

APPLICATION OF SUSTAINABLE DEVELOPMENT INTO PROJECT
MANAGEMENT BODY OF KNOWLEDGE

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DEDICATION

Deepest gratitude to **my beloved father, mother, brother and sister**
for their morale support and encouragement

Sincere appreciation to **my supervisor, lecturers and staffs from**
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ABSTRACT

A project management practice plays an important role to drive the existing practices into more sustainable approach. Construction industry is the main contributor to environment problem, quality of life and national economic. However, the development in Malaysia construction industry still in its growing stage. Thus, this research is carried out to investigate the possibility to integrate sustainable development into project management practices through PMBOK guideline. This research utilized quantitative approach where questionnaires were distributed to project manager, contractor and academician/researcher. The questionnaire was divided into 4 parts which are general information, practices of sustainable development and project management, integrating sustainable development into project management processes and integrating sustainable development into areas of PMBOK. The data collected was analyzed using WEKA and Microsoft Excel. The findings show that Malaysian construction industry is ready to adopt sustainable development and PMBOK because they are practicing acceptable level of knowledge on sustainable development and PMBOK. Besides, results also shown that the initial stage of project life cycle got higher improvement in environmental, social and economic aspect. The integration is possible for project management processes and knowledge areas. The findings also revealed the related attribute between project management processes group and knowledge areas.

ABSTRAK

Amalan pengurusan project memainkan peranan yang penting untuk memacu amalan sedia ada ke dalam pendekatan yang lebih mampan. Industri pembinaan adalah penyumbang utama kepada masalah alam sekitar, kualiti hidup dan ekonomi negara. Walau bagaimanapun, perkembangan dalam industry pembinaan Malaysia masih di peringkat yang masih berkembang. Oleh itu, kajian ini dijalankan untuk menyiasat kemungkinan untuk mengintegrasikan pembangunan mampan ke dalam amalan pengurusan project melalui garis panduan PMBOK. Kajian ini menggunakan pendekatan kuantitatif di mana soal selidik telah diedarkan kepada pengurus projek, kontraktor dan ahli akademi/penyelidik. Soal selidik dibahagikan kepada 4 bahagian iaitu maklumat umum, amalan pembangunan mampan dan pengurusan projek, mengintegrasikan pembangunan mampan dalam bidang PMBOK. Data yang diperolehi dianalisis dengan menggunakan WEKA dan Microsoft Excel. Dapatan kajian menunjukkan bahawa industry pembinaan Malaysia bersedia untuk menerima pakai pembangunan mampan dan PMBOK kerana mereka mengamalkan tahap pengetahuan yang boleh diterima kepada pembangunan mampan dan PMBOK. Selain itu, keputusan juga menunjukkan bahawa peringkat awal kitar hayat projek menyumbang peningkatan yang lebih tinggi dalam aspek alam sekitar, sosial dan ekonomi. Integrasi adalah mungkin untuk proses pengurusan projek dan bidang pengetahuan. Hasil kajian ini juga menunjukkan sifat yang berkaitan antara kumpulan proses pengurusan projek dan bidang pengetahuan.

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LIST OF ABBREVIATIONS

ABBREVIATIONS		FULL NAME
CIDB	-	Construction Industry Development Board
LCC	-	Life Cycle Costing
MBAM	-	Master Builders Association Malaysia
PM	-	Project Management
PMBOK	-	Project Management Body of Knowledge
PMI	-	Project Management Institute
REHDA	-	Real Estate and Housing Developers' Association
SD	-	Sustainable Development
WEKA	-	Waikato Environment for Knowledge Analysis

CHAPTER 1

INTRODUCTION

1.1 Introduction

There are many evidences showing that human development is depleting the natural capital at a faster rate than it can be replenished and is producing waste products at a rate greater than global eco-systems can absorb (UNEP GEO, 2000). This mainly due to the continuous human development and operation of economic systems that beyond ecological limits (RCEP, 2000). Construction industry with its activities was identified as major part of the problem which largely contributing to climate change, resource depletion and pollution (DTI, 2000). Construction industry is directly and indirectly, consumed about 40% of the planet material resources and 30% of its energy. The construction of the buildings were estimated to consume 3 billion tone of raw material and generated about 10-40% of the solid waste in most country annually. To produce one tonne of cement, it requires two tonne of raw material extraction and it produces nearly one tone of CO₂ and up to 6 Kg of green house gas. The increasing demand on the construction material for intensive construction had causes earth resources depletions and generated pollution (Graham, 2003).

Concerning with the global climate change issue, human started to emphasize on sustainable development to mitigate the depletion problem and to save the environment for a better future (Sharma, et al, 2011). Construction is therefore clearly had been identified as part of the problem and it needs to be made as a part of the solution. Construction industry has a major contribution to increase quality of life and national economies. The activities in this industry such as construction, building materials, and associated professional activities including project management had accounted for a significant percentage of the Gross Domestic Product. In UK, the construction process as presently managed according to various standards that is claimed to be highly inefficient. This had been confirmed by the published report of the Construction Task Force “Rethinking Construction” (Rethinking construction, 1998). The success of a project achieved however creating a major environmental and social problem. This indicates that there is a need for radical change of culture within construction industry to make the construction environmentally and socially sustainable without compromising its economic viability.

