APPLICATION OF JAPANESE PROJECT MANAGEMENT METHODS (P2M/KPM) IN JAPANESE ORGANISATIONS IN JAPAN AND MALAYSIA

By

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ABSTRACT

APPLICATION OF JAPANESE PROJECT MANAGEMENT METHODS (P2M/KPM) IN JAPANESE ORGANISATIONS IN JAPAN AND MALAYSIA

Low Foon Siang

Project managers (PMs) in different countries manage projects differently. Japanese project management (JPM) methods, namely Project & Program Management (P2M) and *Kaikaku* Project Management (KPM) emerge as a comprehensive apporach for flexible environments. The key features' 3K of these methods are *kakusin* (innovation), *kaihatsu* (development) and *kaizen* (improvement). This research aims to assess the application of the Japanese project management methods in Japanese organisations of various industries in Japan and Malaysia. The objectives are (a) to conduct a critical review on P2M/KPM; (b) to identify the application of P2M/KPM from the view of Japanese organisations in Japan and Malaysia; and (c) to develop a regression model by identifying the influential parameters of P2M/KPM that correlate with the project success. Six semi-structured interviews and one hundred valid questionnaires were analysed from the PMs of the Japanese organisations in Malaysia and Japan. Statistical data and cross countries analyses were conducted. Subsequently, the findings were discussed and verified by five experts in the project management field. The results show that the Japanese

organisations in Japan and Malaysia apply most of the P2M/KPM management methods. Twenty eight influential parameters of the management methods were found to have significant contribution to the success rate in Malaysia while for Japan, only three influential parameters were identified based on a regression analysis, namely, burden distribution and risk sharing among stakeholders; adapting to environment changes; and cross-departmental process. The findings serve as a practical guideline for having a deeper understanding on the management patterns that contribute to higher success rates in project management, especially while dealing with Japanese organisations. The results also can be adopted to enhance the existing project management methods to achieve a promising outcome.

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APPROVAL SHEET

This ~~dissertation/~~thesis entitled "**APPLICATION OF JAPANESE PROJECT MANAGEMENT METHODS (P2M/KPM) IN JAPANESE ORGANISATIONS IN JAPAN AND MALAYSIA"** was prepared by LOW FOON SIANG and submitted as partial fulfillment of the requirements for the degree of Doctor of Philosophy in Science at Universiti Tunku Abdul Rahman.

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SUBMISSION OF ~~FINAL YEAR PROJECT /DISSERTATION~~/THESIS

It is hereby certified that ***Low Foon Siang*** (ID No: ***11UED06174***) has completed this ~~final year project~~/ dissertation/ thesis* entitled "*Application of Japanese Project Management Methods (P2M/KPM) in Japanese Organisations in Japan and Malaysia*" under the supervision of Dr.Chong Heap Yih (Supervisor) from the Department of Surveying, Faculty of Engineering and Science, and Dr.Lee Wah Peng (Co-Supervisor)* from the Department of Surveying, Faculty of Engineering and Science .

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I hereby declare that the thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UTAR or other institutions.

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CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Project management was initiated in the engineering, aerospace, and defence industries, and it is now used in most sectors such as agriculture, manufacturing, information technology (IT), construction, arts, engineering and design, etc (Watt, 2013). There are many factors or parameters that determine the success or failure of a project. It depends very much on how a project is being managed, and failure is often assumed to be evidence of deficient management: a problem that can be overcome by better management (Sage et al., 2014). The success or failure of a company also relies on how a particular project is being managed. Therefore, being aware of the management methods or parameters and understanding how they work will assist in the success of a project, as the proper use of it will radically improve management effectiveness and performance (Qiu, 2001). Every project manager would like to have a project outcome that delivers and favours their project objectives. They would prefer to have a project that runs smoothly, that could save them time and cost and still meet internal quality targets and customer requirements. By adopting the appropriate project management methods and tools, projects can be managed effectively (Gao et al., 2007). It will be good to have a list of management methods that can be applied in

different projects and in various industries.

There are a few management philosophies that are practised in Japan. One of the most well-known philosophies is lean manufacturing or just-in-time (JIT) production, which is mainly derived from the Toyota Production System (TPS) (Womack et al., 2007). It focuses on reducing waste and at the same time preserving customer value and product quality. There are also several management tools used in these production systems to increase efficiency and effectiveness such as 5S, *kaizen* philosophy and *kanban* system. 5S is a method to organize workplace or work space for better efficiency during production. *Kaizen* which means 'improvement' in Japanese, is a philosophy that emphasizes on continuous improvement. *Kaizen* has been a key factor in Japanese economic success and has proved useful in various areas (Jr Jung, 1996). In conventional Japanese project management (JPM), the development and application of the term *kaizen* revolves around schemes such as total productive maintenance (TPM) and total quality management (TQM), which has been used by Japanese manufacturers for decades (Murata and Katayama, 2010). *Kanban* system is a scheduling system for JIT production. It is an excellent way for promoting improvement and maintaining a high level of production (Ohno, 1988). These management philosophies are used in processes such as those in manufacturing, engineering or business management which involves dealing of projects. Despite having various examples of philosophies and ideologies that originated from Japan, as mentioned above, there has been no official standardization of the JPM philosophy or a special project management term used in the past. In 2001, a

new version of JPM method was generated; namely, Project and Program Management (P2M) which emerged as the first Japanese standard guidebook of project and program management for enterprise innovation. It had been developed by a team led by Professor Shigenobu Ohara, with the support of the Ministry of Economy and Industry in Japan, where it was managed by the Project Management Certification Center (PMCC) (Asada, 2005; Ohara, 2006; Crawford, 2009). This committee established by The Engineering Advancement Association (ENAA) of Japan, has been the pillar on continuing researches and studies on JPM for over 20 years. P2M is a Japanese-style management system developed in Japan to effectively solve complex problems in enterprises or companies, and manage projects and programs to urge value creation activities (Ohara, 2005a). It is a Japanese-type project management knowledge and qualification system, which was proposed to foster development and advancement of project management through value creation in a complicated and changing environment. In the 1990s, when the economic global recession hit, Japanese organisations looked for alternatives in project management methods as a means of revivification in order to survive the economic turbulence. Since P2M is still being put into practical use both internationally and in Japan (Kinoshita, 2005), an improved paradigm called *Kaikaku* (reforms or innovative reforms) Project Management (KPM), which is an advanced version of P2M, emerged as a result (Ohara and Asada, 2009).

There were few factors that inspired the Japanese to develop their own project management methods:

a) Japan's economy declined in international competitiveness, dropping from number one in 1993 to number thirty in 2002;
b) Japan was threatened after China became the world's factory, by producing improved qualities of various manufacturing goods at low costs (PMAJ, 2003).

1.2 Problem Statement

Projects need to be handled with appropriate skills and methods to gain promising outcomes. There are various kinds of projects in every industry and each project has its own objectives, mission and complications that require certain suitable project management skills. The circumstances of a project can change unexpectedly at times, and a flexible, diversifiable and adjustable project managing skill is needed to adapt to the environmental changes or to fulfil the customers' demands when necessary. JPM, particularly P2M and its revised version, KPM, possess three distinguishing features: innovative approaches, flexibility and adaptability to environmental changes (Kinoshita, 2005; Imaguchi, 2009). Adopting JPM has proven to be an effective way of managing and solving problems in particular projects (Imaguchi, 2009). In recent years, there were many studies indicating increased interest in and appreciation of Japanese management principles, leading to the need to address the application of P2M and KPM (Lee and McCalman, 2008). P2M is rather significant in the project management global community as it is the first guide to recognize and address the organized plus systematic nature of

projects and programs, that is also capable of responding towards the complexities of fast-moving, multistakeholder environments (Crawford, 2009). P2M was developed with the support of the Japanese government and industries that showed high appreciation and widespread recognition of P2M. Studies also showed that *kaikaku* brought many success stories, and KPM is essentially important (Kinoshita, 2009a). *Kaizen*¸ one of the important elements of 3K in P2M/KPM is still a distinct field to be researched. The popularity of *kaizen* events is still increasing (Glover et al., 2014). From these statements it is to be understood, that more information and knowledge on P2M/KPM is needed. Unfortunately, at present, there have barely been any investigations done in this area.

1.3 Research Aim and Objectives

The research aims to assess the practice of project management in Japanese organisations in Malaysia and Japan for manufacturing, construction, IT and engineering industries. The objectives are (a) to conduct a critical review on P2M/KPM; (b) to identify the application of P2M/KPM from the view of Japanese organisations in Japan and Malaysia. (c) to develop a regression model by identifying the influential parameters of P2M/KPM that correlate with the success of the project.

1.4 Scope of Research

This research focuses on the Japanese style of project management, which include the ideology and philosophy on its managing methods. Project management is widely recognized especially in construction industry, IT industry, manufacturing and engineering industry (PMAJ, 2003), and it was first introduced into construction and engineering in Japan in the early 1960s (Ohara, 2005a, Cleland and Gareis, 2006). The first three general types of project classifications are the industries of construction, manufacturing and IT (Lock, 2007). As such, the research area covers management methods in these main three classifications, i.e., construction, manufacturing, IT, with engineering industry as it is one of the pioneer fields that applied project management. The questionnaire was distributed to project managers and to those who have experience handling projects in Japanese organisations in Japan and Malaysia. The experts involved in this study were professionals who are familiar with Japanese organisations, and experienced in the project management field and Japanese method of project management.

1.5 Research Methodology

Initial studies were done on a broad scope of topic. These preliminary studies were done by researching secondary sources of scholarly monograph, journals, previous researches, articles and books. Problems due to issues arising from certain topics were identified from the scope of analysis.

Identified problems became the object of interest, and the need for further studies on the topic was inevitable. Hence, the research topic was formulated.

It is vital to have an appropriate research design as it assists to align the strategically planned research methodology to the research problems encountered (Churchill and Iacobucci, 2004). With this research design, research variables such as the type of data, data collection techniques, the sampling methodology, data analysation methodology, data verification methodology, schedule and budget were considered. A research study should have a detailed and definite research design that can be used as a master plan or a blueprint or for data collection that is connected to the research question. Basically, the guiding principle to develop a good research methodology is that methodologies must completely address the research questions (Creswell, 1994). In this research, information on the P2M/KPM management methods obtained through the critical review were sorted according to the phases in managing a project and used as a reference/guideline in designing the semi-structured interview questions and questionnaire. Steps are strategically and carefully planned to ensure a successful research design is obtained and relevant data are collected according the objectives of this research.

Data collection encompasses conducting semi-structured interviews and distribution of questionnaire to collect the relevant data. The information and data from literature reviews were obtained from articles, reference books, seminars and conference papers, articles, journals and related websites. The collected survey data was then analysed in detail and accordingly to achieve

the objectives of the research.

The obtained questionnaire data from the Likert scaling was then compiled and analysed. The software package namely Statistical Package for the Social Sciences (SPSS) Statistics was used for the statistical analysis. Results were then exported to Microsoft Office Excel for tabulation. Each analysis method measures different test statistic, and the analysis methods were determined based on the suitability of each variable. To name few of the methods used in the statistical analysis were demographic analysis, mean analysis, Mann-Whitney U test, among others. Lastly, a regression analysis was conducted and based on the outcome, a model on those influential parameters was explained, which was then validated by experts from the project management field.

Writing up the thesis was the final stage. In this write-up, compilation of information and documentations, the process of wrapping up the results, summary and conclusions and future research recommendations relevant to this study were included.

The research methodology overview of this study is shown in Figure 1.1.

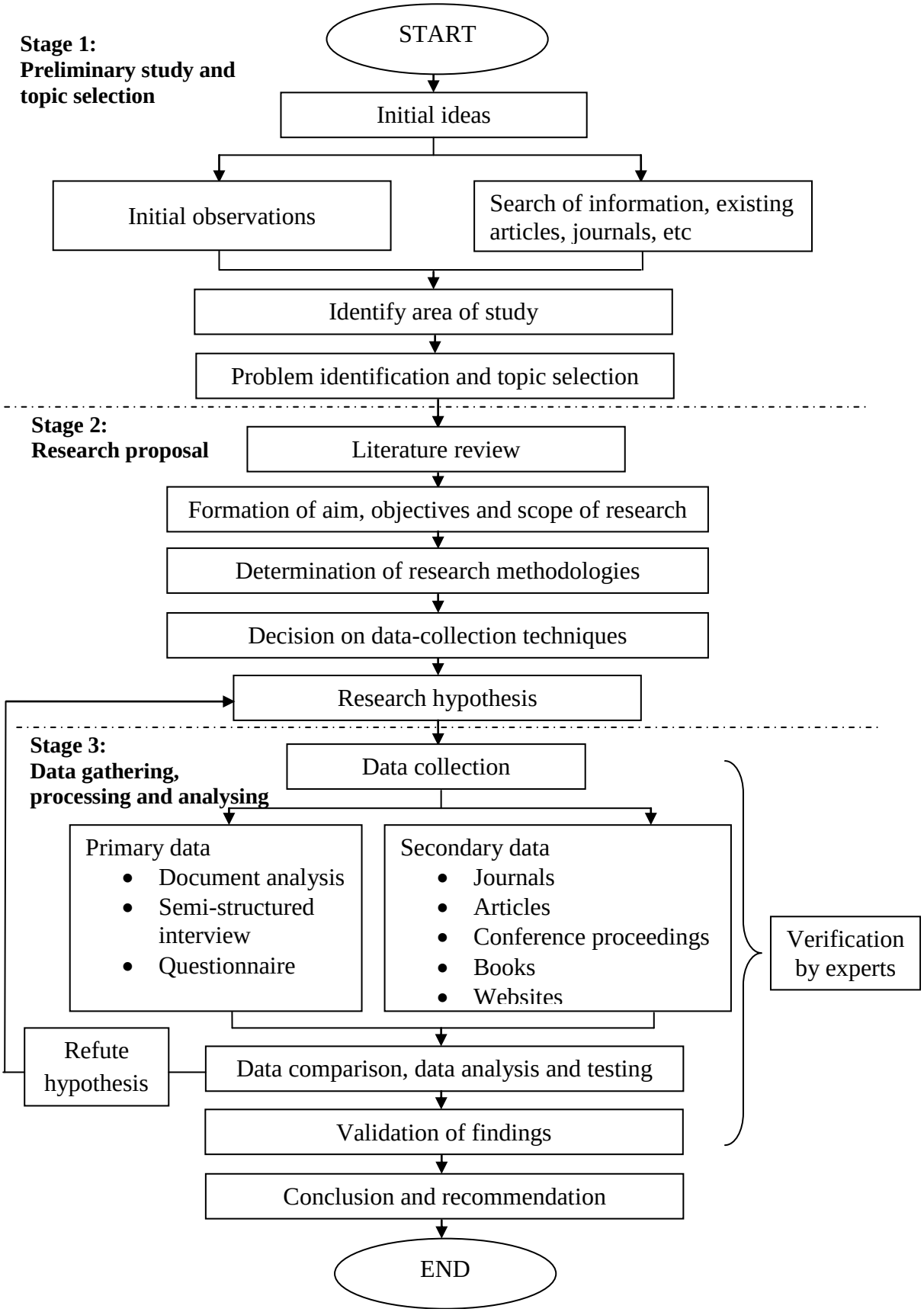


Figure 1.1: Research Methodology Flow

A Gantt chart indicating the milestone of this research is shown in Figure 1.2.

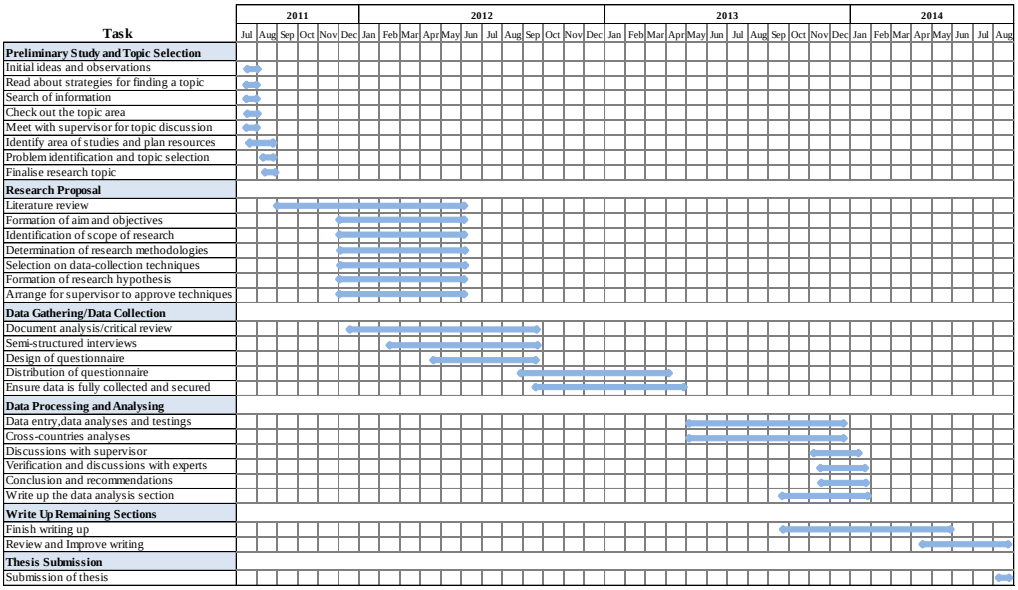


Figure 1.2: Gantt Chart

1.6 Thesis Structure

This thesis has altogether five main chapters, namely Introduction, Literature Review, Research Methodology, Results and Discussion and Conclusion.

In Chapter 1, an introduction on the scope of the research is conveyed, which includes area of interest, problem statement, significance of study, research aims and objectives. The background of the research is explained as well, followed by the research methodology that was used and the methodology framework.

In the subsequent chapter, a thorough review on the literature of the research area is conducted. Information was obtained from materials such as journals, articles, conference proceedings, books and relevant websites. In this chapter, the history, philosophy and ideology of Japanese project management are explained.

Chapter 3 focuses on research methodology that was adopted for this research. A flowchart has been used to illustrate on how the research was conducted, when the document analysis with the critical review was done; the framework of the semi-structured interview, collection of questionnaire data, conduct of data analysis and testing, and the validation process are also included. There is a brief explanation on all the statistical test analyses that were conducted.

In Chapter 4 and Chapter 5, they explain the results, findings and discussion of the research. The obtained results were analysed in detail, and discussion on the findings was thoroughly conducted. All results are tabulated clearly in these chapters.

The final chapter, Chapter 6 concludes the whole research process. It summarises how all the objectives of the research were met. Subsequently, the limitations of the research and recommendations for future purposes are also included.

1.7 Summary

This chapter projects an overall idea on the whole research flow, the background and its processes. Understanding the background and the problems identified, it gives value to this research to formulate the correct aims and objectives. Equipped with the information from this introductory section, it gives a deeper perception on the whole research topic. From the relevant concepts, ideas and knowledge possessed, it assists as fundamental criteria to proceed to the next chapter.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

In this chapter, journal articles, published books, conference proceedings and other written materials are reviewed. This is an exploratory study approach to examine project management theories by extracting relevant information from Japanese project management guidebooks as well as from other major published materials. Three major processes were involved in this critical review, such as (a) a comprehensive introduction on the principles of P2M and KPM, (b) their development and evolution and (c) a short summary on other major project management methods.

2.2 Project and Program Management (P2M)

Japan has had its own style of management since many years ago. However, P2M was the first Japanese project and program management for enterprise or organisation innovation developed by Professor Shigenobu Ohara in 2001 (Ohara, 2005a; Ohara and Asada, 2009). It was developed with the support and help of industry, professional associations and government; and obtained widespread support for adoption and application within enterprises

(Crawford, 2009). P2M is a project management standard or guide that has useful insights to be applied by organisations and enterprises. Two keywords to describe P2M are value creation to enterprises and its mission-approach ideology in managing projects (Ohara, 2005a; Ohara and Asada, 2009). Value creation is a necessity to any organisation. Positive values learned from an event are circulated and accumulated as knowledge information to be used in future events for better improved outcomes. The P2M model aims at creating a strategic framework of innovation to promote corporate values in project management methodologies (PMAJ, 2003) and to create a way for Japanese enterprises and organisations to develop more innovative approaches to ensure that their businesses can compete in the global business environment (Dinsmore and Cabanis-Brewin, 2006). P2M stresses on solving complex problems through creative thinking, innovative breakthroughs that can enhance the planning, executing, monitoring and controlling processes in managing a project while improving quality, reducing cost and time (Ghosh et al., 2012). A project that has undergone reduced costs and time while obtaining improved outcome quality is basically the foundation of a good project management practice. Every project manager would yearn for such results. The P2M model has a combination of entry-level project management, program management, and 11 segments of management frames, which are project strategy management, project systems management, project target management, risk management, relationship management, communication management, project finance management, project organisation management, project resource management, information management, and value management , as illustrated in Figure 2.1 (Ohara, 2005a; Ohara and Asada,

2009). A brief explanation on each segment management frames is summarized in Table 2.1 (Ghosh et al., 2012). Each segment of the management frames has its own functions that contributes in managing a project.

