, this research focuses on the factors

of IMS implementation, the investigation on the components in IMS and study the implementation approach of IMS.

Furthermore, the importance of IMS to be implemented in the organisation as it provides a better management system as the appropriate systems is being merged together. Based on previous research, it is mentioned that the important factors of IMS are on cost, time and resources saving. However, in this research, the researcher investigates on what are the additional factors and how far the IMS factors can influence the success of the implementation. By knowing the factor of integration, the researcher is able to discover the reason and potential on why any organisation implements the IMS. Moreover, the researcher identifies the factors that have become the tendency for the implementation of IMS. Therefore, this study aims in investigating of the overall factors that can contribute towards the integration.

Thus, in order to investigate the components in IMS, the researcher has divided the components into (2) two sections and there are the converged and diverged components. This is because, the researcher wants to investigate on the suitable clauses in ISO that have in common which enable the system to be integrated.

In addition, the researcher also studies on how any organisation will implement the IMS. Zeng et al., (2007) mentioned about the three standards of ISO 9001, ISO 14001 and OHSAS 18001 that have a common underlying principle: continuous improvement based on Deming's cycle (Plan-Do-Check-Act). The integration of different tools and processes can be based on the four phases of the PDCA cycle (Garengo and Biazzo, 2013). Therefore, the researcher would like to study on the implementation approach of IMS which is based on PDCA. Thus, in this research, case studies were selected in order to investigate on the real practice of IMS implementation. By knowing the end-to-end process in implementing the IMS, the researcher has to acquire a better understanding on the topic in order to answer the

real issues of the problems. Besides, this research also tends to discover the potentials and importance of including the risk management system into the current IMS practices by considering the link between the quality management and the risk management.

Furthermore, generally, a research gap is defined as a topic or an area for which any missing or insufficient information limits the ability to reach any conclusion for a question or at all in a given field of study (i.e. IMS, quality management). In this research, the research gap is referring to the lack of information and knowledge regarding the factors of IMS and its implementation in this industry. In this study, the researcher has generalised and combined the factors of IMS. Besides, this research also studies on the specific clauses that are involved in IMS which has not been discussed in the previous research. Previously, the study on the component of IMS is being mentioned generally and it focused on the basic components that can be integrated or converged. In this study, the researcher would like to investigate on the specific clauses of the converged and diverged components based on the International Organisation for Standardisation (ISO) manual. Besides, the researcher would like to identify the related component inside IMS which is based on the real practices in the organisation that has implemented it.

Furthermore, the researcher would like to study on the IMS implementation approach from the industrial practitioner point of view. This is because, in the previous work by another researcher who mentions on the use of Plan, Do, Check and Act approach. However, the details in explaining the process is insufficient. Therefore, this study provides the step-by-step on the implementation approach according to the case study.

1.4 Research Questions

In referring to this research, the research questions are as follow:

- i. What are the key factors that encourage the implementation of Integrated Management System (IMS)?
- ii. What are the components in the IMS that may converge and diverge?
- iii. How to implement the IMS in the organisation?
- iv. Does the risk management system need to be embedded into IMS practices?

1.5 Research Objectives

The objectives of the study can be outlined into four main objectives.

- i. To identify the key factors that contributed to the implementation of IMS.
- ii. To investigate the components in IMS that could converged and diverged.
- iii. To study the implementation of the IMS in the organisation.
- iv. To investigate whether the risk management system needs to be embedded into IMS practices.

The research question was meant to find the gist of the real issue. This is what the researcher wished to know and that included in the process and the investigation of the subject matter and also its drawback. In so doing, by understanding the real issue of the problem statement, it enabled the researcher to construct the specific research objective in order to answer the real problem/ issue that have been identified earlier.

1.6 Significance of Study

The significance of this research is:

- i. This study will expand the knowledge of IMS implementation in the organisation and identify the factors or benefits of using IMS.