Sustainable development had been discussed for so many years and it is a significant aspect for a development of the country for how to make the development sustainable. According to World Commission on Environment and Development, 1987, sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Since construction industry has the vital contribution to the natural resources consumption and pollution, it requires the collaboration of a large number of stakeholders to dealing with the sustainable issue throughout the project. Any construction processes if not handled effectively, it may have a serious impact on the environment.

Presently the concept of sustainability has not penetrated in most of the Malaysia construction project (Ramly, Byrd, 2012). The initiation of the best practice and goals for many of these aspects is still in its infancy state. To lead the industry to be more sustainable in the future, project management play an important role for driving the existing practices into a more sustainable approach. As the project management can present a significant element within the process, the integration between these three vital elements: project management practices, sustainable development, construction industry become essential for a more sustainable performance.

1.2 Statement of Problems

Sustainability is one of the most important challenges nowadays with the concern of balancing economic growth, social well-being and environment (Dyllick and Hockerts, 2002). Triple bottom line is a holistic concept of sustainability where environment, social and economic consideration are identified and considered concurrently in decision making. Environment consideration concerns on the built environment and the natural environment. It refers to the impact on environment from activities in a construction project, and also the extraction of the natural resources that needed in the project (Addis & Talbot, 2001). Social consideration involves the human feelings, security, satisfaction, safety and comfort, and human contribution such as skills, health, knowledge and motivation. (parkin, 2000). Lastly, economic consideration is concerned with the monetary gains from the project for the benefits of clients, construction players, public and government (Zainul Abidin, 2007).

Construction sector had contributes a major negative impacts on the environment such as soil erosion and sedimentation, flash floods, destruction of vegetation and dust pollution, depletion of natural resources and the use of building materials harmful to human health (CIDB 2007a). Construction sector not only facing the challenge to respond to the need for adequate housing and rapid urbanization, but also develop in a way that is socially and ecologically responsible (Du Plessis, 2007).

In Malaysia, the green movement is still at its infancy state where sustainable developments are still at the pioneer stage (Zainul Abidin, 2008). To move towards sustainable construction, more efforts guidance or direction towards green agenda of the industry should be given (Du Plessis, 2007). Many programs had been initiated by the government, professional bodies and private organization to raise the awareness and to promote sustainable application among project developers such as “SURIA 1000 for Developer”, Green Building Index Malaysia rating tools and others. With more developers joining in sustainable practices, the industry will eventually moving toward the path of sustainable construction.

As stated by the Vice President Mary McKinlay at the 22nd World Congress of the International Project Management Association in 2008, project sustainability become the requirement for the project manager in the future development. Project managers need to take a broad view of their role and to evolve from ‘doing things right’ to ‘doing the right things right’. Her speech implies that the project managers need to take sustainability aspect into the consideration for the results of the project. Exploration on the relationship between project management and sustainability in academic research also encouraged as one of the future developments in project management. Thus, this research will explore the concept of sustainability and its application in project management.

Project management is not new in Malaysia as many organizations have attempted to adopt project management practices such as PMBOK in their business processes such, in the projects of development of Multimedia Super Corridor Flagship in Malaysia. The problem with them are either unaware of the latest and suitable project management techniques or unable to adopt them because lack of expertise or resources. The research for PMBOK is growing but there is still less evidence to link the standards to project performance and sustainable development. Thus, this thesis also will explore the awareness of PMBOK in Malaysia construction industry and its application in construction process.

1.3 Research Aim and Objectives

The aim of this research is to investigate the possibilities of integrating sustainable development into project management practices through Project Management Body of Knowledge (PMBOK) guideline in Malaysian construction industry.

The objectives of this study are:

1. To review the concept of Sustainable Development in project management practices through PMBOK guideline.
2. To identify the possibility of integrating the sustainable development elements into the project management practices.
3. To evaluate the relationship between project management processes group and knowledge areas inside PMBOK.

1.4 Research scope

This research is to investigate the application of sustainable development into PMBOK practices in Malaysia construction industry. Thus, the respondent will be scoped in the Malaysia construction projects.

This research will be carried out in the form of questionnaires and examines specific aspect of project management practices (PMBOK). Thus, the target respondents should be familiar with project management and are from specific class of construction players that able to influence on integrating the sustainability concept to the project such as PM practitioners, professionals, academics or researchers, and developers. PM practitioners including project manager, construction manager and main contractor, who lead, manage, coordinate the project teams for their daily tasks and manage whole process or part of the process of the project.