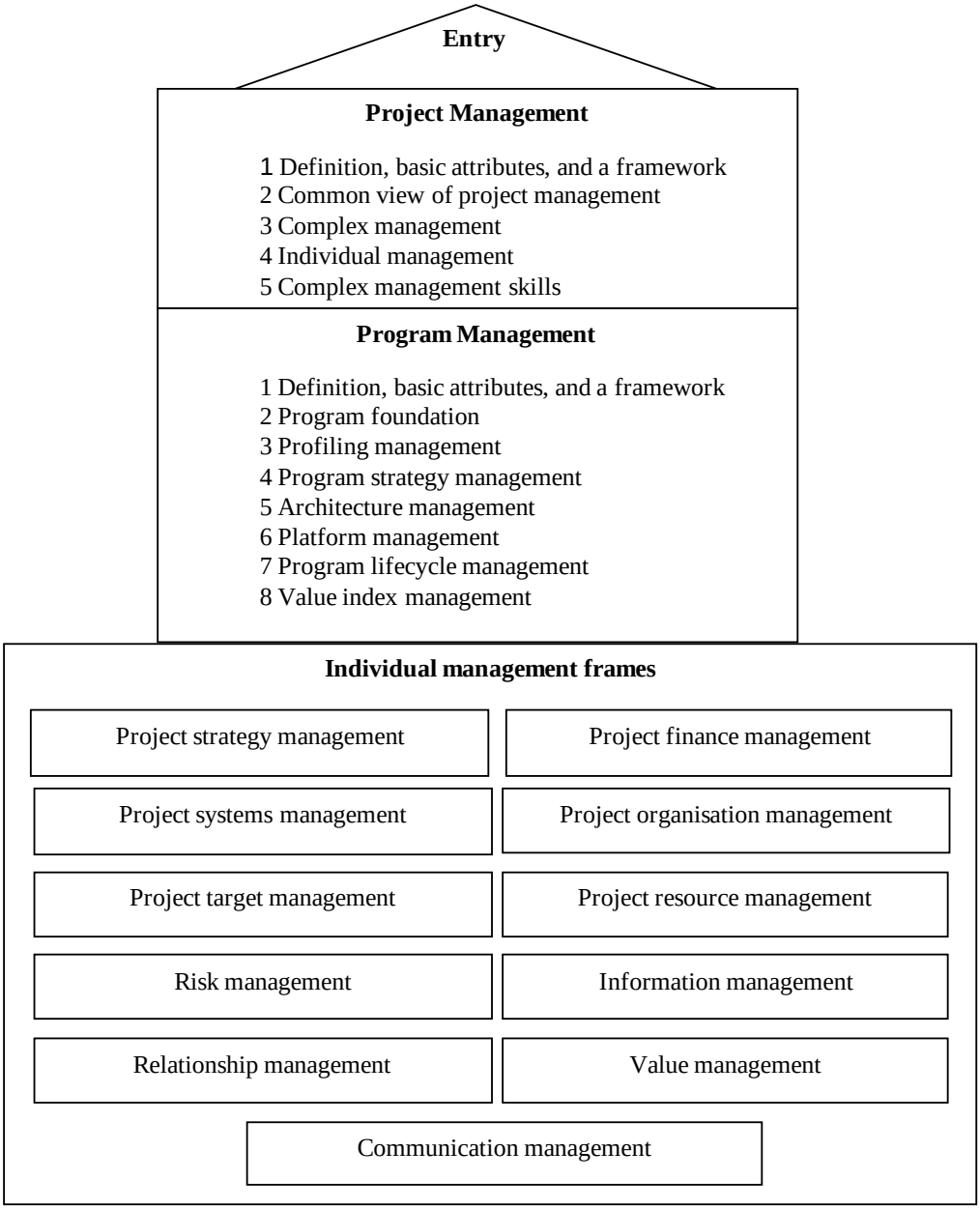


Figure 2.1: P2M Tower

Table 2.1: 11 P2M Segment Management Frames

11 Segment Management Frames		Function
1	Project Strategy Management	Strategy aligns a project with corporate strategy to create value for the corporation.
2	Project Systems Management	It addresses uncertain or unexpected situations in planning and managing a project. Multi-disciplinary systems approach helps in resolving them.
3	Project Finance Management	A project control method to build a structure for procuring funds for implementation of a project.
4	Project Organisation Management	Project organisation creates value by engaging teams, corporations, departments, groups etc. which may have different objectives but come together to reach common goal of the project.
5	Project Objectives/ Goal Management	Project aims to meet or exceed customer satisfaction by meeting scope and quality within time and budget.
6	Project Resource Management	Resources include human, money, machine, material, project platform, information and any intelligence.
7	Risk Management	Proactive risk identification management is necessary throughout the project.
8	Project Information Technology Management	Proper use of IT tools can improve project efficiency.
9	Project Relationship Management	It defines the communication matrix for managing expectations of stakeholders of various interest and influence.
10	Project Value Management	Projects create value for stakeholders. However, some stakeholders can be adversely affected.
11	Project Communication Management	Poor communication is prime reason for project failure.

The essence of P2M focuses on the profiling ideas of complexity to implementation and finding solutions to complex issues (Ohara, 2003). It targets to solving complicated problems that arise while managing a project, with its innovated ideas and solutions. P2M emphasizes that the project manager should not only have knowledge and skills in multiple disciplines but also possess emerging techniques to pave roads to obtain optimal solutions though programs. The basic context of P2M defines program and program

management as a practical capability to respond to external changes, allowing flexibility that copes with ambiguity, complexity, uncertainty, and expandability (Ohara, 2005a). P2M was designed as a curriculum constructing the basis and foundation for a project management professional qualification system, which recognizes the importance of integration and the complex relationships between projects; and also between projects and their surrounding environment (Crawford, 2009). Japanese organisations place an emphasis on the flexibility to adapt to environmental changes, and their models are created based on this concept. Every case is unique and requires different management method, but the basic approach is similar, and can be applied with modifications depending on the situation. Thus, permitting a flexible approach is essential in P2M. P2M also deals specifically and comprehensively with the concept of programs of projects, which is a challenge that other global professional associations such as the Project Management Institute (PMI), Association for Project Management (APM, UK), International Project Management Association (IPMA) and Australian Institute of Project Management (AIPM) were slow to take up (Crawford, 2009). It was not until four years later, after the first release of P2M standard that PMI released their standards for Program and Portfolio Management (PMI, 2006a; PMI, 2006b). It has become a normal practice for other standards to look into program management as well, apart from project management alone.

P2M represents the first significant advance towards genuine integration and acceptance of project and program management at the enterprise level (Crawford, 2009), that has a great potential in contributing to

corporate strategy implementation and enterprise innovation (Pellegrinelli and Bowman, 1994). Through P2M, corporate organisations are made aware of innovated and integrated ideas that can be applied while managing a project to obtain successful results. When other guides and standards mentioned 'integration', it was used with reference to integration within a single project, while P2M is the only standard guide that provides patterns for integration management at enterprise level (Ohara, 2001). Table 2.2 summarizes the objectives of P2M as the first guide (Crawford, 2009).

Table 2.2: The objectives of P2M

P2Mwas the first guide to:
approach enterprise project and program management anew from the viewpoint of the enterprise;
directly address program management (rather than fixating only on single projects);
recognize and respond to the complexities of fast-moving, multistakeholder environments;
recognize and address the organized nature of projects and programs;
specifically address the role of program manager.

P2M not only intents to benefit Japanese organisations but to profitably apply to any organisations globally for seeking a comprehensive guide to program and project management (Ohara, 2005a). Efforts are being made to spread P2M internationally. Some Western companies have introduced P2M into their own organisations (PMAJ, 2003). In reality, P2M has been widely utilised as a standard guide, and with its recognition

for other standards and also innovative approach of project and program management for numerous value creations in enterprises, it provides a firm foundation for further development, evolution and improvement of the project management.

2.3 *Kaikaku* Project Management (KPM)

In the 1990s during the economic bubble, Japanese companies experienced a deflationary depression, and to survive and regain their global competitiveness, the Japanese looked for solutions in the *kaikaku* (reforms or innovative reforms) of business management, organisation, and technology. *Kaikaku* is reformation or innovation in general, done at the management level. It is difficult for Japanese companies to accept reformation and easily adapt to external changes, as they are a community who stand firm in their culture and existing business methods. Despite Japan's cultural hesitancy to change, it has been proven that flexibility, adaptability, and reformation are essential to survive during an economic crisis. Essentially, the successful companies were those who applied *Kaikaku* Project Management (KPM). KPM is a new project management paradigm and an advanced version of P2M, consisting of three significant Japanese elements for success: 3K-*kakusin* (innovation), *kaihatsu* (development), and *kaizen* (improvement). KPM is much reflected in the ethos of Japanese society and this Japanese approach of project management pursues innovation and value enhancement (Morris, 2013). They emphasize innovative reformation and perform multi-

dimensional value management.

KPM is the core management for innovation and integration by 3S/3K combined methodology, where 3S is the proposed scheme, system and service project models in terms of lifecycle in value creation paradigm for organisational models (Ohara and Asada, 2009). In other words, P2M/KPM manages project lifecycle through 3S. The companies that are with the elements of KPM, namely *kaikaku* and 3S/3Kwill have a project management system that functions well and leads to successful projects (Taketomi, 2009a).

3K's *kakusin* (innovation) indicates breakthroughs and modification of new knowledge, and it involves anything to do with creation of new ideas, devices or processes based on combination of new knowledge; *kaihatsu* (development) is the challenge to enhance, expand and acquire the latest knowledge and information; and *kaizen* (improvement) represents incremental and continuous efforts in a proactive work life for improvement at work-floor level (Ohara, 2009b). Application of accumulated and combined new knowledge is done as part of innovated measures. New methods are explored and developed as part of continuous practice for future improvement. As for 3S, a sequence of scheme, system and service have been practiced in managing projects. For instance, justifications of the project investment, risks, cost, feasibility or value of the project will be completed in the initial scheme stage of a project lifecycle, followed by the system stage where a check will be carried out on whether those selected members or organisations manage their job according to original plan or whether they will bring it to completion;

and finally a confirmation will be conducted to see if the business is maintained and operated smoothly or if expected results are attained at the last service stage (Taketomi, 2009b). In short, scheme model matches with the initiating and planning stage of a project; system model corresponds with planning and executing. Any confirmation or tasks required in a post-project work such as operation or a follow-up project are covered in service model.

The KPM method explores the enhanced methodology of strategy implementation in the mode of lateral and cross-functional collaborations as illustrated in Figure 2.2 (Ohara, 2009b). In P2M, there was no classification according to *kakusin*, *kaihatsu* and *kaizen*, and the asterisks (Figure 2.2) indicate a newly included framework in the KPM version. However, the KPM method concentrates on the innovation, development and improvement of Japanese management methods using the foundations of P2M. Thus, it takes into account the whole lifecycle of the project from idea, planning, execution, investment and recuperation to creating value for the future. The KPM method promotes the creation of future value by implementing a number of reform projects linked to strategy, thus providing a body of knowledge to train core leaders, whose responsibility is to recoup and regain the investment, and propose a methodology for avoiding risks of failure in an organisation to solving complex issues (Bredillet, 2007; Ohara and Asada, 2009).

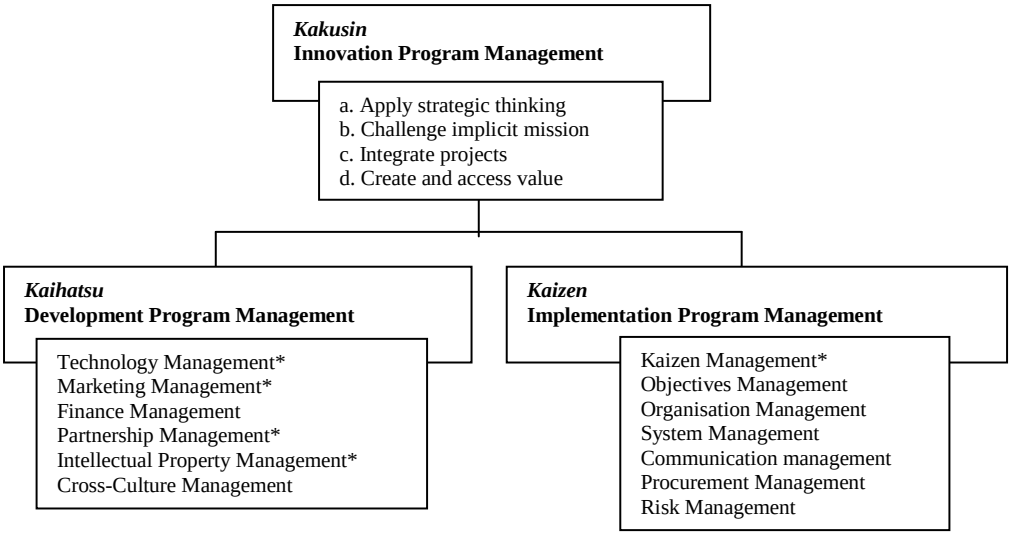


Figure 2.2: KPM Knowledge Framework

The KPM method provides two uniquenesses in its philosophy, namely (a) responsibility for quality control in the world's leading *monozukuri,* which means the art of making things, and (b) backward operation process planning system with a focus on securing delivery (Taketomi, 2009a). Backward operation process is sometimes known as parallel or concurrent engineering system/ concurrent development concept (Tiwana and Bush, 2007). This approach is also known as the *kaihatsu*-style project which can shorten the duration of the whole project, where the downstream process needs to be executed even if the upstream process is not completed (Taketomi, 2009a; Low and Chong, 2012b). This method is adopted to ensure production meets the deadline, or handover date is honored.

Organisations adopting the KPM method have well-designed innovated systems and well-equipped devices to accommodate these two areas. Adjustments and necessary adaptions are made in office devices,

manufacturing and production systems in factories. The Japanese's working attitudes are highly influenced by their culture, mindset and philosophy. Their positive attitudes have led to their great success in manufacturing as well as innovation, and they are renowned for their high standards of quality management control (Zwikael et al., 2005). Japanese manufacturers are well-known for possessing strong R&D skills and managing their technical know-how, which earned them the respect for being a great developer and innovator internationally. The strategies and methodologies of KPM have proven to be effective and successful in providing learning opportunities in companies, enhancing participation, and motivating the consensus and awareness of core leaders (Ohara and Asada, 2009). KPM should be widely put into practical use to yield smoother outcomes of a certain project.

2.4 Development and Evolution of P2M/KPM

Project management should evolve and be revised accordingly to overcome unforeseen changes of circumstances and environment, uncertainties and ambiguities. Project managers need to face different and new challenges day in day out to ensure the success of a certain project. Moreover, based on a study done in 2007 on behalf of Project Management Association Japan, it provides some insights on management of projects that could be summarized as: a) Project failures are not necessarily linked to project managers' capabilities; b) Project definition and development are critical factors of success, and should be more clearly specified; c) Project troubles relate to the

gap of business practices and perceptions between clients and suppliers (Bredillet, 2007). A good project management approach could address to the above-mentioned three criteria. Classical project management approach centred on analytical and positivist thinking paradigm might not be so suitable to handle such new challenges, and there is a need for a new project management method based on a constructivist perspective enabling to address complex ambiguous and uncertain situations in order to translate the strategic intent or idea (Bredillet, 2009). The new project management approach has to be comprehensive, adaptable to flexible environmental changes and be able to solve complex issues. In P2M/KPM, the 11 discrete types of individual management frameworks highlighted by the core philosophy of findings solutions to complex issues are demanded in Japan, and this has widely penetrated into academic, government, community, and business society (Ohara, 2003). Innovative approaches, flexibility, and adaptability are the distinguishing features of P2M/KPM. Projects and programs are managed by these concepts and mindsets.

Therefore, P2M/KPM is essential as a project management method or body of knowledge that exhibits such features that may improve the above-mentioned three summarized insights. Project definitions have been emphasized and the perception gap that exists between suppliers and clients has to be addressed. P2M/KPM handles program management as well as project management; therefore, evaluations are based on the entire mission rather than on just a specific mission as practiced in project management (PMAJ, 2003). P2M/KPM focuses on clients' goals and how they are being

achieved, while taking into account their opinions and suggestions. P2M/KPM considers the overall goal for strategic businesses. On the other hand, it has an equal interest in the process and in how things can be done better next time (Rashid et al., 2009). P2M/KPM is a generic approach that integrates multi/interdisciplinary methodologies and knowledge that propose a framework with the mission driven approach and insightful thinking, where it uses clear success principles for each project which enables solving of complex problems by transforming strategic aims into value creation operations and capital recovery through the 3S project models (Bredillet, 2007). Table 2.3 lists the key characteristics of P2M/KPM (Bredillet, 2009).

Table 2.3: The Key Characteristics of P2M/KPM

Characteristic 1	If an innovative view is desired, a mission is ambiguous (adaptive and implicit) rather than with clear and précise definition (explicit)
Characteristic 2	P2M/KPM framework addresses implicit and explicit mission type;
Characteristic 3	Mission is a creative output from human insight capability combining rationality and intuition, explicit and implicit, linear and non-linear approaches, divergent and convergent thinking;
Characteristic 4	Mission is a "meta-model representation" of the future ideality in a complex, ambiguous, uncertain world;
Characteristic 5	Focus on "Mission-Driven Approach", which explores and includes value creation activity;
Characteristic 6	Modeling is part of P2M/KPM. Three project models (scheme, system and service) represent a generic lifecycle from mission to capital recovery obtained through value creation;
Characteristic 7	Profiling and modeling are core methodologies powered and reformed by a combination of human insightful capability and scientific analysis;
Characteristic 8	Modeling is a generic approach which integrates interdisciplinary approaches, knowledge and methodologies.

Basically, P2M/KPM revolves around the 3K concept in its project management framework. The *kakusin* concept is extremely valuable to furnish

important insights into intra-market competition and strategy (Zapata, 2010). The idea of *kakusin* that incorporates strategic and innovation thinking is applied in various industries to enhance the quality of the project. P2M/KPM incorporated knowledge and intellectual properties into the *kaihatsu* and *kakusin* processes which includes new inventions, development of new ideas, R&D and technologcal know-how (Crawford, 2009). Both *kaihatsu* and *kakusin* activities play an important role in a company to secure the company's competitiveness and to increase the value of intellectual property rights (Kinoshita, 2009b). *Kaihatsu* is enhancement plus expansion of knowledge and information, and involves visionary endeavors toward using newly developed technologies, or utilizing existing technologies in a new manner. It is not limited to development of technology alone, but also covers processes, business practices, product quality and even marketing techniques as well (Ohara, 2009b). After the development of new production materials, innovation takes place to enhance the new product or idea, and to expand its functionalities.

P2M/KPM emphasizes flexibility and adaptability and proposes how organisations can achieve total optimization (Ohara and Asada 2009). Rather than focusing on mere partial optimization when economic crises occurred in the 1980s and 1990s, Toyota maintained its market share by using the flexible *kaizen* philosophy. This philosophy applied to manufacturing and production processes (Murata and Katayama, 2010; Kato, 2011) that strive to eliminate waste and problems and to improve quality through persistent efforts (Glover et al., 2011). Honda, Canon, and Sharp also survived, as they adapted to

changing times by continuing to invest in people (Kinoshita, 2005). Other examples of *kaizen* activities that were practiced by organisations who apply P2M/KPM are continuous improvement of manufacturers' performance in terms of quality, productivity, products, business operations and management systems, achieving highly flexible approaches to rapid changes, and learning from accumulated knowledge (Ohara 2005a, Liker et al., 2008).

In view of social behaviour in management, Japanese people tend to practice collectivism and humanism (Suzuki, 2009). In the P2M/KPM method, collaboration with colleagues or cooperation among team members is common. Achieving group goals is much more emphasized rather than individual goals (Liker et al., 2008). In addition, the Japanese people give priority to inter-human relations (Ohara, 2010). For instance, when making a decision, the Japanese business leaders tend to support outcomes that preserve already established relationships or that could assist in cultivating new ones (Martinsons and Davison, 2007). They will need to consider the other party's concerns before finalizing a conclusion or making a decision. Conclusions are often made based on a group verdict. Having a common goal facilitates good teamwork and eventually, enhances communication among project members.

Communication is one of the characteristics of Japanese management practices (Suzuki, 2009). Project team members tend to have day-to-day communication through morning assemblies or daily early meetings to ensure better performance of the project and to detect any conflict before it turns into major problems (Magoshi and Yamamoto, 2009). It is also a culture in some

Japanese factories to have a five to ten minute morning workout before the start of the day. This activity will enhance communication among co-workers as they have a chance to gather around and connect.

Organisational cultures are influential towards the management practices and management patterns of projects in an organisation. In organisations, the planning and control processes plus the accounts are strongly influenced by culture (Hofstede et al., 2010). In managing a project, planning and control processes are essential steps to be taken. Planning is important to avoid any uncertainties or any extra steps that may turn out to be unnecessary. Control is to ensure that things are running accordingly and as planned. Even for budget control, the accountant from a different group ethnic may have different perceptions when handling costs allocation in a project. They are important personnel who determine the value of the organisation's assets. When dealing with international projects, the way project practitioners from different countries interact and communicate are prominent factors that can interfere with the smoothness of a certain project. The need to acquire the basic knowledge of organisational cultures especially in terms of project management is rather inevitable. Once these management cultures are understood, projects could be run effectively and efficiently.

A management tool has been also established from the importance of this feature, such as project and program balanced scorecard (PBSC). It has been introduced by the Japanese study group as a concept for strategic planning and control for projects (Suzuki, 2009). Projects with strategic

planning have a higher tendency to achieve successful outcome. PBSC is made up of Balanced Scorecard (BSC) for planning and control of projects that is managed with the concept and framework of P2M (Suzuki, 2009). There are basically four procedures in the framework of PBSC. The first is description of strategy map, followed by build program BSC, and then build project BSC, and lastly, the outcome evaluation. Its concept framework is briefly illustrated in Figure 2.3.

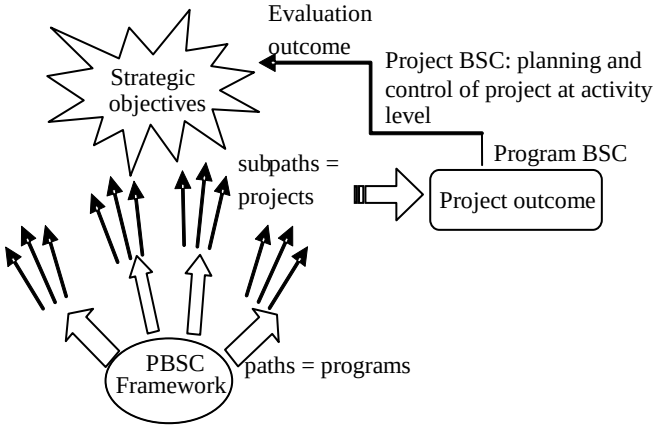


Figure 2.3: PBSC Framework

PBSC requires several paths or programs to accomplish its strategic objectives. These paths are divided into numerous subpaths, also known as projects which are needed to execute each of its programs. To maintain the goal congruence among the project team members, program BSC suggests measurements and targets for evaluating each project outcome (Suzuki, 2009). The steps and measures provided have to be of equal benefit to all project stakeholders as well. Emphasis on project planning and control at activity level is done at project BSC stage, and this feature distinguishes project BSC

from Earned Value Management (EVM), where in EVM it is done at task level (Suzuki, 2009). Finally, a comparison on the targets and results between program and project BSC will be carried out in the outcome evaluation. This procedure is essential to determine if the objectives are met. In a project, communication is especially important among cross-departmental project team members and PBSC is to maintain the goal congruence of the entire project, and not just focus on individual profit of their own departments. Bad communication will result in communication conflicts that can create misunderstanding (Ohara, 2011a). PBSC can be more effective when emphasis is placed on communication (Suzuki, 2009).

Basically, apart from PBSC, there are three management tools in P2M/KPM; namely logic model, technology roadmap and platform management. The tools have been applied in construction projects, IT related systems, and environmental project management such as improving the energy utilization for air conditioning in office buildings (Noji et al., 2009; Osada and Kameyama, 2012). The logic model is used by project managers to evaluate the effectiveness of a project or program. It plans out activities, normally in a graphical depiction design, to obtain mutual understanding among stakeholders. It gives a logical relationship between the resource input, output, and outcomes of a program. This model was applied in a study done in Japan to enforce the verification of effectiveness of their research support system. Inputs and resources that included external and internal factors, long-term outputs, medium-term, and short-term outcomes or impacts were depicted in this model (Takuma et al., 2010). Subsequently, the results obtained will be

adopted to draw out the next action plan. As P2M/KPM emphasizes a lot on value creation, management tools are also structured to place weight not only on economic value creation, but also social values. The logic model has been applied to unite community network in the construction of social value environmental platform (Noji et al., 2011).

In the technology roadmap, the value of the technology is verified (Ohara and Kameyama, 2012). In order to achieve an ultimate goal, this roadmap helps in matching short-term and long-term goals with the help of a certain technology. Normally, project managers use this to plan for new product launching, or when there is an emergence of new technology.

Platform management forms the uniqueness of P2M theory as it is intended to promote standardization of effective design and operation for integration management (Ohara, 2011b). The purpose of this platform management is to review existing business models (Ohara and Kameyama, 2012). In the context of P2M, platform works as a base that supports the whole project, and is made up of management system, service system, and information knowledge system, which mainly covers four major areas; i.e., environmental infrastructure, standard subsystem, collaborations, and knowledge accumulation system (Osada and Kameyama, 2011). Platform and service supports are essential factors that provide knowledge on people, information, and cultures (Ohara, 2011b). Platform management is applied in green infrastructure programs, IT system construction, green technology, and social infrastructure business, among others.

The above-mentioned four management tools work effectively together with the 3K/3S project models in managing projects. The 3K ideology is imperative for the management tools because the reformation, development, innovation, and improvement of management skills are essential to cope with the constant environmental changes that greatly influence the management methods of projects. In terms of *kaihatsu*, the development and advancement of strategies and methods were done in all four management tools. In response to external changes, new strategic planning, and evaluation methods are developed in PBSC, whereas research is often done to create new resources, for better outputs, and outcomes in logic maps. Evolution and breakthrough of new ideas and knowledge will be practiced in technology roadmap and platform management. The *kaizen* concept targets for continuous improvement of planning and evaluation methods in PBSC, suggestions of corrective actions from the outcomes obtained in logic model, efforts on improvement of technological ideas on a daily basis in technology roadmap, and endless knowledge input to enhance the stabilization of platform management. Emphasis of *kakusin* can be found in modification of target control and evaluation methods in PBSC. These methods will be innovated to suit the targets and objectives of the project for a preferred outcome. In logic models, strategic planning and resource inputs are enhanced to provide more effective evaluation methods of projects. Timeless innovation of existing technology will be conducted in technology roadmap, whereas enhancement of knowledge and information will be carried out in platform management. The concept of 3S - scheme, system, and service project models are also applied in these

management tools in the context of P2M/KPM. Table 2.4 summarizes the four management tools along with the 3K/3S project models of P2M/KPM.

Table 2.4: Management Tools with 3K/3S Project Models

Management tools / 3K/3S	PBSC	Logic model	Technology roadmap	Platform management
Objective of management tools/skills	Strategic planning control, and evaluation of project targets	Evaluation of project effectiveness, strategic planning, and obtaining consent among stakeholders	Verification of value in terms of technology	Review of business model
Kaihatsu	Development of strategic planning, and evaluation methods	Research and advancement of resources, input and output	Evolution of new technology	Development of knowledge and information
Kaizen	Continuous improvement of target planning and control methods	Proposals of corrective actions based on output and outcomes	Continuous improvement of technological ideas on a routine basis	Continuous input of knowledge to enhance the stabilization of the platform base
Kakusin	Modification of target control and evaluation methods	Enhancement of strategic planning and resources input	Innovation of existing technology	Enhancement of knowledge and information
Scheme model	Management and evaluation of execution objectives , establishment of an independent execution method	Drawing up of execution plans and understanding its significance based on medium-term and long term visions	Adoption of technology	Mutual information network
System model	Management, control, evaluation of target and objectives	Setting of development targets/objectives	Affirmation of competitive developmental techniques	Open innovation
Service model	Execution of business models	Evaluation of business models	Technology updates	Updates on business models

There are, however, some limitations of P2M/KPM. Firstly, there is no guarantee that an organisation's KPM program will be successful (Ohara, 2009a). Many factors determine the success or failure of such programs. For example, because environmental changes require new efforts for adaption, such as restructuring or shifting people into other jobs in the workplace, employees tend to resist and dislike *kaikaku*, unless their anxieties and worries are resolved, or *kaikaku* is justifiable for them to be accepted (Ohara, 2009a). Thus, efforts are required to relieve such problems.

In addition, when the economy turned sour in the 1990s for Japan, changes were made in some areas of Japanese conventional management in order to survive the recession. Restructuring, which included work force lay-offs, production and inventory reductions, and plant closures, were applied (Schonberger, 2007). Japan's conventional model of 'seniority-based payment and lifetime employment' has been revised and reduced, even to zero in some extreme cases, and for example, the Toyota group has also extensively embarked on accepting contract workers and temporary employees (Kinoshita, 2009b). Other activities included to overcome the recession will be *kaikaku* or innovative (*kakusin*) reformations that encompass joint venture agreements with foreign companies (Robertson, 2004; Schonberger, 2007)

2.5 Manufacturing industry in general

Project management has been widely applied in the innovation of manufacturing systems such as artificial intelligence application system, automation and computer-aided manufacturing (Ohara, 2005a). Manufacturing can be classified as process-dominated, and it executes the project by making the same product over and over again (McCrary et al., 2006). Quality and productivity improvement aiming to gain competitive advantage has been a major issue for most manufacturing industry leaders (Jr Jung, 1996), who target cost reduction and efficiency/effectiveness improvement that are major factors in determining the success of the project (Grover, 1994; Yong and Li,

2011). Therefore, it is always a challenge for manufacturers to capture the correct management skills in order to alleviate the level of efficiency and effectiveness needed for producing profitable products in the long run.

2.5.1 P2M/KPM's Principles for Manufacturing Industry

Manufacturers, namely automobile manufacturers, also face the two-boss problem. Therefore, *kaihatsu* project organisation was adopted to highlight the roles of the team members in a project. The functional division will still maintain its responsibility in assuring its quality, but the project manager will have to cover the overall quality of the project as well, apart from cost/budget or delivery/schedule, because the quality of certain techniques or skills often influences the success of the project (Taketomi, 2009a).

To improve success rates in the manufacturing industry, *kaikaku* program emphasizes a knowledge base that comprehends a new combination of knowledge, challenges and identification of new useable knowledge, acquiring of new knowledge, practical use of the new knowledge and access rights of intellectual properties (Ohara, 2009a). KPM permits project managers' access to intellectual issues, and Sharp Company is renowned for using this type of experience via *kinkyu* (urgent) project, where the special feature of the *kinkyu* project is the development of a prospective technology to the application of that technology, until the mechandising of the developed product, which all takes place in a very limited time (Miyamoto, 2007).

The KPM method emphasizes two major areas as highlighted, i.e., quality control in the art of making things (manufacturing), and its backwards operation process planning system with a focus on securing delivery (Taketomi, 2009a). Factories and organisations which are adopting KPM method have made adjustments in their manufacturing and production systems to accommodate these two areas.

Meanwhile, the *kaizen* approach improves the performance of manufactures in terms of quality and productivity improvement s (Jr Jung, 1996; Liker et al., 2008). It is about continuous improvement in routine manufacturing activities for value creation at the work-floor level. An essence of *kaizen* is the famous 5S system, consisting of *Seiri* (tidiness), *Seiketsu* (standardization), *Seiton* (orderliness), *Seiso* (cleanliness), and *Shitsuke* (discipline), where a clean and well-ordered environment is preferred (Harris, 1995; Liker et al., 2008). Therefore, in order to offer total services in manufacturing industries, continuous improvement of products, achieving highly flexible approaches to rapid and frequent changes and learning from accumulated knowledge in the Japanese manufacturing industry are essential (Ohara, 2005a).

Besides, manufacturing also focuses on flexibility by proposing how organisations can achieve total optimization rather than focusing on mere partial optimization (Ohara and Asada, 2009). When economic crises occurred in the 1980s and 1990s, Toyota maintained its market share by using the

flexible *kaizen* philosophy. Other manufacturing companies such as Honda, Canon and Sharp also survived, as they adapted to changing times by continuing to invest in people (Kinoshita, 2005). Many companies implemented flexible manufacturing cells or flexible manufacturing systems to link enabling technology with their manufacturing processes (Jr Jung, 1996), which not only increases the quality and productivity but also encourages time-reduction.

Kakusin also plays an important role in creating new production materials to secure the company's competitiveness and to increase the value of intellectual property rights (Kinoshita, 2009b). This method is used by Japanese manufacturing firms, and that clearly explains why large funds are invested in a company's R&D and technology know-how progressions. Aiming to reduce inventory to minimal or in ideal cases to zero is another innovative approach to regain profits, and this method is renowned in Toyota's lean production system that includes the *kanban* system (Ohno, 1988; Kinoshita, 2009b).

2.6 Construction Industry in General

Project management dominates in the construction industry and involves constructing a unique architecture one at a time (McCrary et al., 2006). It involves planning, controlling and coordinating from tendering until

handing over of the project, and at the same time, putting balanced weightage in quality, time, scope and price.

The Japanese construction industry is unique in its approach, management system and objectives, with two distinctive characteristics, “design and build/ integrated system” and the “employee training approach”, while putting emphasis on “consistent quality” and “quality before cost” (Chi, 2004). Japanese contractors strive to provide the highest quality for their clients because excellence is achieved through quality (Reid and Sanders, 2012). Nevertheless, there are several common problems that are ongoing issues in the Japanese construction industry, which include constructability, conflicts in structural designs, inadequate temporary work designs, improper construction methods and differing site conditions information (Andi and Minato, 2003). Thus, it is obvious that these problems need to be solved, and it will involve appropriate project management skills.

2.6.1 P2M/KPM’s Principles for Construction Industry

Construction projects nowadays are much more complicated; for example, the use of matrix-style organisation that causes the “two boss” problem and confusion among team members (Taketomi, 2009a). It requires new management skills with integration of an overall management approach such as the ideas of P2M/KPM’s 3K- *kaihatsu*, *kaizen* and *kakusin* in construction industry (Ota, 2009). For instance, the *kaikaku* project organisation of KPM comes into the picture as a solution to this “two-boss

problem"; whereby with this structure, project members are given missions or instructions directly from top management (Taketomi, 2009a). Meanwhile, *kakusin* has also been successfully performed in construction projects with the influence of the four key management elements in P2M/KPM, namely value creation, lifecycle, technology fusion and built environment management (Ota, 2008). The innovation activities in the construction industry are illustrated in Figure 2.4, which is improved and modified from Ota (Ota, 2009). 3K is the core concept used in managing construction projects.

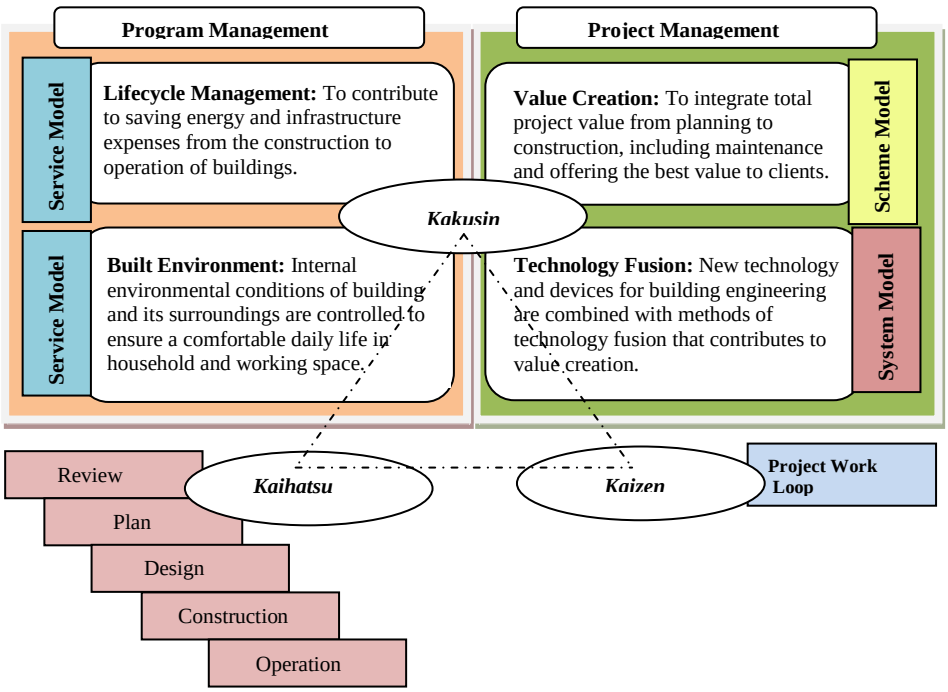


Figure 2.4: Innovation Activities in Construction Industry with 3K in P2M/KPM

Kaihatsu can be learned from experience through the five activities of projects: review, plan, design, construction and operation; corporate *kaizen*

can be attained when a company develops several projects through work loop (Ota, 2009).

An addition to that, value creation (*kaizen*), built environment and lifecycle management are applied in Level 1 of construction, that is, the planning stage, which also includes other management frames of P2M such as strategic, finance and risk management; whereas technology fusion management is utilized in Level 2, called the construction stage, which also consists of organisation, design, cost, quality, procurement, evaluation, schedule and construction process management, and finally, for Level 3, or the final stage known as the operation/maintenance stage, facility management takes place (Ota, 2008). In a case study of constructing a green building in Singapore, innovation in constructing the building has been performed from the point of view of these four key elements (value creation, lifecycle, technology fusion and built environment management) in P2M/KPM (Ota, 2009; Ota, 2010).

Last but not least, flexibility and being able to adapt to the environmental changes is another feature of P2M/KPM. Japanese construction companies adopted this philosophy in order to maintain their businesses during economic crises. The Taisei Corporation, a renowned construction company in Japan, demonstrates the importance of understanding knowledge management when attempting to carry out *kaihatsu* or *kaizen* projects in the construction sector (Tanaka and Tamaki, 2009).

2.7 Information Technology (IT) Industry in General

IT is a must in any organisation. Project management in IT focuses on processes and projects in resources management and in information-sharing platforms that not only enhance the corporate values but also improve strategic systems of an organisation (Ohara, 2005b). It deals with anything from acquisition, processing, storage of data and dissemination of information by a microelectronics-based combination of telecommunications and computing (Longley and Shain, 2012). Banking firms, financial institutions, medical centers, hotel facilities and even government offices apply IT to cope with the current trend. With its wide utilization in most industries, the quality and standard of IT is very much of importance. Quality management or quality assurance of a software development, for instance, is quite subjective and difficult to evaluate because unlike manufacturing products, software itself is kind of abstract as well as its quality level (Ohara, 2005b).

2.7.1 P2M/KPM's Principles for IT Industry

A knowledge base platform has been proposed by KPM in IT projects. It drives the "visualization" of projects and practices the "circulation of knowledge," and is significant for managing IT projects together with features of KPM such as innovation, development and improvement to implement reduction of delivery dates, risks and costs in IT projects (Yunokawa, 2009). Furthermore, IT projects have short delivery dates, and delay found out a few weeks later can lead to fatal problems. Thus, accumulation of experience from

past projects into a knowledge base and compilation of each project's know-how is important (Ohara, 2005b; Yunokawa, 2009). This is a major difference between the manufacturing industry and IT industry. The former deals much with assembly of special hardware to build production lines, while the latter needs to keep project management information as a form of knowledge-based project information sharing to solve problems in real time (Yunokawa, 2009).

In the case of introducing IT systems in projects of business activities, business and project risk management and also assessment of the effects on investment needs to be excuted, and this can be done with KPM by sharing information on the outcomes and risks among IT system stakeholders, such as the project owner, system planner, contractor and system user (Yamamoto, 2006). With a systematic *kakusin* system in information sharing, accumulated know-how from a certain project can be used as future reference that eventually helps not only stakeholders in an IT project to efficiently use the system, but also to reduce project and business risks.

Kaihatsu is also adopted in IT projects, and an example of the application of this essence is utilizing IT in projection technology, or "visualization," in project management (Kogo and Miyagawa, 2009). The application range of IT systems is developed and widened to cater for its needs in market demand. With projection technology, computer graphics are used to make the proposed construction visible or to support other software developments such as disaster prevention software, where the probability of earthquake reoccurrence may be analysed (Kogo and Miyagawa, 2009). IT is

always changing and advancing. Its technology and know-how has to be progressive and always on par with the latest market trend. Therefore, *kaizen* or continuous improvement in IT is a necessity for coping with IT advancement, and at the same time maintaining its cost and securing its time schedule. For a project to be successful, apart from having motivation and good communication among project members, the work and organisational breakdown structures are also vital, as these breakdown structures serve as useful means of visualization (Komatsu, 2006). So, *kaizen* is practised not only in terms of technology advancement but also in work and organisational structures, where workload, job tasks and responsibility among team members or project managers are distributed accordingly. When human resources are organized systematically, and with the ability to "visualize," IT quality can be managed and assured eventually.

IT vendors also applied the 3S-scheme, system and service project model in their projects to promote value creation activities, such as improvements in corporate software, service systems and achieving total innovation (Shirai et al., 2011).

2.8 Engineering Industry in General

Most industries, which include manufacturing, construction and IT require the foundation of engineering. The design, planning, building, analyzing, maintaining and improving of systems, structures, machines,

devices, processes and materials are all basics involved in an engineering industry. Engineering is a wide discipline and encompasses the major basic branches of civil engineering, mechanical engineering, chemical engineering and electrical engineering.

2.8.1 P2M/KPM's Principles for Engineering Industry

Japan is well-known worldwide for its engineering technologies and applications (Reddy, 2011). The adoption of *kaihatsu* can be seen evidently when dealing with engineering designs. They are continuously improving (*kaizen*) in terms of their research and development. New technologies are always being researched to create advancement, and existing technologies are continuously being innovated (*kakusin*) to have better specifications and outcome. Engineering industry applies engineering knowledge and techniques for study, providing improvement both in products and services, planning and implementation of methods, systems, planning and procedures (Ohno, 1988). These are combination of all the 3K –*kakusin, kaihatsu* and *kaizen* concept. Knowledge is continuously created and learned for future betterment.

Long partnership and trust are the strength of Japanese engineering industry, apart from being renowned for practising high quality management (Ohara, 2009b). Maintaining the best quality of product and service is essential for long term business. In order to prevent delay that will destroy reliability, the back type scheduling from end to front is adopted (Ohara,

2009b). This is the approach of KPM. Adopting the mindset of *kaikaku* will eventually introduce new approach and bring in new knowledge in the engineering field that is useful for other branches of industries.

2.9 Other Project Management Standards

2.9.1 PMBOK

There are currently three formal project management standards, which are driven by PMI (Project Management Institute), Association for Project Management (APM) and Japanese ENAA (Engineering Advancement Association of Japan) or JPMF (Japanese Project Management Forum) (Morris et al., 2006).

The PMI (Project Management Institute) attained Project Management Body Of Knowledge (PMBOK) standardization in 1983 and released its first edition of PMBOK in 1996, with updated editions in 2000, 2004, 2008 and 2013 (PMI, 2013). PMBOK describes generally accepted practices and knowledge that are applicable to almost all projects most of the time (Wirth and Tryloff, 1995; Dinsmore and Cabanis-Brewin, 2006).

This standard describes the project management processes, tools, and techniques utilized to manage projects toward a successful outcome, and it divides projects into ten knowledge areas as shown in Figure 2.5: project

integration management, project time management, project scope management, project cost management, project quality management, project human resource management, project communications management, project risk management, project procurement management and project stakeholder management (PMI, 2013).

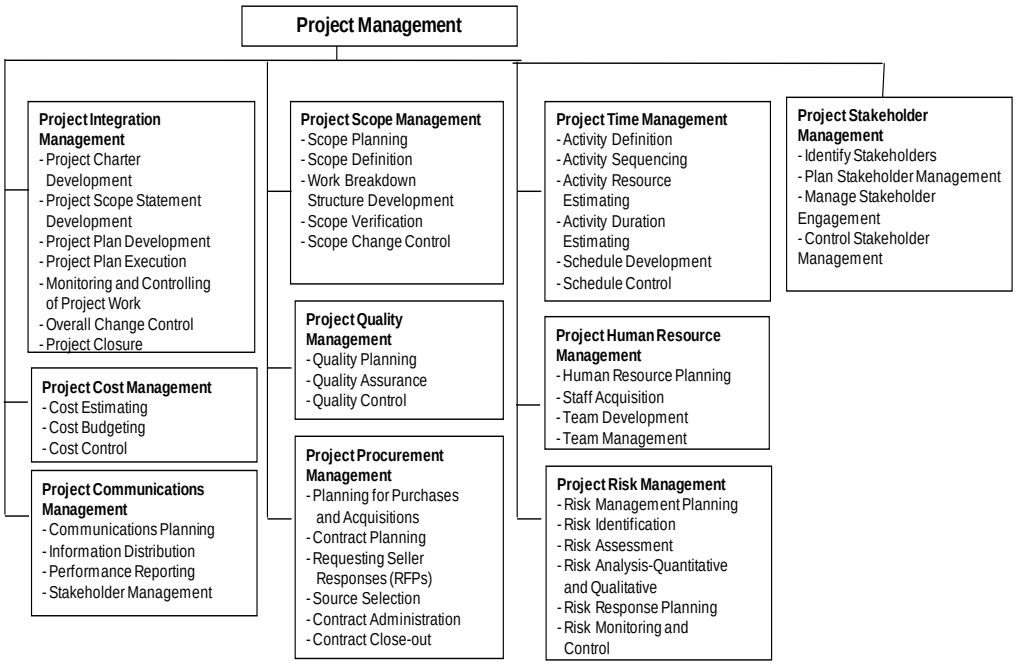


Figure 2.5: PMBOK Guide

Not all key areas are applicable on all types of projects and it is the responsibility of the project management team to determine the appropriateness in a given project (Dinsmore and Cabanis-Brewin, 2006). The main feature of PMBOK is to acquire an expected performance in accordance with stakeholder needs by operational processes (Asada, 2005). Operational processes involve planning, executing and controlling. PMBOK aims at achieving three requirements: time, cost, and project scope (Gao et al., 2007). PMBOK is strictly focused on bringing activities in line with a plan (Williams,

2005) and does not manage resources to achieve objectives (Collyer and Warren, 2009).

Managing projects with PMBOK is found to be beneficial to various industries. A good project management method should be adopted to ensure the organisation achieves its long-term goals.

2.9.2 APMBoK

Association for Project Management Body of Knowledge (APMBoK) is standardization from United Kingdom and consists of seven categories as shown in Table 2.5 (APM, 2006). The Association for Project Management (APM) first published APMBoK in 1991, with its sixth edition published in 2012. APM was founded in 1972, based in United Kingdom, and is the largest member of The International Project Management Association (IPMA) (Ghosh et al., 2012). IPMA is a federation of several national project management associations that was founded in Europe in 1967 (Kousholt, 2007), and is the oldest project management association.