1.5 Research Significance

This research can seek the level of awareness on sustainability from some of the construction players in the industry. Since a sustainable development will have significant impacts on the social, economy and environment, the level of awareness will imply the trend of the industry towards sustainable development. The level of awareness on PMBOK also indicating the relationship of the construction practices with project management, where the industry is applying project management standard into the project to ensure the successful completion.

PMBOK is an international source of project management standards for the project management practices. When there is a new aspect which play an important roles in the project management, a new version of PMBOK will be updated by Project Management Institution. For example in the 5th edition of PMBOK, new main additional element of the 10th knowledge area which is stakeholder was added. It was perceived that stakeholder involvement will play an important role for the project success.

Since currently sustainable development is becoming more important in project management, it was suggested to apply sustainable development into project management practices. The proposing of adding sustainable development into PMBOK knowledge areas in this research will indicate the commitment of the Malaysian construction players in the sustainable development.

In term of academic field, this research also further enhances the existing theories and materials collected and adding new possible theories and explanation. This is beneficial to the future researcher and project management student trainers or institution for considering this new approach.

1.6 Brief Research Methodology

This research methodology consists of two phases fo work. In the first stage, issues and problem, topic of study, aim & objective, scope and significance of study are identified. Besides, the literature review, pilot study and distribution of questionnaires were also conducted at this stage. The nature of this study will be in quantitative manner. The questionnaire will have rating scale questions, as well as

some multiple choice questions. Online survey tool will be used to ease the data collection process that creates convenience for respondents.

The data collection and analysis, is conducted in the second phase. After the questionnaires were collected from the respondent, analysis is performed. The findings were discussed and conclusion or recommendations were made. Figure 1.1 shows the general step of the study.

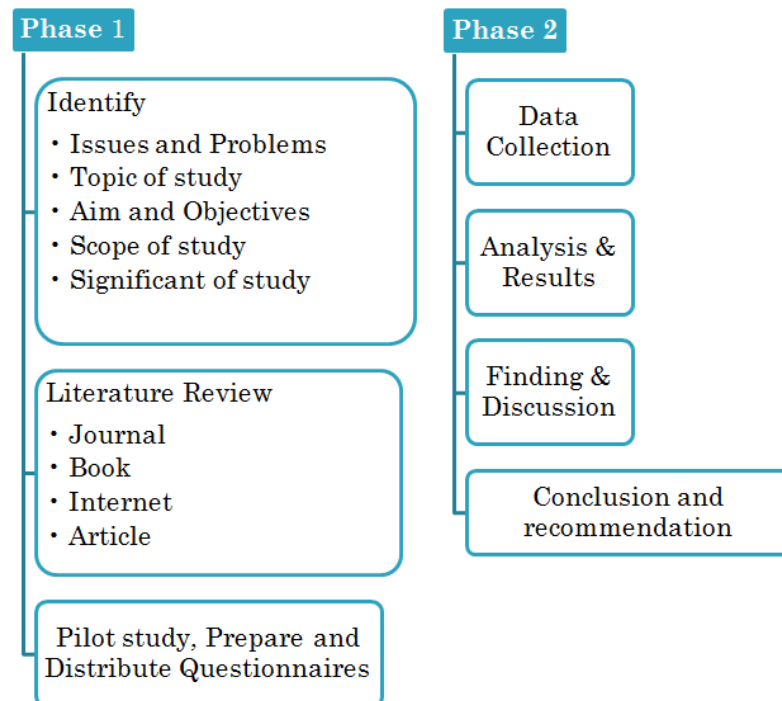


Figure 1.1: Flow of Study

1.7 Chapter Organization

Based on the research methodology mentioned previously, this study will be organized into 6 chapters as below:

Chapter 1: Introduction

The first chapter is the introduction of the study, problem statement, significance of study, aim and objectives, scope of the study and brief research methodology.

Chapter 2: Literature Review

The second chapter will cover the vast literature review of the related topics and also the gap between all the previous researchers. It focuses on the literature review with the aim to investigate the sustainable development concept to be considered in the project management practices that follow the guidelines of PMBOK.

Chapter 3: Research Methodology

This chapter will cover the research methodology mainly detailing in the method of data collection and analysis.

Chapter 4: Data Analysis and Findings

The fourth chapter will present the result of the analysis from the data collected. The result will then discuss based on the analysis thoroughly.

Chapter 5: Conclusion and Recommendation

The last chapter will concludes the study based on the achievement of the objectives of the study. Recommendation on will be given for improvement and exploration of future research on the related topic.

1.8 Summary

Sustainable development plays an important role in the construction industry. The effectiveness in considering sustainable development attributes in project management practices will influence the success of a project. Thus, the aim of this research is to investigate the possibility of integrating the sustainable development into project management practices using PMBOK guideline. The industry readiness and current practices are also taken into consideration in this research. The selected respondents are mainly from industry players and researcher, and quantitative approach is used where questionnaires were distributed among the respondents. This research is significant in order to gain a better understanding for facilitating sustainable development into the industry proj

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