Table 2.5: Categories of APMBoK

Project Management in context				
Project management Project Context Portfolio Management Project Office				
Planning the strategy				
Project Success Criteria and Benefits Management Project Management Plan Stakeholder Management Risk Management Value Management Quality Management Health, Safety & Environment				
Execution the Strategy	**Techniques**	**Business & Commercial**	**Organization & Governance**	**People & the Profession**
Scope Management Scheduling Resource Management Budgeting & Cost Management Change Control Earned Value Information Management and reporting Issue Management	Requirements Management Development Estimating Technology Management Value Engineering Modelling & Testing Configuration Management	Business Case Marketing & Sales Financial Management Procurement Legal Awareness	Project Life Cycle Concept Definition Implementation Hand-over and Close-out Project Reviews Organization Structure Organizational Roles Method and Procedures Governance	Communication Teamwork Leadership Conflict Management Negotiation Human Resource Management Behavioural Characteristics Learning & Development Professionalism &Ethics

APMBoK is more concise, and covers a wider range of project management materials and is less than half of the size of PMBOK (Ghosh et al., 2012). APMBOK goes beyond planning, control tools and techniques and includes technology management, organisation, economics and finance, people skills, human social behaviour and environmental context (Morris and Pinto, 2004).

2.9.3 PRINCE2

Projects IN Controlled Environments (PRINCE2) was established in 1996, formed by a consortium of 150 European organisations. PRINCE2 is a standard for IT projects in the United Kingdom (UK), but the concepts can also be applied to non-IT projects. It is widely recognized and the de facto standard for project management for government agencies in the UK, which is practiced in private sectors in the UK and internationally (Ghosh et al., 2012). This process-based project management standard is a structured yet flexible

management guide that was designed to improve the effectiveness of project management.

Control in PRINCE2 can be achieved in the following three ways:

(i) Dividing the project into manageable, controllable stages

(ii) Managing milestones

(iii) Defining organisational structure of the project team.

The structure of PRINCE2 is illustrated in the following chart. (Figure 2.6)

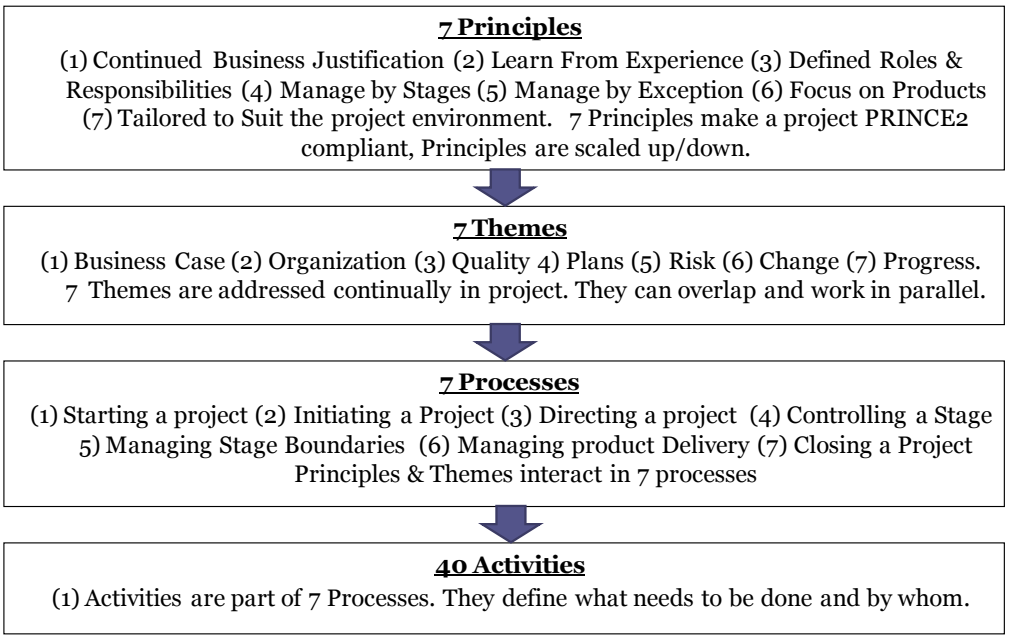


Figure 2.6: Structure of PRINCE2

2.9.4 ICB

IPMA Competence Baseline (ICB) was introduced by IPMA. ICB is the most widely accepted standard after PMBOK (Ghosh et al., 2012). It is more clearly directed at the assessment of behavioural competencies of people,

which are the personal relationships in a team (Crawford, 2009). Therefore, ICB focuses on the capability and skill assessment of the project manager and project team. It is indicated as having applications to *People* (development, assessment and registration/certification of people), as it is especially intended to provide a basis for the IPMA's certification program for project personnel (Crawford, 2009). ICB lists 46 competencies that are practiced by a project manager in a project, where these competencies are known as a collection of knowledge, personal skills, attitude and experience as seen through the eye of the project manager, known as *Eye of Competence* (Caupin et al., 1999).

2.9.5 Summary of Other Project Management Philosophies

It is rather interesting to find out that there are several project management professional associations around the world with their own respective project management body of knowledge standards. Different countries may have different standards that place focus on different aspects, such as knowledge areas, behavioural competencies of people or relationships between projects and their environment. It would be useful to understand the project management trend of each individual project and adopt or apply the appropriate standards and qualifications accordingly.

2.9.6 Brief Comparison of JPM with other major project management methods

The distinct features of P2M/KPM were also evaluated by comparing them with those of PMBOK as it is the most common and well-established

United States (US) method, and has been adopted in many organizations around the world, including in Japanese organizations. This section compares these two globally renowned project management methods and stresses the general features of the eastern and western way of managing projects.

The PMBOK method is narrower in conceptual breadth and scope compared with P2M/KPM (Morris et al., 2006). Before, it deals mainly with projects, whereas P2M/KPM handles program management as well as project management; therefore, evaluations are based on the entire mission rather than on just a specific mission as practiced in project management (PMAJ, 2003). However, four years after the first release of P2M, PMI has published standards for program management as well (PMI, 2006b; Crawford, 2009).

Japanese people has a tendency to practice collectivism and humanism apart from individualism, while the west emphasizes more on individualism (Ohara, 2010). Individualism means work or job tasks are clearly defined and divided for each employee, and appraisals or evaluations are based on individual performance. With the P2M/KPM method, collaboration with colleagues or cooperation among team members is common. Rather than individual goals, they look more into achieving group goals (Liker et al., 2008). Having a common goal facilitates good teamwork and eventually, enhances communication among project members. Bad communications will result in communication conflicts that can provoke misunderstandings

(Ohara, 2011a). Therefore, communication management is vital in managing projects.

Relationship in the Japanese community is important for bringing together or connecting a group of people, such as the associations among project team members or departmental staff. In P2M/KPM, the relationship management framework is one of the 11 individual management domains that is not specifically featured in PMBOK as one of the main knowledge areas. Japanese coworkers have stronger friendships at work compared with their US counterparts (Lincoln and Kalleberg, 1985), because they emphasize human relations and mutual trust (Kinoshita, 2009b). Trust will lead to the formation of long-term relationships (Asada, 2005). For example, longer-term alliances and informal relational contracts have been applied in information technology (IT) related projects in Japan compared with the US approach (Tiwana and Bush, 2007).

Another difference between the PMBOK and P2M/KPM methods is that the former is relatively goal-oriented, whereas the latter is mission-driven (Ohara, 2006). In order to accomplish a mission, P2M takes into account not only each process that comes along the way but also the detailed content of each process. It uses clear and measureable success measures for each project. Mission-driven approach enables solving of complex problems by transforming strategic aims into value creation operations and capital recovery through the 3S project models (Bredillet, 2009). By contrast, PMBOK is prone to place emphasis on meeting the project objectives

through initiating, planning, executing, monitoring and controlling, and closing (PMI, 2013). In the construction industry, for instance, there is a need to go through certain stages, such as design, planning, construction, commissioning, and maintenance. These stages of the entire project follow a phased development concept, whereas parallel or concurrent development concept applies to JPM (Tiwana and Bush, 2007). Furthermore, P2M/KPM is the only standard that furnishes an integration management model across programs and portfolios of projects at organisation level (Ohara, 2001; Crawford, 2009).

Last but not least, another point of difference between these two approaches is their styles of decision making, thinking and mindsets. In P2M/KPM, the Japanese tend to be uncertain and ambiguous, whereas PMBOK practices definiteness and clarity (Ohara, 2010). In the mindset of the western, logical thinking is emphasized and this eventually removes all ambiguities. Things are defined and made clear. In terms of decision making, American business leaders tend to be more performance oriented (House et al., 2004). They make decisions that will create opportunities for their efforts to be recognized, thus reflects a comparatively higher need for achievement (Martisons and Davison, 2007). In contrast to this, the Japanese people give priority to inter-human relations (Ohara, 2010), thus creating an indecisive environment. When making a decision, Japanese business leaders have a tendency to favor outcomes or results that preserve already established relationships or that could assist in cultivating new ones (Martisons and Davison, 2007). They need to consider the other party's

concerns and conditions before finalizing a conclusion or making a decision. Conclusions are often made based on a group verdict.

Overall, a comparison of the differences between P2M/KPM and PMBOK is summarized in Table 2.6.

Table 2.6: Comparison between P2M/KPM and PMBOK

P2M/KPM	PMBOK
Scope: -Handles programs & projects (Ohara and Asada, 2009). - Broader in scope (Morris et al, 2006). -Evaluations based on the entire mission (Ohara, 2003). -Collectivism (Ohara, 2010).	**Scope:** -Deals mainly with project level (PMI, 2013). -Narrower in scope (Morris et al., 2006). -Evaluations made on specific missions (Ohara, 2003). -Individualism (Ohara, 2010)
Managerial approach: - Concurrent development and integration management (Ohara, 2001; Tiwana and Bush, 2007; Crawford, 2009). -Lifelong employment and loyalty (Oliver and Wilkinson, 1992). - Do not practice layoff system in conventional model (Kinoshita, 2009b; Rashid et al., 2009). -Partially adopts the layoff system (Schonberger, 2007; Kinoshita, 2009b).	**Managerial approach:** - Phased development concept (Tiwana and Bush, 2007). -Practice layoff system (Meek, 1999).
Problem-solving methods: -Flexibility approach (Glover et al., 2011). -Mission-oriented: Focus on not only clients' goals, but also how they are achieved, taking into account opinions and suggestions (Ohara, 2006). -Ambiguous, uncertain (Ohara, 2010). -Decision making outcomes favor inter-human relations (Martinsons and Davison, 2007).	**Problem-solving methods:** - Fixed approach on schedule, cost and quality (Dinsmore and Cabanis-Brewin, 2006). -Goal-oriented: Focus on delivering whatever is required by clients without considering other factors as long as the result is achieved (Ohara, 2006). -Definiteness, clarity (Ohara, 2010). - Decision making outcomes favor performance oriented (House et al, 2004) and recognition of effort (Martinsons and Davison, 2007).

Comparing with PRINCE2, P2M/KPM does not specify its scope only on IT projects. Although PRINCE2 also covers non-IT projects, it mainly emphasizes on projects related with IT. ICB is more on behavioural competencies of people, whereas P2M/KPM concentrates more on its philosophies of theories, idealogy and mindset of the project managers.

2.10 Research Gap

It was mentioned in the problem statement in Chapter 1 that there are lack of studies done on P2M/KPM. To strongly support the statement here, a list of published journals and articles in English language from 2000 to 2014 were reviewed as shown in Bibliography A. These listed journal papers were project management related articles from previous studies with research areas closest to the current study. The list was organized according to the published year, author(s), journal title, research area studied, title of article and a brief review on it. Scopes of research area included in the list were philosophies/concepts/body of knowledge (JPM and non-JPM) of project management, cross-cultural studies and the correlation between project management performance and project success. From the table tabulated in Bibliography A, there were 90 articles under the category of philosophy, 27 articles for cross-cultural studies, 32 articles for correlational studies and 11 articles on cross-areas of research. Based on the previous articles, the JPM methods mentioned were normally *kaizen*, lean thinking or just-in-time (JIT) and there were not many on P2M/KPM. On top of that, body of knowledge

chosen in most of the previous studies was the commonly renowned Project Management Body of Knowledge (PMBOK) in United States. The scope in the list was subsequently narrowed down, in search of specifically P2M/KPM related researches. Eventually, only a handful of it was found. There were approximately 12 published articles and 8 conference papers related to P2M/KPM within the period of 2000 to 2014. There were no articles found in 2000, as the official establishment of P2M/KPM was only from 2001 onwards. Most of the articles were focused on manufacturing industry. Areas discussed in those articles briefly included the following but not limited to (i) review on P2M/KPM ideology (Low and Chong, 2012a); (ii) approach of P2M/KPM in manufacturing, construction and IT industries (Low and Chong, 2012b); (iii) *kaizen* events (Doolen et al, 2008; Glover et al, 2014). Based on these findings, it is rather convincing that P2M/KPM related journals are rarely published and probably not many studies were done in this area. There is already a lack of previous studies on P2M/KPM on the whole, let alone the application of its management methods. The research on P2M/KPM is relatively new, with the fact that its official emergence was approximately more than a little of a decade ago (from the year 2001). It is obvious that there exists a gap in this research area and needs to be addressed further. During the first half of the period of study (from year 2001 until 2007), there were approximately 5 documents published, but the number of articles literally tripled to a figure of 18 within the second half of the period of study (from year 2008 until 2014). This is a strong indication that P2M/KPM research is currently very aggressive and actively progressing. It is profoundly important to have deep penetration into this field and conduct further research on P2M/KPM as it is

an effective managing method and essentially important (Kinoshita, 2009a; Imaguchi, 2009).

Cross-cultural study was included as one of the research areas in Bibliography A because cultural aspect plays a vital role in project managing, especially for international projects. There are many global status projects that may need to be managed by several project managers internationally. These international projects are very much culturally oriented and the success of the project depends on how cultural differences among the countries involved are managed. Therefore, it is important to study the cross-cultural differences when involving global project practitioners. The Japanese government has emphasized economic internationalization and globalization (Ananthram et al, 2010). They initiated the expansion of Japanese organisations abroad, especially in Asia (Pop, A. M. and Pop, D., 2007). Joint ventures or merging of organisations globally may create and enhance new business ideas. Eventually, new technologies and business models would create new business opportunities (Kushida, 2012). Apart from building business network, Japanese companies have also started investing overseas because of lower start-up costs and cheaper manpower resources. Some organisations are subsidiaries of their parent companies in Japan, while others are joint ventures with local companies. Concluding from these points, it clearly denotes the importance of having cross-countries input for the research, i.e., Japanese organisations outside of Japan, namely Malaysia and within Japan; and to understand the cultural practices in project management of these two countries. Malaysia is one of the nations with many trades and business relations with

Japan. Since the Japanese investors are increasing in this region, it will be valuable to understand further their philosophy and way of management too. Obtaining a deeper understanding in P2M/KPM management methods and finding out how they are related to the success or failure of a project in Japanese organisations in these two countries, i.e., Japan and Malaysia, will be an eye opener, and could eventually open up a wider scope of information plus contribution into the project management knowledge area.

Different countries are governed with their own different cultures and project managers in different countries may run projects of a similar nature with different approaches in order to bridge the cultural differences of international stakeholders (Saludin, 2005; Fisher, 2011). Therefore, the basic foundation of managing a project would be similar and universal. So, if the basic philosophies, theories, practices and approach to project management that play an important role in many areas of globalization to most management activities could be understood, it will be beneficial to international project practitioners. The philosophies and theories are important as these will form the basic skills of a successful project manager.

2.11 Conclusion

This chapter outlines the literature review on JPM's P2M/KPM and provides brief explanations on some major project management standards currently being practiced worldwide. The review provides a useful guideline

to design the semi-structured interviews and also assists in structuring the questionnaire. The scope of literature review has focused on the background, the establishment, development and evolution of P2M/KPM. It also discusses the general application of P2M/KPM in manufacturing, construction, information technology and engineering. A total of six research hypotheses were also discussed addressing to the research objectives such as to identify the application of P2M/KPM management methods or to find out the association or correlation between the two countries. These hypotheses will be tested with corresponding analyses methods as discussed further in Chapter 3-Research Methodology. Eventually, the review shows that P2M/KPM is quite established, especially in Japan, according to numerous published journals mainly in Japanese language. Through this literature review especially on P2M/KPM, it explains mainly on its philosophies, ideology and mindset approach. There could be a lack of information and details on the application of its management methods. Information on comparison among the industries such as manufacturing and construction, could also rise as an issue and be of interest among the project practitioners in future. To complete the current review or to address to the uncertainties by previous researchers, this research covers the application of P2M/KPM management methods in Japanese organizations and a comparison among the industries with an analytical approach has been conducted.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

Basically, primary data and secondary data were collected for this research. The primary data source was collected through semi-structured one-to-one basis personal interviews and questionnaire surveys. Survey is the most ubiquitous and familiar form of research in social sciences studies. This chapter covers the research hypotheses and methodologies used in this research study.

3.2 Research Hypotheses

With regard to the rankings by the respondents on the application of P2M/KPM management methods, it is assumed that there is a positive agreement of the respondents' rankings and are inter-related to each other within the group. From the above assumption, the first hypothesis proposed that:

Hypothesis 1: There is a significant level of agreement among the respondents within each group of the survey on the rankings of the

management methods.

Each individual P2M/KPM management method is perceived to be significantly practiced/applied/adopted by project managers in both Japan and Malaysia when managing projects. Therefore, the next hypothesis is obtained.

Hypothesis 2: The P2M/KPM management methods are significantly applied from the stance of Japanese organisations in Japan and Malaysia.

The third hypothesis proposes that the perceptions of project managers in Japan and Malaysia on management methods applied are significantly correlated.

Hypothesis 3: There is a positive statistical correlation between Japanese project managers and Malaysian project managers on the perceptions of P2M/KPM management methods applied.

The application of P2M/KPM management methods in Japanese organisations in Japan and Malaysia are presumed to have a degree of similarity, since the basic culture or practice of the organisations may not change despite being in different countries. However, there could be an extent of differences as well between the two countries that influences the attitudes of project managers and managerial culture, as after all both originated from two different cultures altogether. The following is the proposed hypothesis related to the similarities or differences in the application of P2M/KPM management

methods between the two countries.

Hypothesis 4: There is significant difference on the application of each individual P2M/KPM management method between the Japanese organisations in Japan and Malaysia.

The application of P2M/KPM management methods in Japanese organisations in different industries may vary. Since the identified P2M/KPM management methods were not specifically narrowed down to specific industries, the management methods are assumed to be applied in all industries covered in this research.

Hypothesis 5: There is significant difference in perceptions on P2M/KPM management methods among the different industries, namely manufacturing, construction, IT, engineering and others. However, among the management methods listed, there could be a handful that may receive more emphasis in certain industries.

Five of the hypotheses evaluate the second objective of this research, i.e., to identify the application of P2M/KPM from the view of Japanese organisations in Japan and Malaysia.

The success or failure of a project is influenced by various factors in the project environment. Different management methods or management skills affect the project performance and its outcome. It is presumed that the

individual P2M/KPM management method has a positive influence on the project's success rates. Therefore, the influence of each management method on the project success was analysed and the following hypothesis is attained.

Hypothesis 6: There is a positive statistical relationship between each management method and project success.

Adopting the regression analysis to create a regression model, this hypothesis explores the relationships of management methods variables with project success. The last hypothesis evaluates the third objective of the research, i.e., to develop a regression model by identifying the influential parameters of P2M/KPM that correlate with the success of the project.

3.3 Framework of Research Methodology

Six main phases of research methodology were discussed. Figure 3.1 illustrates the flow chart of the methodology.

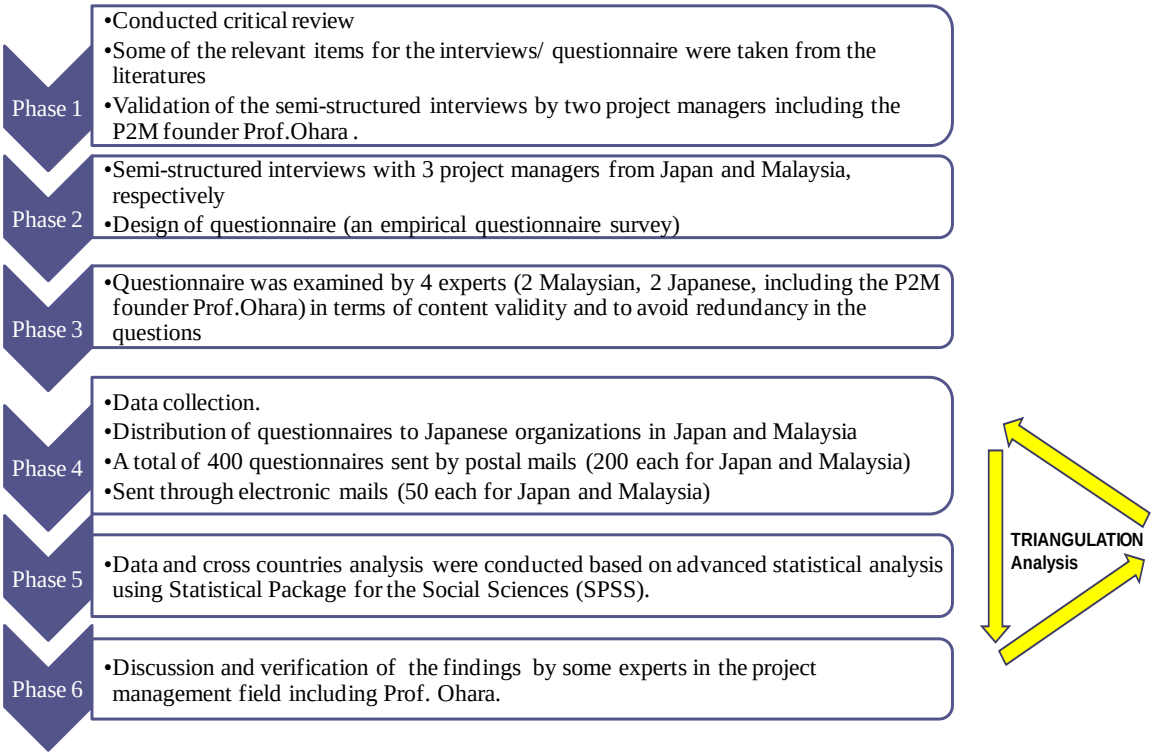


Figure 3.1: Flow of Research Methodology

3.4 Critical Review

Firstly, an exploratory study was carried out in the form of critical review method to examine the project management theories, where the documents were analysed and relevant items were identified and extracted from literatures, such as articles, major journals, conference proceedings, Japanese project management guidebooks, project management magazines, published books and sources from the internet. This critical review method is useful to obtain the information that address to the first objective of this research. Information will not be overlooked by using this review method, which is done thoroughly and precisely. Relevant information and those that

were feasible to the research were used in the design of questions for the interviews and questionnaire.

3.5 Semi-structured Interviews

Interviews are one of the most important sources of information in terms of case study research (Yin, 2009). This research has adopted the case study research method, where six case studies were conducted with six Japanese organisations utilising semi-structured interviews. The semi-structured interviews were carried out with three project managers from Japan and Malaysia, respectively, covering manufacturing, construction and IT/engineering fields. Semi-structured interviews are predominantly of qualitative nature and useful for interviewers to have the freedom to explore general views or opinions in more detail. It is more flexible and the interviewers/researchers can attempt to fix and control the circumstances of the interview to ensure data obtained are relevant to the research (Moore, 2000). Interviewees also do have the opportunity to elaborate more on the issue and convey feedbacks. The semi-structured interview was selected as a method of research in this study due to its flexibility and appropriateness to the study needs. Questions were structured utilizing the knowledge obtained from critical reviews and they were set in a simple logical sequence to have a smooth discussion flow. An interview guide was drafted to help pose the questions needed to be addressed during the conversation and how to pose follow-ups questions. The questions were prepared based on the aim and

objectives of the research and designed in a proper order to guide the interviewees to elaborate more on the management methods that they practice while managing projects. Other than asking the interviewee to elaborating more, possible responses were mentally prepared in order to ensure a smooth conversation is achieved when interviewee voice out their rationale or discuss on other influencing conditions on the research area. The questions were sequenced in such a way to lead and direct the project practioners to share their opinions casually during the conversation and at the same time, in a more thoroughly manner. Next, the potential sources of information were sorted, i.e., to identify the suitability of targeted organisations and relevancy of project managers. Selected key informants were contacted to set for an appointment. A simple interview protocol with rules to follow were fixed, such as the opening sentences at the beginning of the interview were determined which included informing the interviewee on the consent and confidentiality of the interviewee and organisation. Other information that should be conveyed to the interviewee prior to the commencement of the interview would be explanation on the purpose of the interview, the expected duration of the interview and why they were selected. These simple rules will be conducted for each interview to ensure consistency among interviews, hence, increasing the reliability of the findings. During the interview, responses/data was recorded with audiotape and manually by taking notes. Following the interview, key data were summarized immediately by reviewing the notes and audiotape was referred for clarity. The questions were proofread and validated by two experts, one of whom included the P2M founder, Professor Shigenobu Ohara. After each interview, notes transcribed were reviewed and content

analysis was adopted to analyse the data obtained from the interviews. The semi-structured interview questions are attached in Appendix B (for Japanese organisations in Malaysia) and Appendix C (for Japanese organisations in Japan).

A process flow has been developed to indicate how the semi-structured interview was carried out. The process model is about the systematic flow in ethnomethodology of field conversation which addresses for content analysis (Shank, 2006). Figure 3.2 illustrates the process flow of the semi-structured interview.

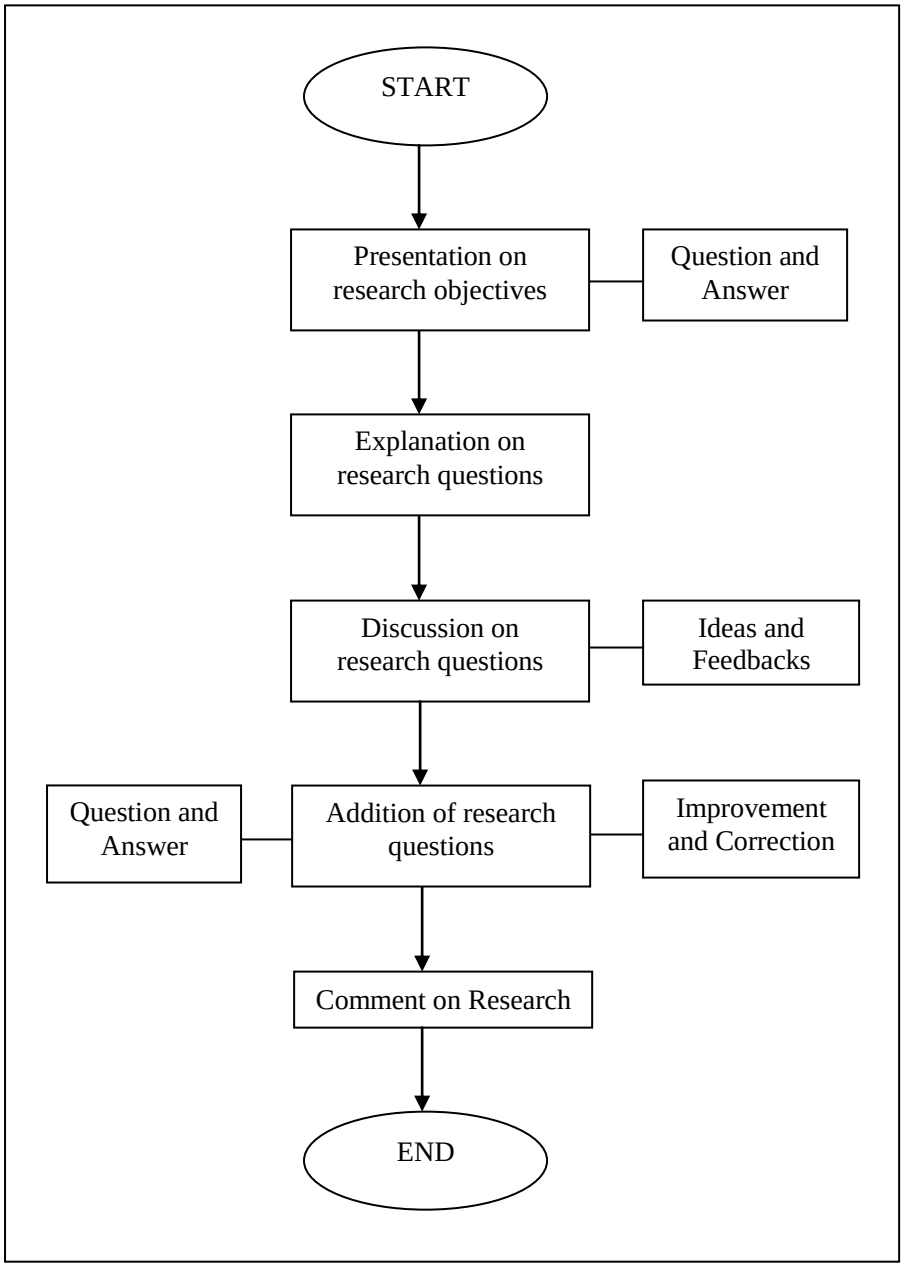


Figure 3.2: Process Flow of Semi-structured Interview

3.6 Design of Questionnaire

This research adopted the empirical questionnaire survey method. Therefore, the P2M/KPM management methods identified (total: 35 methods/factors) from document analyses and literature reviews were then

used to design the questionnaire. The 35 management methods are shown in Table 3.1.

Table 3.1: P2M/KPM management methods

Phase 1: Conceptual / Formation / Initiating / Definition
1. Clarifying strategic targets and setting short-term targets to achieve them. An action plan is drawn up to realize the targets.
2. Analyzing the current organisational characteristics such as values and norms; and clarifying the difference between the ideal and present standard norm, before designing a suitable norm for the organisation.
3. A conceptual plan is used to develop a report of feasibility study (scheme report) with the intention to facilitate flexible adaption to possible occurrence of changes.
4. When making a difficult decision, established relationships with the vendors/clients (inter-human relations) will be prioritized.
5. In managing financial matters of a project, reasonable burden distribution and risk sharing among stakeholders are practiced.
6. Having a system to support each management work and the results of each management will be accumulated and reused as knowledge resources.
Phase 2: Planning / Build up / Design / Start up
1. Encouraging comprehensive breakthrough by application and combination of new knowledge to upgrade the performance.
2. Project information is shared and all data of the project is displayed. Emphasizing on transparency and visualization of objectives.
3. Setting up a project organisation that is under the direct control of top management. Project managers receive missions conveyed directly from top management.
4. Daily morning assembly / group meeting is conducted before the start of a working day.
5. Systems approach to systematically design the details for implementation of work processes and engineering techniques in the project.
6. To plan, organize, adjust and control all the required resources such as workforce, materials, finances, time, fundamental resources and intellectual resources in an integrated manner.
Phase 3: Implementation / Production / Progress
1. Emphasis on teamwork and achieving group goals.
2. When managing a project, adapting to changes in environment when necessary is practiced. This means the possibility of deviating from the initial plans and objectives.
3. Practicing 'target management' in handling projects where time limit for each milestone is set and the starting date is decided counting backward from that deadline. Also known as backward operation process planning system.
4. Applying concurrent engineering / simultaneous parallel development.
5. Emphasizing value creation activities such as development of new products/business models, operational innovation, through continuous improvement in routine processes.
6. Acquiring new knowledge and information through practicing innovation is often encouraged to enhance competitive advantage.
7. Encouraging continuous improvement at the work-floor level to find ways of making new knowledge become beneficial.
8. To bridge cultural barriers between different groups, mutual trust and respect to each other in a complex project environment are practiced.

Table 3.1: P2M/KPM management methods (continued)
Phase 4: Acceptance / Handover
1. Upon project completion, a lessons-learned review or reflection activity is conducted.
2. Possessing longer-term alliances (e.g., with suppliers, clients) and ability to obtain informal relational contracts in future.
3. Upon completion of a certain project, consideration of short-term and long-term effects, and verification of risk and effect is done to ensure the realization of benefits and satisfaction of stakeholders.
4. After a completion of product/services provided, a routine work is designed in a work program for maintenance based on knowledge management.
General practice in managing a project across all above phases
1. Encouraging cross-divisional project team system / cross-departmental process.
2. Encouraging lifelong employment.
3. Employing part-timers / contract workers/temporary staffs.
4. Practicing lay-offs when the organisation or economy is facing downturn.
5. Emphasizing on continual training and human development education.
6. The predetermined project organisation structure can be altered due to situation changes in midst of project.
7. Decision making tend to be uncertain because of collective agreement and group verdict are emphasized.
8. Emphasizing personal evaluation system/evaluation on individual KPI (key performance index) as individual job tasks and roles in a project are clearly defined and highlighted.
9. Emphasis on identifying and analyzing constraint conditions and uncertainties from all aspects of a project.
10. In order to cope with the environmental changes, reorganizing and restructuring of company/business are practiced.
11. Team members and those from other divisions are encouraged to voice out ideas for problem solving and improvement.

On top of that, the findings from the semi-structured interviews were also used as a guideline in the structuring of the questionnaire. The semi-structured interviews work as a preliminary study to project a general idea on how Japanese organisations in Japan and Malaysia manage their projects. The questionnaire has three main sessions, namely, demography session, rating on the level of application of the management methods using a five-point Likert scale and an open-ended session to evaluating the success rates of the projects managed with the mentioned management methods. An extract of the blank questionnaire is attached in Appendix D. The questionnaire was designed both in English and Japanese versions in order for the Japanese organisations to

have a better understanding in the questionnaires. Both the English and Japanese versions were proofread by the P2M/KPM founder and an English/Japanese professional translator/interpreter to ensure the contents have no discrepancies.

The questionnaire was examined by four well-experienced experts (two Malaysians, two Japanese, including the P2M/KPM founder Professor Ohara) to verify the adequacy of information, items and clarity of the questionnaire in terms of content validity and to avoid redundancy in the questions. Some questions have been rephrased, and the finalized version of the questionnaire was found clear, appropriate and sufficient. To assess each question in the questionnaire, an explanation on the relevancy was equipped with each and every question. The questionnaire with the explanation is attached in Appendix E.

3.7 Data Collection

Questionnaires were distributed randomly to a population of Japanese organisations in Japan and Malaysia. The survey subjects for this research were project managers of Japanese organisations in Japan and Malaysia encompassing a wide range of industries, mainly from manufacturing, construction, information technology and engineering. A total of 500 questionnaires were sent by postal mails (200 each, for Japan and Malaysia), and another 50 electronic questionnaires, each for Japan and Malaysia

respectively, were sent through electronic mails. In order to remind the return of the completed questionnaire forms or to clarify on any unclear items on the questionnaire, electronic communications such as electronic mails and follow-up telephone calls were launched whenever possible.

3.8 Data Analysis

Data and cross-country analysis were conducted based on advanced statistical analysis method using Statistical Package for the Social Sciences (SPSS). Figure 3.3 illustrates the statistical analysis conducted with SPSS.

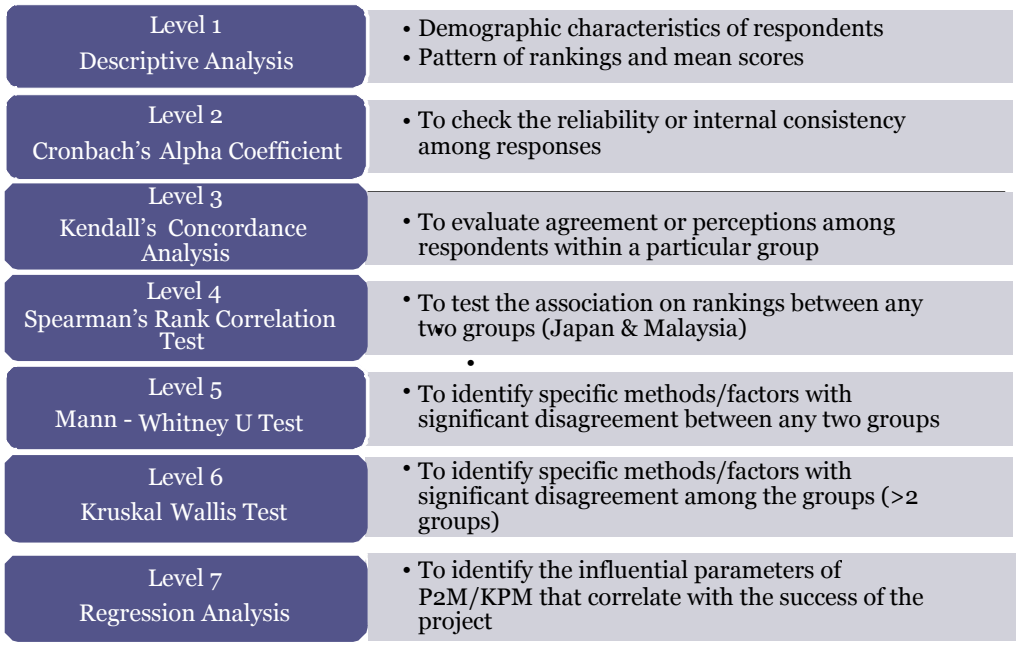


Figure 3.3: Data Analysis Framework with SPSS

3.8.1 Descriptive Analysis

This section describes the demographic profile of the population. It gives essential information that includes the background information on the participated respondents. The information was useful to understand the appropriateness and eligibility of the respondents. In this research, four generic questions were asked, which included (i) the years of tenure with the company; (ii) the years of experience related to project management; (iii) nature of organisation; and (iv) type of organisation (for Malaysia only).

3.8.2 Cronbach's Alpha Coefficient

To measure the reliability of the questionnaire results, Cronbach's alpha, α, coefficient should be adopted. The coefficient alpha, developed by Cronbach in 1951, was the most commonly and widely used index of internal consistency for estimating the reliability of measurement instruments such as questionnaires, scales, or inventories (Raykov, 1997) in various fields including sociology (Cortina, 1993). The higher the score obtained, the more reliable the generated scale is, and an acceptable value for Cronbach's alpha will have to be a value of at least 0.7 to 0.8; values substantially lower will indicate an unreliable scale (Kline, 1999; Field, 2013). It is important to have reliable data in order to proceed with the following analyses. This will provide accurate findings and useable results.

3.8.3 Mean Scores & T-test

Mean is a simple statistical model analysing the centre of a distribution of scores (Field, 2013). It renders an overall trend of the results obtained and gives the information if the particular management method is applied as per the second objective of this research. Mean scores was used to know which management method was highly emphasized, or least applied/ practised by the project managers. Although there are other types of average, i.e., mode and median, mean average was used to obtain precisely up till decimal points the scale in the five-point Likert scale. Median is the middle value obtained after listing down all the data in numerical order. Therefore, the list of obtained scores from the respondents has to be listed in order beforehand. However, if there is an occurence of the same value in the middle of the list, that value will be taken as the median and this may not be the accurate value that exhibits the average of the Likert scale score. Mode is the value that occurs most in the list of data or the value with the most frequency. If there is no occurence of the same value in the list, there will be no mode. Therefore, mode or median is not suitable to be used in this research as mean average will give a more precise and accurate score.

To further confirm the results of mean score, one sample *t*-test can be conducted and can be used to test the second hypothesis. Although *t*-test is a parametric statistic test, it can be conducted with non-normal distribution data as long as the sample size is big, i.e. a sample size that is more than 30 (Field,

2013). This can be done by setting a fixed particular value that is compared with the mean of the sample population.

In this research, the sample size used is 100 which is considered to be sufficient as it is larger than the suggested sample size of 30 (Field, 2013). The result analyses obtained with this sample size would be adequate to represent the general trend of the population.

3.8.4 Kendall's Concordance Analysis

Kendall's concordance (Kendall's W) analysis is to specifically look at the agreement level between the raters. Kendall's W is used to measure the strength of association among the ranking of items. In this research, the analysis was used to investigate the rankings by the respondents in each particular group as to address to the objective of the first hypothesis. This coefficient of concordance permits multiple judges (rather than just two), allowing it to be a quality that is most suitable to test inter-judge reliability (Siegel and Castellan, 1988).

3.8.5 Spearman's Rank Correlation Coefficient

Among all the rank based statistics, the Spearman rank correlation coefficient was the earliest to be developed and is probably the best known today (Siegel and Castellan, 1988). There are times where this statistic test is referred to as Spearman's rho, represented by r_s. It is a standardized measure

of the strength of association between two different groups that does not depend on the assumptions of a parametric test (Field, 2013). This analysis was selected to check if there is any similar substantial agreement between Malaysia and Japan that addresses the third hypothesis of this research.

3.8.6 Mann-Whitney U Test

Mann-Whitney U test was to test two independent samples if there were differences between them. It tests whether the populations where the two samples are collected have the same location (Field, 2013). This test is one of the most powerful among the non-parametric tests, usually used as an alternative to the parametric *t*-test when the assumptions of parametric data are not met (Siegel and Castellan, 1988). In this research, this test was selected to investigate if there were any significant differences between the two countries in perceptions on each management methods which correspond to test the fourth hypothesis of the research.

3.8.7 Kruskal-Wallis Test

Kruskal-Wallis test, which is a non-parametric test, was conducted to check whether more than two independent groups differ with one another. In this study, the test was done to check if there were differences in perceptions on the management methods among the different organisations that is used to test the fifth hypothesis of the research. However, this test will only show that a difference exists, and it does not tell exactly where the differences lie (Field,

2013). Further *post hoc* tests will be required to identify where the differences are found. Mann-Whitney U tests were used as the non-parametric *post hoc* tests.

3.8.8 Regression Analysis

To look at the influence each management method has on the success rate, a linear or simple regression analysis was conducted. This analysis tests the sixth hypothesis of this research that concurrently linked to the third objective of this research. In a simple regression test, a linear model is used to predict one variable or outcome from a single predictor variable. In the scenario of this research, the outcome variable will be the success rate, while the predictor variable will be each management method (or parameter). In this regression analysis segment, the term 'parameter' will be utilized to represent 'management methods' as it is more appropriate in the sense, the term parameter means a variable or quantity whose values determine the characteristics of something or a statistical population. In this case, these 35 management methods are utilized to measure the success rates of projects. Therefore, these 35 management methods are a set of parameters of the success rate. Hence, with respect to results analysis and discussions relevant to regression model, it will be standardized to use 'parameter' instead of 'management methods'.

The general form of the model is $Y_i = (b_0 + b_1 X_i)$ where Y is the outcome variable (in this research it is correspondent to 'success rate'), X is

the predictor (in this research, it corresponds with each of the 35 parameters), b_1 is the regression coefficient associated with the parameter and b_0 is the value of the outcome analysis when the predictor is zero (Field, 2013). Value b_0 is also known as *y*-intercept. b_1 also represents the gradient of the regression line, where the value of this b_1 indicates the change found in the outcome resulting from a unit change in the parameter. Also, another point to look into is the level of significance. As a general rule, if the significance is observed to be less than 0.05 ($p<0.05$), the parameter contributes significantly in predicting the outcome. From the results analysis, another value that is of interest is the coefficient of determination, R^2 value, which represents the amount of variance in the outcome explained by the model. This value should be expressed in percentage, by multiplying it with 100.

For the model to be reliable and accurate, choosing the correct sample size is important. Generally, for a simple regression analysis, the minimum appropriate size of the sample with a single independent variable is 30 (Hair et al., 2006). However, the sample size required also depends on the size of the effect that is acquired to detect, that is how well the predictors predict the outcome. The size of effect measures the strength of relationship between two variables. When the expected size of effect is large, it is considered to be statistically significant. Figure 3.4 shows the sample size required in regression depending on the number of predictors (in this research, corresponds with the number of parameters) and the size of expected effect (Field, 2013).

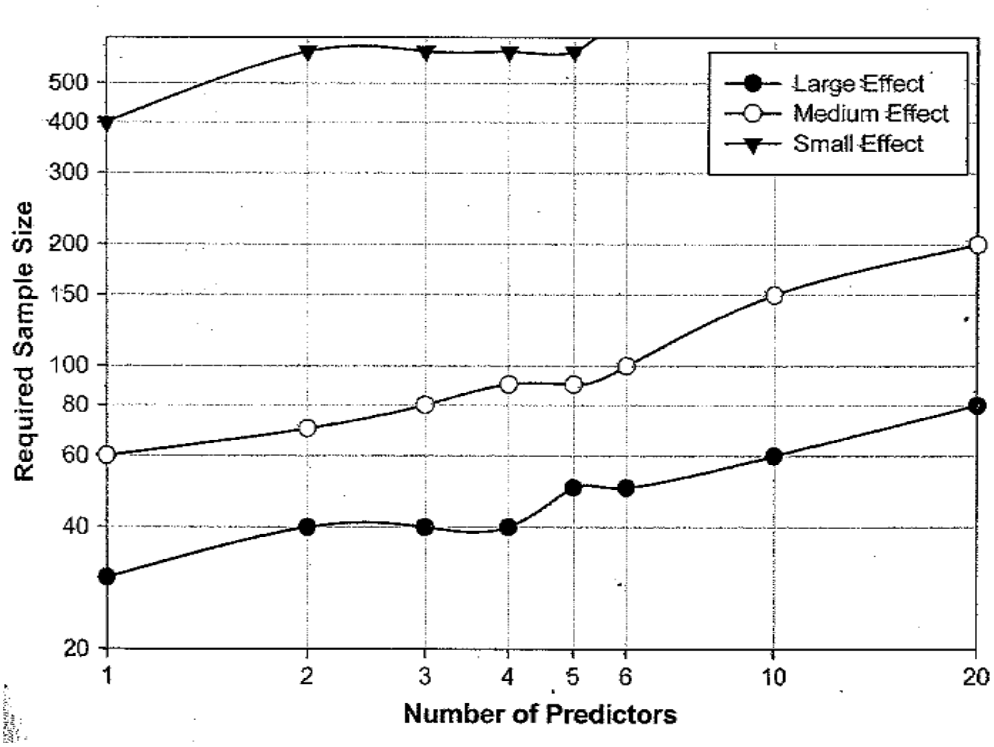


Figure 3.4: Sample Size Required vs Number of Predictors

From this graph, whether the expected effect is large, medium or small, the minimum sample size is approximately 30 for a single parameter. Since the sample size for this research is larger than 30, it can be assured that the obtained model is reliable and accurate.

3.9 Verification of Results

The triangulation analysis was utilized as a mean of verification of the research results. This method is often used and is the preferred line in social science studies. In this triangulation method, the validation of the results was done through cross verification from two or more sources. In a particular study, two or more methods are used to check the results. If different methods lead to

the same outcome or results, the obtained findings are believed to be reliable and valid. Five experts, including the P2M founder Professor Shigenobu Ohara, were invited to verify the findings of the research. A sequence of the following validation process was conducted (Figure 3.5). The validation process has undergone four main steps, those are, observation, analysation, interpretation and verification.

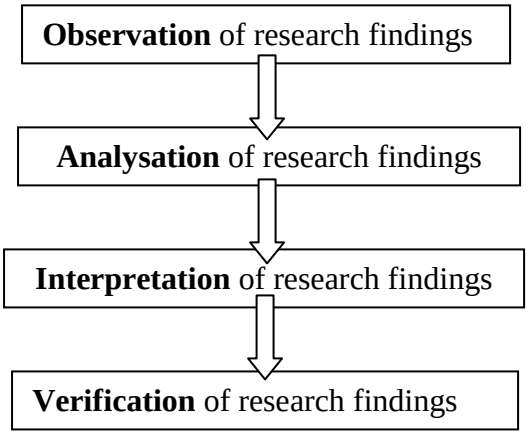


Figure 3.5: Validation Process of Research Results

3.10 Summary

This chapter outlines a detailed methodology to guide the research process flow. The secondary data was mainly collected from critical review and document analysis. On top of that, semi-structured interviews and survey by questionnaire were adopted for the primary data collection. As for the data analysis and testing, the SPSS statistical software was used. In the final stage, the research results were validated by few experts in the project management field. All methods conducted in the research were interconnected and equally important to achieve the research objectives.

CHAPTER 4

RESULTS AND DISCUSSION - RESULTS OF CRITICAL REVIEWS AND SEMI-STRUCTURED INTERVIEW

4.1 Introduction

The results and discussion will be discussed in two chapters; Chapter 4 – Results on critical reviews, semi-structured interview and Chapter 5 – Results on questionnaire survey. This chapter discusses on findings and analyses the outcome of the research that covers the results of the document analyses, critical reviews of literature and semi-structured interview. The semi-structured interview was conducted with project management experts. The goals of the interview were to validate the process of research and provide a guideline on the questionnaire design.

4.2 Critical Reviews

From the critical review done on P2M/KPM, relevant management methods have been carefully filtered, extracted and identified. Based on the reviews, a total of 35 management methods were listed and segregated into five categories, namely,

Phase 1: Conceptual/Formation/Initiating/Definition,

Phase 2: Planning/Build up/Design/Start up,

Phase 3: Implementation/ Production/Progress,

Phase 4: Acceptance/Handover,

plus the General phase as shown in Figure 4.1 below. These phases are generally found when managing a certain project.

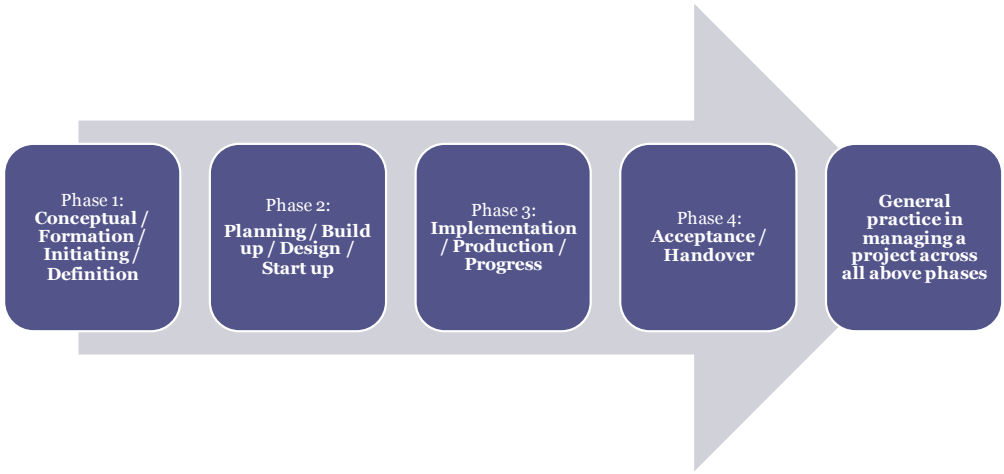


Figure 4.1: General Phases in Project Managing

Table 4.1-Table 4.5 shows the finalized 35 items that were used in the five categories in the questionnaire. The explanations to each question were listed as well. The keywords were also underlined for easier description in the results table later on.

Table 4.1: Management Methods – Phase 1

Question	Explanation
Phase 1: Conceptual / Formation / Initiating / Definition	
1. Clarifying strategic targets and setting short-term targets to achieve them. An action plan is drawn up to realize the targets.	*The first step is a kaikaku process. For example, the usage of project & program balanced scorecard (PBSC) for strategic planning and concept control of projects. PBSC is a strategic planning and control concept for projects was established by the Japanese study group. Project-BSC is also used for evaluating projects in multi-measures.*
2. Analyzing the current organisational characteristics such as values and norms; and clarifying the difference between the ideal and present standard norm, before designing a suitable norm for the organisation.	*There are altogether 4 steps in a kaikaku process. The first being 'Clarifying strategic targets (refer Q1 above)..'. The subsequent 3 steps are analyzing the current organisational characteristics, clarifying them and designing a suitable norm.*
3. A conceptual plan is used to develop a report of feasibility study (scheme report) with the intention to facilitate flexible adaption to possible occurrence of changes.	*This is the feature of scheme model in KPM. It is to access if the scheme model concept is applied.*
4. When making a difficult decision, established relationships with the vendors/clients (inter-human relations) will be prioritized.	*Japanese business leaders tend to give priority to inter-human relations.*
5. In managing financial matters of a project, reasonable burden distribution and risk sharing among stakeholders are practiced.	*This is a feature of project finance management in P2M. It also indicates part of risk management.*
6. Having a system to support each management work and the results of each management will be accumulated and reused as knowledge resources.	*It discusses the role of information systems in project management, such as, utilization of project information technology management (Feature of P2M)*
This phase is the most initial stage of a project where the concepts and formation of the project are discussed, defined and decided. This will form the foundation of the project.	

Table 4.2: Management Methods – Phase 2

Question	Explanation
Phase 2: Planning / Build up / Design / Start up	
1. Encouraging comprehensive breakthrough by application and combination of new knowledge to upgrade the performance.	*This is a feature of innovation. Kakusin includes long and short-term innovation.*
2. Project information is shared and all data of the project is displayed. Emphasizing on transparency and visualization of objectives.	*Visual management has known to be an effective vehicle for continuous improvement activities or kaizen. Also, exhibits project objective management featuring visualization of objectives, transparency and accountability. (Feature of KPM)*
3. Setting up a project organisation that is under the direct control of top management. Project managers receive missions conveyed directly from top management.	*Exhibiting kaikaku project organisation is able to solve two-boss problems (matrix-style organisation) .Aims at managing a project smoothly and also changing the company culture. Having the top management oversees the progression of a certain project is a feature of kaikaku project organisation. The role of top management is vital to lead kaikaku ideas such as business reforms and management innovation in an organisation, and to achieve corporate vision. Kaikaku can be defined as reformation of value creation that includes enterprise, organisations, technology, etc, by the leading HQ or top management.*
4. Daily morning assembly / group meeting is conducted before the start of a working day.	*Morning assemblies are normally adopted by Japanese companies and Japanese organisations in Malaysia. This encourages communication and relations among co-workers. P2M encourages communication skills.*
5. Systems approach to systematically design the details for implementation of work processes and engineering techniques in the project.	*To assess if system model is applied. (KPM) Indicates project systems management.*
6. To plan, organize, adjust and control all the required resources such as workforce, materials, finances, time, fundamental resources and intellectual resources in an integrated manner.	*It indicates the application of project resources management (a feature of P2M).*
This is an important phase of a project as it involves all planning works, design and the built up or start up. A good plan is essential to ensure a smooth flow of a project in the later stage.	

Table 4.3: Management methods – Phase 3

Question	Explanation
Phase 3: Implementation / Production / Progress	
1. Emphasis on teamwork and achieving group goals.	*Feature of P2M/KPM – teamwork. With good teamwork, kaizen can be achieved.*
2. When managing a project, adapting to changes in environment when necessary is practiced. This means the possibility of deviating from the initial plans and objectives.	*Evidence of having flexibility and adaptability to environmental changes. KPM's flexible philosophy, kaizen.*
3. Practicing 'target management' in handling projects where time limit for each milestone is set and the starting date is decided counting backward from that deadline. Also known as backward operation process planning system.	*Kaikaku or kaihatsu style project management can be found in KPM. Backward operation system is also 1 of the 2 originalities of KPM.*
4. Applying concurrent engineering / simultaneous parallel development.	*P2M/KPM emphasizes parallel development.*
5. Emphasizing value creation activities such as development of new products/business models, operational innovation, through continuous improvement in routine processes.	*P2M/KPM also describes value creation activities.(Value management)*
6. Acquiring new knowledge and information through practicing innovation is often encouraged to enhance competitive advantage.	*This is about kaihatsu, which realizes innovation, technology, development of knowledge and techniques among government, industry and academia. Examples of innovation also include upgrade of performance on the whole and integration of projects.*
7. Encouraging continuous improvement at the work-floor level to find ways of making new knowledge become beneficial.	*This is about kaizen. Kaizen is improvement on knowledge at work-floor level or cross-sectional establishments. For example, kaizen approach to improve the performance of manufacturers in quality and productivity. Applies to other industries as well.*
8. To bridge cultural barriers between different groups, mutual trust and respect to each other in a complex project environment are practiced.	*This is a practice in hybrid management, which is an effective method of bridging cultural barriers between different groups or when dealing with a complex project environment. In a hybrid management relationship, it is important to respect and trust each other and not to push one-sided views on another person. By adopting hybrid model is away to realize total optimization.*
This phase implements and executes the steps planned in phase two, It shows the progress of a project.	

Table 4.4: Management methods – Phase 4

Question	Explanation
Phase 4: Acceptance / Handover	
1. Upon project completion, a lessons-learned review or reflection activity is conducted.	*This practice is applied by P2M/KPM. The practice is about project value management.*
2. Possessing longer-term alliances (e.g., with suppliers, clients) and ability to obtain informal relational contracts in future.	*Good relationship management facilitates trust that will lead to the formation of long-term relationships. (P2M/KPM) Relationship management is one of the knowledge areas emphasized in P2M.*
3. Upon completion of a certain project, consideration of short-term and long-term effects, and verification of risk and effect is done to ensure the realization of benefits and satisfaction of stakeholders.	*This is to apply strategy management as practiced in P2M.*
4. After a completion of product/services provided, a routine work is designed in a work program for maintenance based on knowledge management.	*This is the feature of service model in KPM. It is to access if the service model concept is applied.*
Finished project is inspected and handover to client. Acceptance phase for agreed and satisfied clients/customers.	

Table 4.5: Management methods – General

Question	Explanation
General practice in managing a project across all above phases	
1. Encouraging cross-divisional project team system / cross-departmental process.	*In order to make total optimization possible, better communications, exchanging of ideas is part of organisation management.*
2. Encouraging lifelong employment.	*Conventional Japanese management has been changing based on KPM. KPM requires reformation for the better and adaptability to changes in time. Therefore, restructuring is practiced too.*
3. Employing part-timers / contract workers/temporary staffs.	*Conventional Japanese management has been changing based on KPM. KPM requires reformation for the better and adaptability to changes in time. Therefore, restructuring is practiced too.(This is not JPM, but it may state that they are accepting restructuring and no longer sticking to lifelong employment like previous practice. This can further assess Q2 on encouraging lifelong employment)*
4. Practicing lay-offs when the organisation or economy is facing downturn.	*Japanese conventional model has to be reformed in order to survive the recession – with KPM method, lay-offs exist.*

Table 4.5: Management methods – General (Continued)

5. Emphasizing on continual training and human development education.	*Japanese companies consider training and human development education to be a prime responsibility.*
6. The predetermined project organisation structure can be altered due to situation changes in midst of project.	*It indicates the project organisation management in P2M.*
7. Decision making tend to be uncertain because of collective agreement and group verdict are emphasized.	*P2M/KPM has more tendencies to prioritizing group decisions. Japanese people tend to practice collectivism and humanism. However, some of them are individualistic although they do not seem to show it on surface. They follow the majority, but in reality it may be against their own will.*
8. Emphasizing personal evaluation system/evaluation on individual KPI (key performance index) as individual job tasks and roles in a project are clearly defined and highlighted.	*KPM and kaihatsu –style projects are to have project system functions well especially in matrix organisations.*
9. Emphasis on identifying and analyzing constraint conditions and uncertainties from all aspects of a project.	*It explains the risk management activities.*
10. In order to cope with the environmental changes, reorganizing and restructuring of company/business are practiced.	*Flexibility or adaptability of environmental changes is a feature of KPM. It is part of kaikaku activity.*
11.Team members and those from other divisions are encouraged to voice out ideas for problem solving and improvement.	*The emphasis on inputs of comments and opinions show that the organisation is flexible in terms of changes, and is willing to adapt to necessary conditions. This will leave room for innovative ideas that are the roots of further development and exploitation. Good communications system enables employees to voice ideas. Communications management is one of the knowledge areas in P2M.*
This phase shows the management methods that are generally practised when handling a project.	

4.3 Findings from the Semi-structured Interviews

The participants were senior project managers, who had more than 10 years of project management experience with the company. The results of the discussions were summarised in this section. Due to the need for

confidentiality, the identity of the organisations and managers are kept anonymous.

A total of six topics were discussed during the interviews, which included:

- Brief background of the company
- Project management methods applied
- Phases or stages involved in the project
- Features or characteristics of the management style practiced in each phase
- Extending localization (for organisations in Malaysia)
- Recognition of P2M/KPM

The findings from the content analysis were tabulated and presented systematically as below. The details of the interview transcripts are included in Appendix F. The patterns of the differences and similarities between Malaysia and Japan are highlighted and summarized. Categorizing and coding of the interview data were adopted to analyse the semi-structured interview results. As part of coding qualitative interviews, themes have been set according to some verbatim quotations from the participants. There were recurring views/statements from the participants and the frequency of utterance/number of occurrence was counted and tabulated as below. Each utterance/occurrence is indicated with a tick (√).

4.3.1 Background of the Companies

A brief description of the six companies are as follows:

i. Company A (manufacturing and engineering): A Japanese organisation with headquarters in Japan, and oversees various branches internationally. They have set up their factories in Japan as well as overseas.

ii. Company B (manufacturing and engineering): A Japanese organisation with foreign partnerships based in Japan. They have business offices and factories operating in Japan and overseas.

iii. Company C (construction): A Japanese organisation with headquarters in Japan, and deals with projects locally (in Japan) and internationally, including Malaysia.

iv. Company D (manufacturing): A Japanese organisation that has been in Malaysia for approximately 12 years, and is a full subsidiary of its mother company in Japan.

v. Company E (manufacturing): A Japanese organisation that has commenced its business in Malaysia for about 30 years by forming a joint venture company stake, while the local organisation owns a 51% share.

vi. Company F (manufacturing and IT): A fully Japanese owned organisation with business offices and factories operating in Malaysia for more than a decade.

4.3.2 Application of Project Management Methods

Interview data and information were captured from the participants and set into themes for better analysis and discussion. Table 4.6 shows the qualitative results on the current practice of project management methods/theories in the organisation and their applications.

Table 4.6: The Current Application of Project Management Methods

	Themes	Companies					
		A	**B**	**C**	**D**	**E**	**F**
1	Flexibility/Suggestion system	√	√√	√	√√	√√√	√√
2	Top management to oversee	√√	√√	√	√	√	√
3	Projects were mission-oriented.	√	√	√	√	√	√
4	Projects were goal-oriented.		√				√
5	Organized management system/ quality management.	√	√√	√√	√√√	√√√	√
6	Innovations/ New combinations of knowledge.	√	√	√	√		
7	Knowledge resources		√	√	√	√	
8	Visual management		√			√	

All companies emphasized on inputs of comments and opinions in the project management. This indicates that the organisations are flexible in terms of changes, and are willing to adapt to necessary conditions, if these create improvements. It will leave room for innovative ideas for further development and exploitation. Progress at each stage of the project is evaluated and judged by the division head or vice president. Having the top management to oversee the progression of a certain project exhibits the *kaikaku* project organisation structure (Taketomi, 2009a; Chong and Preece, 2014). The role of top management is vital to lead *kaikaku* ideas such as business reforms and management innovation in an organisation (Imaguchi, 2009; Taketomi, 2009b). *Kaikaku* organisation encompasses awareness of people's mindsets

and the roles in organisational layers: in 3K- *kakusin* or innovations are reflected in new combinations of knowledge initiated by top management and employees, the *kaihatsu* or development is led by the middle layer of management to put innovation in practice by acquiring new knowledge, and *kaizen* or improvement is done at the work-floor level to convert and find ways of making new_knowledge become beneficial (Imaguchi, 2009, Ohara, 2009a, Stosic et at., 2012). They also prefer having an organized management system with a clean and well-ordered working environment (Harris, 1995; Liker et al.,2008; Imai, 2012).

The concept of a mission-driven approach is a key element in KPM (Ohara, 2009b), wherein the focus is not only on clients' goals, but also on the process of how they are achieved, taking into account opinions and suggestions (Ohara, 2006; Wang, 2011; Qasem and Baharun, 2012). A mission-driven organisation often attracts employees with high degree of pro-social motivation, whereby these motivated employees can achieve high levels of task and extra-performance most of the time (Grant and Sumanth, 2009). However, this is not the case for Company B. Apart from being mission-oriented, Company B also exhibited a tendency towards goal-oriented approach in some of their projects. Depending on each individual project, it will be decided whether to prioritize its goal or mission. Oriented by both mission and goal approaches, is a scenario of a mixed organisational practice. A minority of Company B's employees dared to challenge the top management to change for the better. This phenomenon is rarely seen in a pure Japanese organisation. Pure Japanese organisations will welcome suggestions

from employees, but employees normally will not challenge those at the top if their opinions are not heard. Since Company B is a mixed organisation with Japanese and foreign stakeholders, internally oriented enterprise culture explains the occurrence of this behaviour (Belak and Milfelner, 2012). Company B retained its management methods injected from their mother company, and at the same time, absorbed the management style of their foreign counterparts, resulting in a mixture of JPM and non-JPM methods in their project management. Company B & E emphasized visualization, where visual management is known to be an effective vehicle for continuous improvement activities or *kaizen* (Liker et al., 2008; Murata and Katayama, 2010, Imai, 2012).

4.3.3 Phases or Stages Involved In a Project

The phases or stages involved in managing a project for each company are displayed in Appendix F – Topic 2.

4.3.4 Features/Characteristics of the Management Style Practiced at Each Phase

The features and characteristics of the management style practiced in managing projects are tabulated in the Table 4.7.

Table 4.7: Features Applied in Managing Projects

	Themes	Companies					
		A	**B**	**C**	**D**	**E**	**F**
1	Corrective actions (*kaizen).*	√	√	√	√	√	√
2	Reflection activity	√	√	√	√	√	√
3	Continuous improvement (*kaizen).*	√	√		√	√	
4	Human development (on-the-job training, etc).	√	√√	√	√√√	√√	√
5	Cross-departmental	√			√	√	√
6	Communication system.	√	√	√	√	√	√
7	Teamwork, cooperation	√		√	√	√√	√
8	Concurrent activities.	√	√			√	√

The organisations followed the basic guidelines of PDCA (Plan-Do-Check-Act) (Dahlgaard et al., 1995). This is an iterative management method for continuous improvement, or *kaizen*. It guides organisations to plan before an action, carry out the scheduled plans, check if the actions conform to the plans and act on what has been learned (Moen and Norman, 2009).

Stages 1-2 or 'Plan/Design' and 'Do': *Kakusin* project management is applied where strategic thinking is used with a consideration of value creation;

Stages 1-3 or 'Plan/Design' and 'Do' development: Involves *kaihatsu* and project management whereby development, risk and return are the principle issues of concern;

Stage 4-5 or 'Check/Verify' and 'Act': Featuring *kaizen* implementation project management where *kaizen*, objective, organisation, system, risk, communication and procurement management are applied throughout the whole process of the project (Ohara, 2009b).

Executing concurrent activities will shorten the time of the development period and will eventually reduce the timeline for the whole

project. This approach is known as the Simultaneous Parallel Development system, which is an element in the *kaihatsu*-style project that can be applied to automobile projects (Taketomi, 2008).

Corrective actions are carried out on all areas. Examples of *kaizen* activities are as follows: (i) reduction in cost or manpower; (ii) *kakusin* and enhancement of production methods; (iii) quality improvement (iv) encouraging innovative thinking to achieve better levels of efficiency. Reflection activity is also conducted in order to focus on the deficiencies of both technical processes and team processes, and to search for room for improvement (Liker et al., 2008). The information gathered from reflection processes will be used in up-coming projects. What was learned from one project, the information and knowledge obtained could be applied to another subsequent project, as effective knowledge transfer plays a significant role in the success of an organisation (Anna et al., 2010). With knowledge transfer, it can also contribute to better performance of up-coming projects (Anna et al., 2009). This will assist in the *kakusin* activity, and with the newly obtained information and knowledge, a comprehensive breakthrough could be achieved to upgrade performance (Ohara, 2009b).

Japanese companies consider training and human development education to be a prime responsibility (Inohara, 1990). A morning assembly is held with the division members to enhance day-to-day communication (Magoshi and Yamamoto, 2009). This is a common practice in manufacturing facilities. A good communications system enables employees to voice out

ideas that can be used for problem solving, improvement and to make contributions to the corrective action process (Liker et al., 2008; Ohara and Asada, 2009). Also, it is common in Japanese organisations regardless of its location in Japan or overseas, to emphasize on teamwork and having common group goals (Tucker et al., 2002). By possessing good teamwork, *kaizen* can be achieved (Kinoshita, 2009b). It is vital for the organisation to have a mindset that emphasizes on continuous improvement for the better. Most of the features mentioned above could be seen practiced in all four companies. Even Company B, with a mixed organisation, adopts the Japanese managing culture in Japan.

4.3.5 Extent of Localization

Table 4.8 shows the results of the survey on the importance of localization in project management.

Table 4.8: Extent of Localization

Themes		Companies					
		A	**B**	**C**	**D**	**E**	**F**
1	Organisational hierarchy.	√	√	√	√	√	√
2	Top management comprised of Japanese only.	√		√	√	√	√
3	Mixture of Japanese and foreigners (Foreign partners were also assigned to top management)		√				
4	Head of divisions/managers comprised of Japanese and locals.				√	√	√
5	Handles local market.	√	√	√	√	√	√
6	Handles international market.	√	√				√

Figure 4.2 illustrates an overall image for better understanding on the extent of localization in the companies. It demonstrates a general idea on the distribution of human resources in Japan organisations.

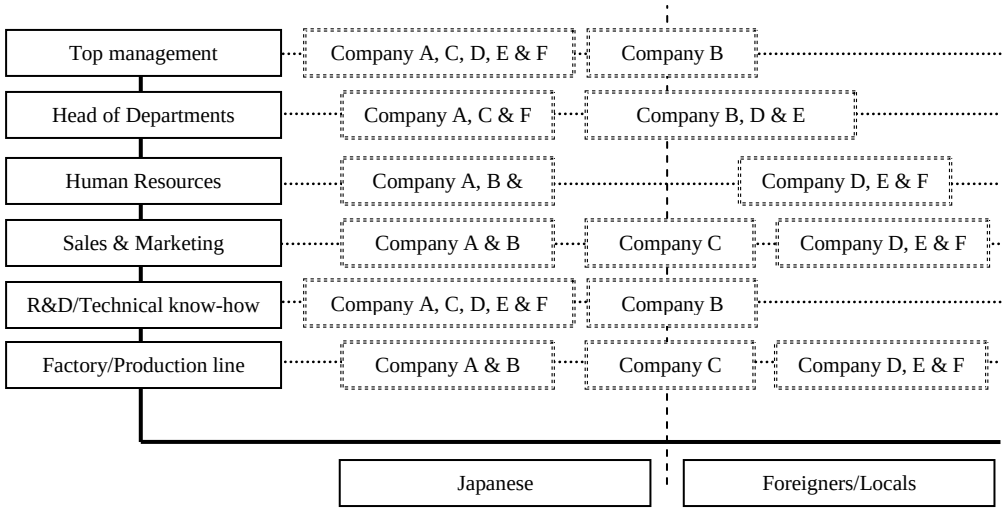


Figure 4.2: Human Resources Distribution

For organisations in Japan and their overseas subsidiaries, the top management team comprises mainly of Japanese. Organisations in Japan practice the hierarchy system. Any changes or amendments require the approval and opinions of the top management. A strict decision-making hierarchy prevails (Tucker et al, 2002). These organisations would give instructions from top to bottom. Internal promotion is very slow and strongly based on seniority, occurring only after at least 15 years of working experience (Rashid et al., 2009). Nevertheless, a handful of local staffs are appointed to head a department in some of their subsidiaries. A faster promotion system exists in Japanese susidiaries located abroad.

4.3.6 Recognition of P2M/KPM

Awareness of the terms P2M or KPM was discussed. Table 4.9

explains the recognition of P2M/KPM with regard to the companies.

Table 4.9: Recognition of P2M/KPM

Themes		Companies					
		A	**B**	**C**	**D**	**E**	**F**
1	Not aware of the term P2M/KPM.	√	√	√	√	√	√
2	Applying JPM methods	√	√	√	√	√	√

Although the term P2M/KPM has not been used, the features and characteristics of the KPM method are practiced in their managing of projects and in the production system. The nature of practice is very much based on the philosophy of KPM, such as the applications of 3K - *kakusin, kaihatsu* and *kaizen* that are widespread in their project management. It has also been found that Company B as compared to other companies has been highly influenced by both JPM and non-JPM methods.

Japanese organisations in Malaysia are still maintaining the JPM style in terms of technical, production and manufacturing elements, while it also mixes with the local culture, particularly in human resource management. This is also true for foreign organisations who are investing in Japan. Needless to say, the typical Japanese organisations adopt solely JPM method in their technology-related matters. The KPM method encompasses *kakusin, kaihatsu* and *kaizen,* which can be applied to various project management areas, as highlighted in the four companies being researched. Although the term KPM is not used, the organisational practice is similar to the project management methods in KPM. This also indicates that the KPM method is influential not only in Japanese organisations in Japan, but also Japanese subsidiaries abroad.

The studies showed that the JPM philosophy has been disseminated in these organisations. They operate with the mindset of always striving for *kakusin*, evolution and *kaizen* that include challenges, business operations, respect for people, teamwork and making changes for the better. *Kaihatsu* in terms of technical, products, process and human resources is also practiced in these organisations. The term KPM is still very new and only emerged seven years after the establishment of P2M in 2001. This could be the reason why the term is not widely recognized or used, even though this management method is presently being widely practiced.

Although the concept of localization has been applied in the management of human resources, the working attitude and ethical mindset are still influenced by the Japanese way of management. They might have a mixed management system that includes both JPM and non-JPM methods. Nevertheless, they are also still performing well in the market. In conclusion, it is this innovatory project management method that keeps the organisations growing, while maintaining excellence in order to succeed under unpredictable market conditions.

4.3.7 Conclusion from the Semi-structured Interviews

The semi-structured interviews were informative as it gave an overall picture about JPM. The interviewees were free to discuss on the topics asked, to elaborate and to provide their opinions. The outcomes obtained were very

useful as there were limited to previous studies on this scope. This has further affirmed that semi-structured interview is an appropriate empirical research method because it allowed the researcher to carry out research in an area where few previous studies exist and further investigate on the scope of interest from the interviewees' perspective (Myers and Newman, 2007). The findings from the semi-structured interview clarified the significant points found from the critical reviews of literature, were helpful in contributing to the design of questionnaire and useful in strengtening the problem statement.

CHAPTER 5

RESULTS AND DISCUSSION – RESULTS OF QUESTIONNAIRE SURVEY

5.1 Introduction

This chapter discusses on findings and analyses of the questionnaire survey. Data analysis was done on the results of the questionnaire based on statistical analysis with Statistical Package for the Social Sciences (SPSS). Eventually, the findings were discussed to render a better insight and understanding of the whole research.

5.2 Questionnaire Results, Analysis and Discussion

In the questionnaire, three essential sections were classified:

(i) Demography session where it describes the respondents' personal profiles.

(ii) Focused on the level of application of the management methods using a five-point Likert scale from 1 to 5, whereby;

1=never practice; 2=rarely practice; 3= practice sometimes (neutral);

4=often practice; 5=very often/always practice

(iii) In this open-ended session, respondents were:

- To rate in percentage the success rates of their projects managed with the mentioned management methods.
- To state in their opinion, whether there is still room for improvement in the project management methods applied in their organisations. If yes, they were further requested to indicate the phase in particular.
- To suggest and rate any other unmentioned principles/management methods on the survey form based on the project practitioners' personal discretion and actual experience.

Some returned questionnaires were incomplete and therefore, void. Finally, in total, there were 50 valid and completed questionnaires from Japan and Malaysia, respectively, making up a total of 100 respondents. Hence, data analysis on this research was conducted based on the 100 usable questionnaires.

5.2.1 Descriptive Analysis/ Demographics

This section describes the background information of the survey respondents. Table 5.1 shows the survey respondents' background information for both Malaysians and Japanese, which includes the years of tenure with the company, years of experience related to project management, nature of organisation and type of organisation (applicable for Malaysians only). The first item of 'Years of tenure with the company' will give an approximate idea

on how familiar the respondent is towards the managing pattern of his/her organisation. It showed that a majority of the respondents were very loyal to their current company. For both countries, more than 70% of the respondents have been working for more than five years in the same organisation.

Table 5.1: Demographics

Years of tenure with the company

	Malaysia		Japan	
	Number	%	Number	%
< 5 years	15	30	10	20
5-10 years	11	22	7	14
11-15 years	4	8	6	12
16-20 years	8	16	4	8
>20 years	12	24	23	46
Total	50	100%	50	100%

Years of working experience related to project management

	Malaysia		Japan	
	Number	%	Number	%
< 5 years	10	20	15	30
5-10 years	17	34	14	28
11-15 years	7	14	7	14
16-20 years	6	12	6	12
>20 years	10	20	8	16
Total	50	100%	50	100%

The nature of your organisation

	Malaysia		Japan	
	Number	%	Number	%
Manufacturing	36	72	22	44
Construction	3	6	4	8
Information Technology	3	6	15	30
Engineering	4	8	4	8
Others	4	8	5	10
Total	50	100%	50	100%

Type of organisation (Malaysia only)

	Malaysia	
	Number	%
100% Japanese owned	33	66
Joint venture (Japanese/Local/Others)	17	34
Total	50	100%

The second item shows the 'Years of experience related to project management' for both in Japan and Malaysia. This information is also depicted

in the pie charts as illustrated in Figure 5.1. The experienced participants with more than 20 years comprised only 20% (or equivalent to 10 respondents) for Malaysia and 16% (or equivalent to 8 respondents) for Japan. For Malaysia, this figure was the same as those who have less than 5 years of experience. The majority of the respondents, that is 34%, were from the 5-10 years of experience group. In Japan, those with less than 5 years and 5-10 years of experience had approximately the same percentage, with 30% and 28%, respectively. Coincidentally, both Malaysia and Japan had the same percentage for the respondents with 11-15 years and 16-20 years of experience. Both these groups consisted of 14% and 12%, respectively, of the total survey respondents.

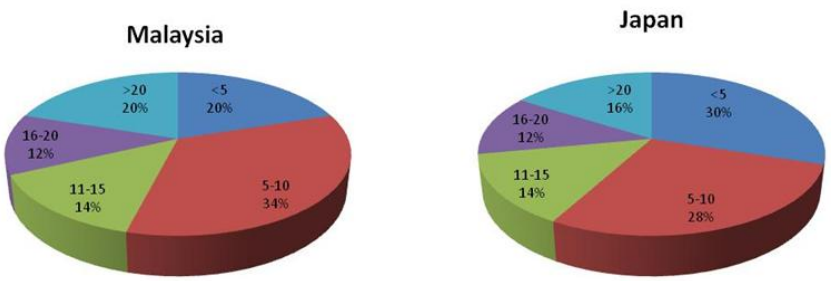
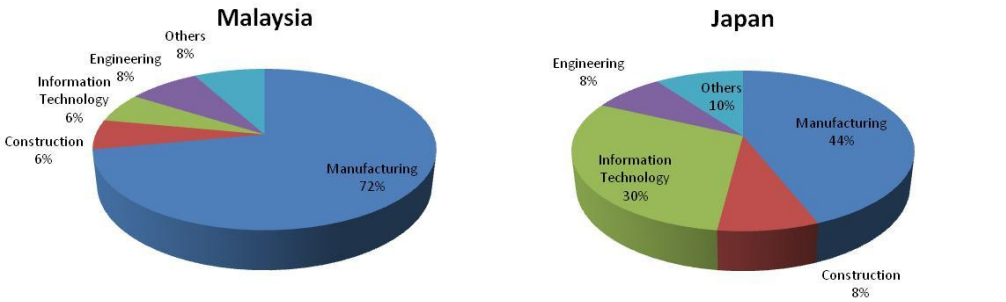


Figure 5.1: Years of Experience Related to Project Management

Colors	Years
Blue	<5
Red	5-10
Green	11-15
Purple	16-20
Light Blue	>20

The pie-charts in Figure 5.2 explain the nature of the organisations of the respondents, namely, manufacturing, construction, information technology, engineering and others. For both Malaysia and Japan, majority were respondents from the manufacturing industries, with 72% and 44%,

respectively. In Malaysia, the rest of the industries, i.e., construction, information technology (IT), engineering and others contributed only a mere 6%-8%. In Japan, the second highest contributor was from the IT industry. Construction and engineering were equal with 8% each, and the rest 10% was from other industries.



Colors	Industry
Blue	Manufacturing
Red	Construction
Green	IT
Purple	Engineering
Light Blue	Others

Figure 5.2: Nature of Organisations

For Japanese organisations in Malaysia, there are two types of companies, one is 100% owned by Japanese, and another is a joint venture between Japanese and local stake-holders.

5.2.2 Results Analysis

The data was analysed using SPSS software. Numerous statistical analyses were carried out.

5.2.2.1 To Anaylse the Realibility of Data

Table 5.2 tabulates the results for Cronbach's alpha coefficients, mean scores and Kendall's coefficient of concordance.

Table 5.2: Pattern of Rankings and Mean Scores

	Overall			Malaysia			Japan		
Management methods	Mean	Rank	SD	Mean	Rank	SD	Mean	Rank	SD
Phase 1	**3.72**			**3.68**			**3.75**		
Drawn up action plan	4.39	1	0.79	4.24	2	0.87	4.54	1	0.68
Standard norm	3.88	7	0.98	3.76	12	0.89	4.00	7	1.05
Conceptual plan (Scheme report)	3.45	28	1.22	3.44	31	1.20	3.46	25	1.25
Inter-human relations	3.52	24	0.85	3.68	14	0.84	3.36	28	0.83
Burden distribution and risk sharing among stakeholders	3.46	27	1.16	3.46	29	1.09	3.46	24	1.23
System support on knowledge resources	3.59	21	0.96	3.50	24	0.93	3.68	18	1.00
Phase 2	**3.62**			**3.76**			**3.49**		
Breakthrough of new knowledge	3.76	12	1.00	3.68	15	0.91	3.84	12	1.08
Visualization of objectives	3.85	9	0.94	3.74	13	0.88	3.96	9	0.99
Direct control of top management	3.76	13	1.10	3.94	4	1.13	3.58	22.5	1.05
Daily morning assembly	3.31	31	1.59	3.80	11	1.34	2.82	33	1.67
Systems approach	3.36	30	1.15	3.58	21	1.09	3.14	31	1.18
Integration management	3.70	15	0.93	3.80	10	0.88	3.60	20	0.97
Phase 3	**3.84**			**3.80**			**3.89**		
Teamwork	4.26	2	0.92	4.24	1	0.74	4.28	2	1.07
Adapting to environment changes	3.88	8	0.86	3.96	3	0.83	3.80	13	0.88
Target management	3.93	5	1.05	3.82	9	1.02	4.04	5	1.07
Concurrent engineering	3.49	25	1.15	3.56	23	1.20	3.42	26	1.11
Value creation activities	3.63	19	1.00	3.48	26	1.01	3.78	14	0.97
Practicing innovation	3.85	10	1.02	3.64	16.5	0.96	4.06	4	1.04
Continuous improvement	3.79	11	0.92	3.86	7.5	0.88	3.72	16.5	0.97
Bridging cultural barriers	3.92	6	1.01	3.86	7.5	0.88	3.98	8	1.13
Phase 4	**3.58**			**3.63**			**3.54**		
Reflection activity	3.96	4	0.97	3.90	5	0.95	4.02	6	1.00
Possessing longer-term alliances	3.28	33	1.21	3.42	32	1.18	3.14	32	1.23
Realization of benefits of stakeholders	3.60	20	0.99	3.62	18	0.95	3.58	22.5	1.05
Routine work for maintenance	3.48	26	1.01	3.56	22	0.88	3.40	27	1.12
General practice in managing a project across all above phases	**3.41**			**3.38**			**3.44**		
Cross-departmental process	3.54	23	1.10	3.48	27	1.15	3.60	21	1.07
Lifelong employment	3.38	29	1.23	3.48	28	1.28	3.28	29	1.18
Employment of part-timers	3.64	18	1.28	3.36	33	1.35	3.92	10	1.14
Practicing lay-offs	2.07	35	1.14	2.16	35	1.15	1.98	35	1.13
Continual human development education	3.74	14	0.97	3.62	19	0.99	3.86	11	0.95
Alteration of predetermined project organisation	3.66	17	0.99	3.60	20	1.01	3.72	16.5	0.97
Emphasis on collective agreement	2.86	34	1.05	2.98	34	1.04	2.74	34	1.07
Emphasis on personal evaluation system	3.56	22	0.94	3.48	25	0.91	3.64	19	0.96
Analyzing constraint conditions and uncertainties	3.30	32	0.98	3.44	30	0.86	3.16	30	1.08
Reorganizing and restructuring of company	3.69	16	0.95	3.64	16.5	0.96	3.74	15	0.94
Encouraged to voice out ideas for problem solving	4.03	3	0.89	3.90	6	0.91	4.16	3	0.87
Number (N)		100			50			50	
Kendall's coefficient of concordance (W)		0.132			0.116			0.182	
Actual calculated chi-square value		447.193			197.398			310.220	
Critical value of chi-square from table		48.602			48.602			48.602	
Degree of freedom (df)		34			34			34	
Level of significance		0.000			0.000			0.000	
Cronbach alpha		0.898			0.923			0.870	

SD: Standard deviation

H_0 =respondent's set of rankings are unrelated (independent) to each other within each group

Reject H_0 if the actual chi-square is larger than the critical value of chi-square from distribution table

The Cronbach's alpha coefficients for Malaysia and Japan were 0.923 and 0.870, respectively, as shown in Table 5.2. The value for combined

Malaysia and Japan was 0.898. The values were much higher than the threshold value of 0.70, which indicates a good internally consistency and reliability. Alpha coefficient is used to portray the reliability of factors derived from multi-point formatted questionnaire. The higher the score or the greater the value of coefficient, the more reliable the generated scale is, and based on several studies, 0.70 is an acceptable reliability coefficient (Field, 2013).

5.2.2.2 To Analyse the Application of Management Methods Based on Mean Scores

Analysis of the results of cross-country field studies indicated that Japanese organisations both in Malaysia and Japan often apply most of the 35 management methods when managing their projects. Managing a project basically has four phases, namely initiating, design, progress and handover. All four phases showed a mean value range of 3.38 to 3.90 of the five-point Likert scale for both countries. The five-point Likert scale used in the questionnaire is defined as 1: never practice, 2: rarely practice, 3: practice sometimes (neutral), 4: often practice and 5: very often/always practice. The mean scores are tabulated in Table 5.2. Figure 5.3 illustrates the mean scores for all the management methods.

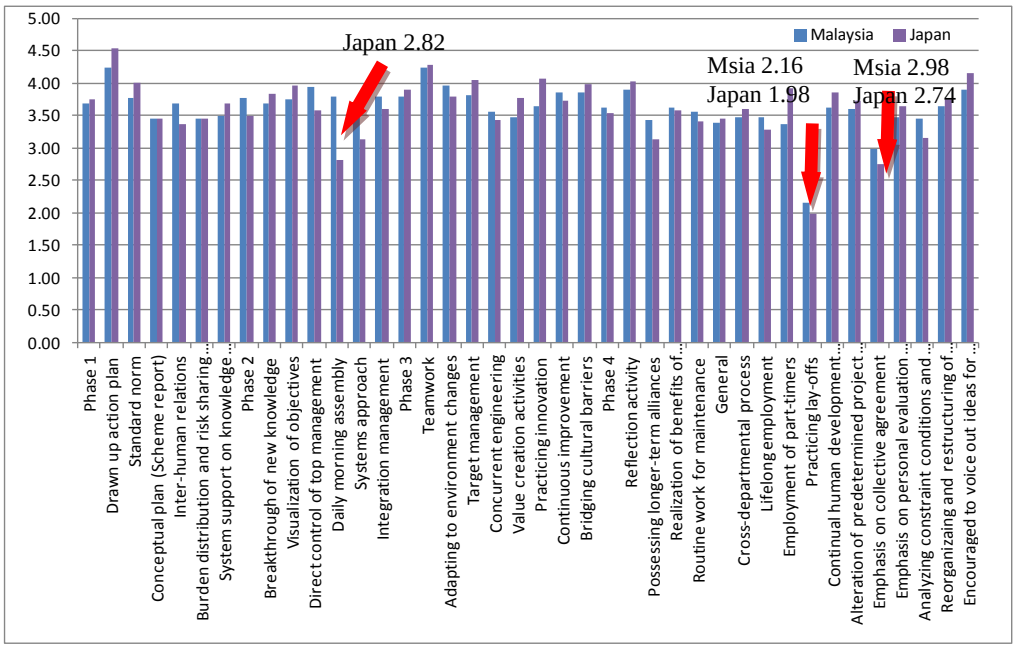


Figure 5.3: Mean Scores

The mean value of both countries showed the highest in Phase 3 of implementation/progress, where management methods such as teamwork, mutual trust, adapting to environmental changes, target management, concurrent engineering, innovation and *kaizen* ideology were emphasized. In Malaysia, the top management methods turned out to be emphasis on teamwork, drawing up an action plan to realize targets, and achieving group goals. The least was the practicing of lay-offs. In Japan, the top management method also emphasized on drawing up the action plan, followed by emphasis on teamwork. Practicing lay-offs came out last as well. This is quite common as Japanese organisations encourage loyalty (Hofstede, 2010) and still practices the lifetime employment concept (Tucker et al., 2002). The Japanese society obtained a high score in the long-term orientation index which indicated that Japanese emphasize long-term relationships that could last a lifetime (Hofstede, 2010). Both countries held unanimous perceptions on the rankings of these management methods.

However, in both countries, there were two methods, i.e. ‘practicing lay-offs’ and ‘emphasis on collective agreement’ which obtained mean scores that were lower than 3.00. In Japan, apart from the above mentioned two methods, the mean for ‘Daily morning assembly’ was also lower than 3.00, with a score of 2.82.

The findings can be interpreted as follows:

- Japanese co-workers in Japanese organisations have stronger friendships at work (Lincoln and Kalleberg, 1985), because they emphasize human relations and mutual trust (Kinoshita, 2009b). Trust will lead to the formation of long-term relationships (Asada, 2005). When good relationships are built, employees feel obligated to perform at their best for their companies. This is the foundation of building up trusted relationships between the employee and employer. Employees are rarely lay-off when a reliable relationship is built.
- Lifetime or lifelong employment is common in Japanese organisations, which is based on an unwritten employment contract and thus it relies on mutual trust (Inohara, 1990; Kinoshita, 2009b). Lifetime employment encourages loyalty (Oliver and Wilkinson, 1992, Tucker et al., 2002). Therefore, workers are rarely dismissed due to business downturns (Rashid et al., 2009). This again explains a low mean score on ‘Practicing lay-offs’.
- For ‘emphasis on collective agreement’, the mean scores for Malaysia and Japan were 2.98 and 2.74, respectively. Japan is a balanced mixture of a collectivist and individualist society (Hofstede, 2010),

which may explain the obtained mean score of nearly 3.0, at the central of the five-point Likert scale. Japanese society is seen to show many of the characteristics of a collectivistic society (Verghese, 2007). Although they have the characteristics of it, the Japanese society is not as collectivistic as other Asian neighbours such as China or Korea, as the Japanese society does not have extended family system which is the basis of a collectivistic society (Hofstede, 2010). When making decisions, they tend to follow the majority as they put harmony of group above the expression of individual opinions. However there are times, things are decided against their own will. This can be explained with the *honne-tatemae* behavourial that is considered to be of paramount importance in Japanese culture (Ishii et al., 2011).

Honne is a person's true feelings and desires, while *Tatemae* is the opinions and behaviour one displays in public. *Honne* may be contrary and contradictory to what is expected by the society or what is required according to one's circumstances and position, and they are often kept hidden, except perhaps with one's closest friends. On the other hand, *tatemae* is explained as what is expected or anticipated by society and required according to one's circumstances and position, but these may or may not match one's *honne* (Mehri, 2006). Therefore, though the Japanese society may appear collectivist, they may actually want to have their own say and make their own decisions in certain circumstances in managing a project. The results of the findings indicated their true opinions and showed that individualists also made a proportion of the sample. Another example of individualistic behaviour is their

choice to stay loyal to one's company. The Japanese are renowned for their loyalty to their companies, but choosing to be loyal is totally up to the individual, therefore, it is an individualistic thing to do. So, it is clear that the Japanese society comprises a mixture of collectivist and individualist ideology.

According to verifications done by experts at the end of the research, 'Daily morning assembly' is practiced in manufacturing organisations, especially in factories, and in construction sites (Magoshi and Yamamoto, 2009). Others such as IT or engineering, or in other divisions such as sales, marketing or R&D, they seldom put this into practice. Morning assembly/meetings may only be conducted once a week or less. In the current research for Malaysia, 72% of the respondents were from manufacturing. This explained their high mean score of 3.80 for this management method. As for Japan, the mean was 2.82, which is approximately 3.00, a score in the middle of the five-point Likert scale. Based on Table 4.7 shown earlier, the respondents from Japan comprised a 52%, coming from manufacturing (44%) and construction (8%) industries. This population of 52% is nearly half of the respondents from Japan, which interprets the obtained mean score of approximately 3.0 for this management method.

5.2.2.3 To Assess the Trend of Agreement

Next, Kendall's coefficient concordance (*W*) was used to assess the trend of agreement among the respondents in a particular group. As shown in Table 5.2, the Kendall's coefficient concordance for the JPM management

methods among all respondents was 0.132; among Malaysian project managers was 0.116; and among the Japanese project managers was 0.182. The entire computed *W* was all statistically significant with a significance level of less than 0.001. However, since the number of management methods were above the referral number of seven, the chi-square value would be referred to instead of the *W* value (Siegel and Castellan, 1988). According to the degree of freedom 35-1=34 and the allowable level of significance of 5%, the critical value of chi-square from the distribution table was found to be 48.602. The actual computed chi-square values of the three segregations (i.e. Malaysia and Japan, Malaysia, Japan), were 447.193, 197.398 and 310.220 respectively. All the three values were well above the chi-square critical value of 48.602, which was obtained from the standard reference table. The results indicated to reject the null hypothesis, H_0, whereby the respondents' sets of rankings are not related (independent) to each other within the group.

Consequently, there was sufficient evidence to conclude that there was a significant degree of agreement among the respondents within the respective survey country on the rankings of the management methods. This concordance test ensures the opinions and data collected from the questionnaire survey to be consistent and valid for further analysis. This result is in accordance with the first hypothesis which stated that the rankings by the respondents are statistically related.

The dispersion of ratings for each management method among the respondents in the survey was tested by using the standard deviation (SD). SD

indicates how much ‘dispersion’ or variation there is from the mean, and a low SD shows that the data tends to be very close to the mean, meanwhile a high SD denotes that the data points are spread out over a large range (Field, 2013). In this research, the SD of each item among the respondents when analysed together, and also when separately studied between two countries, was about one. This low SD of about one reflected that the respondents commonly shared a significant level of agreement on rating each method.

5.2.2.4 To Further Analyse the Application of Management Methods Based on the t-Test

One sample *t*-tests can be utilised to determine if the mean of a specific sample is different from a particular value. μ was the population mean (project managers between Japan and Malaysia), and μ_0 was fixed at 3 following the definition given in the rating scale; ratings below 3 (i.e., ratings of 1 and 2) represented that the management methods were not practiced/applied by project managers while managing projects. Therefore, in this case, the *t*-test value for this one sample *t*-test was set at 3.

Null hypothesis, $H_0 : \mu \leq \mu_0$.

Alternative hypothesis, $H_a : \mu > \mu_0$

Table 5.3: Results of *t*-Test

Management methods	*t*-test Overall (100) Mean	Calculated *t* value	*t*-test Malaysia (50) Mean	Calculated *t* value	*t*-test Japan (50) Mean	Calculated *t* value
Phase 1: Conceptual / Formation / Initiating / Definition						
Drawn up action plan	4.39	17.594	4.24	10.074	4.54	16.099
Standard norm	3.88	9.004	3.76	6.014	4.00	6.736
Conceptual plan (Scheme report)	3.45	3.696	3.44	2.597	3.46	2.605
Inter-human relations	3.52	6.142	3.68	5.699	3.36	3.078
Burden distribution and risk sharing among stakeholders	3.46	3.971	3.46	2.979	3.46	2.639
System support on knowledge resources	3.59	6.114	3.50	3.796	3.68	4.814
Phase 2: Planning / Build up / Design / Start up						
Breakthrough of new knowledge	3.76	7.629	3.68	5.264	3.84	5.521
Visualization of objectives	3.85	9.080	3.74	5.972	3.96	6.864
Direct control of top management	3.76	6.896	3.94	5.870	3.58	3.900
Daily morning assembly	3.31	1.953	3.80	4.221	2.82	-.760
Systems approach	3.36	3.129	3.58	3.764	3.14	.840
Integration management	3.70	7.555	3.80	6.424	3.60	4.379
Phase 3: Implementation / Production / Progress						
Teamwork	4.26	13.741	4.24	11.786	4.28	8.460
Adapting to environment changes	3.88	10.279	3.96	8.159	3.80	6.424
Target management	3.93	8.883	3.82	5.662	4.04	6.884
Concurrent engineering	3.49	4.260	3.56	3.305	3.42	2.680
Value creation activities	3.63	6.290	3.48	3.344	3.78	5.657
Practicing innovation	3.85	8.343	3.64	4.695	4.06	7.219
Continuous improvement	3.79	8.546	3.86	6.904	3.72	5.250
Bridging cultural barriers	3.92	9.092	3.86	6.904	3.98	6.112
Phase 4: Acceptance / Handover						
Reflection activity	3.96	9.860	3.90	6.678	4.02	7.214
Possessing longer-term alliances	3.28	2.320	3.42	2.518	3.14	.805
Realization of benefits of stakeholders	3.60	6.031	3.62	4.638	3.58	3.900
Routine work for maintenance	3.48	4.753	3.56	4.478	3.40	2.514
General practice in managing a project across all above phases						
Cross-departmental process	3.54	4.888	3.48	2.959	3.60	3.969
Lifelong employment	3.38	3.092	3.48	2.648	3.28	1.680
Employment of part-timers	3.64	5.018	3.36	1.883	3.92	5.706
Practicing lay-offs	2.07	-8.163	2.16	-5.168	1.98	-6.362
Continual human development education	3.74	7.625	3.62	4.440	3.86	6.416
Alteration of predetermined project organisation	3.66	6.687	3.60	4.200	3.72	5.250
Emphasis on collective agreement	2.86	-1.328	2.98	-.136	2.74	-1.726
Emphasis on personal evaluation system	3.56	5.986	3.48	3.734	3.64	4.695
Analyzing constraint conditions and uncertainties	3.30	3.063	3.44	3.614	3.16	1.052
Reorganizing and restructuring of company	3.69	7.261	3.64	4.695	3.74	5.546
Encouraged to voice out ideas for problem solving	4.03	11.537	3.90	7.000	4.16	9.475
Number (*N*)		100		50		50
One-tailed critical value of *t* from table		1.660		1.677		1.677
Degree of freedom (df)		99		49		49

Table 5.3 shows the results of the *t*-test. The *t*-test value was compared with the critical *t* value from the standardized table to determine the acceptance or rejection of null hypothesis. In the case for Malaysia and Japan,

the critical *t* with 99 degrees of freedom, $\alpha = 0.05$ and one-tailed was 1.660. The decision rule states that if the one-tailed critical *t* value is lesser or smaller than the observed *t* value and the mean scores are in the right order, H_0, will be rejected. The critical *t* value was 1.660, and was compared with the observed *t* for each management method involved. There were two management methods with observed *t* lower than 1.660. The two management methods were 'Practicing lay-offs" and 'Emphasis on collective agreement', that have a mean of 2.07 and 2.86, respectively. Thus, H_0 was not rejected for these two management methods which mean insufficient evidence to conclude that the mean score for these two management methods have a mean larger than μ_0. Therefore, the methods were not significantly practiced/applied/adopted by project managers in both Japan and Malaysia when managing projects in all nature of organisations. As for the other 33 management methods, H_0 was rejected, and could be statistically concluded that these 33 management methods are perceived to be significantly practiced/applied/adopted by project managers in Malaysia and Japan when managing projects. When the two countries Malaysia and Japan were analysed separately, the same findings were obtained, projecting the two management methods, namely, 'Practicing lay-offs" and 'Emphasis on collective agreement' have the same tendency as well. The critical *t* value was 1.677 for a degree of freedom of 49. The observed *t* values were lower compared to the critical *t* value for these two factors. As the mean were in the right order, it failed to reject H_0. For Japan, 'Daily morning assembly' also seemed to have failed to reject H_0 too. The above findings confirmed the second hypothesis that most of the P2M/KPM management methods were applied in the Japanese organisations in Japan and

Malaysia. There are however, a few management methods that were found to be handled differently in the Japanese organisations between the two countries.

5.2.2.5 To Analyse the Correlation Between Two Subjects

To prove whether there is any similar substantial agreement between Malaysia and Japan, Spearman's rank correlation analysis was done as shown in Table 5.4. The correlation coefficient was 0.605 with a significance level of 0.000 was obtained. With the correlation significance level at 0.05, the null hypothesis was rejected. Thus, there was adequate evidence to conclude that there was significant correlation between Malaysian project managers and Japanese project managers on the management methods applied. A positive correlation between Malaysia and Japan showed that when Malaysia's project managers applied certain P2M/KPM methods in managing their projects, Japan's project managers too have a tendency in applying the same methods as well. It is rather interesting to find out the correlation between Japanese project managers and Malaysian project managers on their perception of the project management methods as and when Malaysian project managers for instance handles a project in Japan, they may have a better insight and understanding on how projects in Japan are being managed. This relationship will also provide a deeper and further understanding on management of joint projects that involve both countries. The statistical results indicated that the third hypothesis was accepted. For reference, the correlations coefficients with ≤0.35 are generally considered to represent weak or low correlations, 0.36-0.67 to represent modest or moderate correlations, and 0.68 to 1.0 to be strong

or high correlations (Taylor, 1990).

Table 5.4: Results of Spearman's Rank Correlation Analysis

Application of P2M/KPM management methods	r_s	Significance level	Conclusion
Malaysia PM vs Japan PM	0.605	0.000	Reject H_0 at 1% significance level

H_0 = no significant correlation on the application of management methods between two groups

H_a = significant correlation on the application of management methods between two groups

Reject H_0 if the significance level (p-value) calculated is less than the allowable value of 1%.

5.2.2.6 To Examine the Differences in Perceptions on the Management Methods Between Japan and Malaysia

Mann-Whitney U test was adopted to examine the differences in the median (μ_M = median for Malaysia; μ_J = median for Japan) values between the two countries as shown in Table 5.5.

The results did not detect a large variation in the median values and the actual calculated *p*-values for most of the management methods were more than the prescribed significance level of 0.05. Therefore, H_0 was not rejected. This result has reinforced that both countries do not show a significant difference in their management perceptions. However, there were three management methods that rejected H_0, indicated with an asterisk in the table for $p<0.05$. There were 'daily morning assembly', 'practicing innovation' and 'employment of part-timers'. There is statistical evidence stating a significant difference in perceptions of the project managers in Malaysia and Japan for these three management methods.

As explained earlier, since the nature of organisations for both

countries were relatively different, the perceptions on these three methods may show a significant difference. ‘Daily morning assembly’ (mean Malaysia=3.80; Japan=2.82) is normally practiced in manufacturing organisations/organisations with factories. A large population of the respondents in Malaysia was from manufacturing, which explained the high mean score obtained.

Table 5.5: Analysis Results for Mann-Whitney U Test

	Mann-Whitney U		
	Mean Rank		
Management methods	Malaysia	Japan	Asymp. Sign.
Phase 1: Conceptual / Formation / Initiating / Definition			
Drawn up action plan	45.76	55.24	0.068
Standard norm	46.35	54.65	0.134
Conceptual plan (Scheme report)	50.06	50.94	0.876
Inter-human relations	55.44	45.56	0.070
Burden distribution and risk sharing among stakeholders	50.16	50.84	0.904
System support on knowledge resources	47.75	53.25	0.311
Phase 2: Planning / Build up / Design / Start up			
Breakthrough of new knowledge	47.17	53.83	0.228
Visualization of objectives	46.77	54.23	0.177
Direct control of top management	55.77	45.23	0.059
Daily morning assembly	58.68	42.32	0.004*
Systems approach	55.60	45.40	0.068
Integration management	53.12	47.88	0.343
Phase 3: Implementation / Production / Progress			
Teamwork	47.65	53.35	0.284
Adapting to environment changes	53.08	47.92	0.341
Target management	46.91	54.09	0.193
Concurrent engineering	52.78	48.22	0.413
Value creation activities	46.39	54.61	0.138
Practicing innovation	43.79	57.21	0.015*
Continuous improvement	52.38	48.62	0.495
Bridging cultural barriers	47.62	53.38	0.296
Phase 4: Acceptance / Handover			
Reflection activity	48.23	52.77	0.405
Possessing longer-term alliances	54.01	46.99	0.213
Realization of benefits of stakeholders	50.87	50.13	0.893
Routine work for maintenance	51.90	49.10	0.612
General practice in managing a project across all above phases			
Cross-departmental process	49.40	51.60	0.693
Lifelong employment	53.17	47.83	0.342
Employment of part-timers	44.32	56.68	0.026*
Practicing lay-offs	52.74	48.26	0.418
Continual human development education	47.26	53.74	0.243
Alteration of predetermined project organisation	49.01	51.99	0.587
Emphasis on collective agreement	53.49	47.51	0.284
Emphasis on personal evaluation system	47.76	53.24	0.321
Analyzing constraint conditions and uncertainties	53.82	47.18	0.227
Reorganizing and restructuring of company	49.17	51.83	0.625
Encouraged to voice out ideas for problem solving	46.47	54.53	0.141

Null hypothesis $H_0 : \mu_1 = \mu_2$ (p>0.05)

Alternative hypothesis $H_1 : \mu_1 \neq \mu_2$ (p<0.05)

Japanese organisations in Japan are mainly Japanese, and Japanese organisations in Malaysia have been localized in terms of human resources to an extent. Most of the employees in Japanese organisations in Malaysia are locals, except for the top management team, who are still Japanese. Generally, Japanese are actively involved in innovations, R&D research and technical know-how. This explains the significant difference on this 'practicing innovation' (mean Malaysia=3.64; Japan=4.06). Japanese organisations in Japan have a higher tendency in employing part-timers or non-regular employees (mean Malaysia=3.36; Japan=3.92) (Berggren and Nomura, 1997). In Japan, part-timers are more likely to be hired by large firms as a means of reducing labour costs (Fagan and O'Reilly, 2002). Married women tend to work as part-timers rather than full-time employees as they enjoy the flexible work schedule given the fact that they need to balance concurrently their roles as a working mother and homemaker (Kucera, 2001; Broadbent, 2003). The above findings correspond with and support the fourth hypothesis of this research.

5.2.2.7 To Examine the Differences in Perceptions on the Management Methods Among the Industries

Kruskal-Wallis test was conducted on the 100 respondents to check if there were differences in perceptions on the management methods among the different organisations, namely manufacturing, construction, IT, engineering and others as shown in Table 5.6. From the results table, the *p*-values for most of the management methods were more than the prescribed significance level

of 0.05. Therefore, these management methods failed to reject H_0, which was stressing the fact that no significant differences on these management methods existed among the organisations.

Table 5.6: Differences among Industries

Management methods	Kruskal-Wallis	Mann-Whitney U									
		M-C	M-I	M-E	M-O	C-I	C-E	C-O	I-E	I-O	E-O
	Asymp. Sign.	Asymp. Sign.	Asymp. Sign.	Asymp. Sign.	Asymp. Sign.	Asymp. Sign.	Asymp. Sign.	Asymp. Sign.	Asymp. Sign.	Asymp. Sign.	Asymp. Sign.
Phase 1: Conceptual / Formation / Initiating / Definition											
Drawn up action plan	0.320	0.425	0.195	0.197	0.522	0.166	0.758	0.377	0.078	0.749	0.247
Standard norm	0.079	0.388	0.005	0.360	0.629	0.424	0.951	0.656	0.330	0.091	0.647
Conceptual plan (Scheme report)	0.750	0.860	0.261	0.590	0.620	0.450	0.813	0.703	0.262	0.748	0.553
Inter-human relations	0.110	0.137	0.068	0.705	0.585	0.015	0.209	0.499	0.087	0.105	0.917
Burden distribution and risk sharing among stakeholders	0.066	0.089	0.130	0.582	0.013	0.590	0.468	0.690	0.688	0.259	0.192
System support on knowledge resources	0.068	0.396	0.065	0.592	0.081	0.840	0.364	0.092	0.121	0.004	0.535
Phase 2: Planning / Build up / Design / Start up											
Breakthrough of new knowledge	0.583	0.106	0.714	0.585	0.530	0.222	0.501	0.466	0.749	0.725	1.000
Visualization of objectives	0.095	0.697	0.009	0.959	0.537	0.225	0.808	0.509	0.113	0.033	0.652
Direct control of top management	0.571	0.347	0.605	0.187	0.977	0.270	0.182	0.569	0.358	0.769	0.394
Daily morning assembly	0.001*	0.095	0.013	0.356	0.001*	0.010	0.048	0.005	0.511	0.109	0.124
Systems approach	0.901	0.886	0.692	0.474	0.447	0.949	0.677	0.664	0.560	0.628	0.961
Integration management	0.586	0.736	0.923	0.268	0.174	0.800	0.497	0.424	0.372	0.285	0.960
Phase 3: Implementation / Production / Progress											
Teamwork	0.584	0.240	0.235	0.647	0.992	0.696	0.252	0.427	0.268	0.560	0.837
Adapting to environment changes	0.674	0.594	0.235	0.362	0.795	0.974	0.712	0.576	0.812	0.266	0.414
Target management	0.007*	0.008	0.002*	0.702	0.743	0.543	0.112	0.052	0.150	0.049	0.686
Concurrent engineering	0.251	0.194	0.663	0.389	0.119	0.230	0.152	0.540	0.242	0.248	0.043
Value creation activities	0.164	0.108	0.163	0.821	0.446	0.037	0.133	0.256	0.367	0.067	0.309
Practicing innovation	0.121	0.225	0.015	0.403	0.217	0.670	0.758	0.955	0.420	0.617	0.797
Continuous improvement	0.786	0.680	0.394	0.258	0.793	0.950	0.762	0.912	0.638	0.743	0.510
Bridging cultural barriers	0.275	0.730	0.037	0.967	0.442	0.167	0.808	0.469	0.166	0.354	0.539
Phase 4: Acceptance / Handover											
Reflection activity	0.013*	0.638	0.160	0.008	0.273	0.665	0.029	0.690	0.001*	0.931	0.005
Possessing longer-term alliances	0.182	0.022	0.696	0.919	0.341	0.132	0.070	0.027	0.798	0.413	0.513
Realization of benefits of stakeholders	0.246	0.080	0.113	0.453	0.799	0.390	0.396	0.169	0.769	0.224	0.480
Routine work for maintenance	0.300	0.502	0.136	0.637	0.089	0.221	0.471	0.219	0.601	0.820	0.337
General practice in managing a project across all above phases											
Cross-departmental process	0.619	0.233	0.581	0.577	0.516	0.400	0.236	0.190	0.547	0.358	0.880
Lifelong employment	0.195	0.810	0.017	0.482	0.512	0.182	0.633	0.663	0.281	0.341	0.881
Employment of part-timers	0.152	0.472	0.091	0.070	0.094	0.799	0.536	0.655	0.636	0.763	0.836
Practicing lay-offs	0.174	0.603	0.021	0.612	0.992	0.472	0.469	0.696	0.037	0.125	0.719
Continual human development education	0.162	0.493	0.127	0.129	0.401	0.157	0.720	0.306	0.031	0.697	0.086
Alteration of predetermined project organisation	0.324	0.327	0.500	0.851	0.048	0.566	0.398	0.651	0.640	0.180	0.192
Emphasis on collective agreement	0.125	0.200	0.035	0.354	0.174	0.925	0.189	0.868	0.103	0.915	0.271
Emphasis on personal evaluation system	0.426	0.091	0.989	0.203	0.552	0.240	0.505	0.464	0.329	0.767	0.803
Analyzing constraint conditions and uncertainties	0.938	0.937	0.775	0.826	0.383	0.975	0.905	0.742	0.749	0.606	0.480
Reorganizing and restructuring of company	0.744	0.372	0.427	0.759	0.659	0.192	0.716	0.724	0.465	0.367	1.000
Encouraged to voice out ideas for problem solving	0.254	0.057	0.038	0.876	0.168	0.358	0.716	0.489	0.243	0.977	0.329

M: Manufacturing, C: Construction, I: Information Technology, E: Engineering, O: Others

sign.value for Mann-Whitney U test = 0.0025

However, there were three management methods that were found to have a significance level of less than the *p*-value of 0.05, which leads to the

rejection of H_0. Rejecting H_0 indicates that there is a difference in terms of mean value on these three management methods. Kruskal-Wallis test will only show that a difference exists, and it does not tell exactly where the differences lie. Further *post hoc* tests will be required to identify where the differences are found. Mann-Whitney U tests were used as the non-parametric *post hoc* tests. Adjustments were made to the *p*-value based on the Bonferroni correction method, where the critical *p*-value will be divided by the number of comparisons/tests made. In this case, the *p*-value of 0.05 was divided by 10 as there were altogether 10 tests (10 pairs of organisation combinations). Refer to Table 5.6 for all the 10 pairs. A further division of 2 was done, as a comparison between the individual pair was also made. Therefore, the corrected *p*-value of 0.0025 was used as the criterion for significance. However, this critical value for significance was considered to be very small and very restrictive. With this corrected value, only a niche of difference could be detected. Table 5.7 summarizes the management methods that exhibited differences among the industries. There is statistical evidence stating a significant difference in perceptions of the project managers in the different industries on these three management methods. Project managers in the manufacturing and others showed difference in opinion when it comes to practicing daily morning assembly. Project managers in manufacturing and IT industry have different views on target management, whilst project managers in IT and engineering organisations have different perspectives on reflection activity. It can be said that statistically, the project managers in Japan and Malaysia despite being from different industries, mostly apply the same project management methods. The statistical results obtained here affirmed

the fifth hypothesis of the research.

Table 5.7 Management Methods that Exhibited Differences among Industries

Management methods	Industries
Daily morning assembly	Manufacturing and Others
Target management	Manufacturing and IT
Reflection activity	IT and Engineering

5.2.2.8 Success Rates

By applying the above-mentioned management methods, the respondents from Malaysia and Japan were requested to rate in percentage if they have successfully achieved what they wanted and expected when managing previous projects. This score is an indicator or measurement of the rate of success of the projects. The graph in Figure 5.4 illustrates the rating in percentage for both Malaysia and Japan, respectively. It showed that for both Malaysia and Japan, more than half of the responded project managers agreed that by applying the mentioned management methods their projects obtained a success rate of more than 50%.

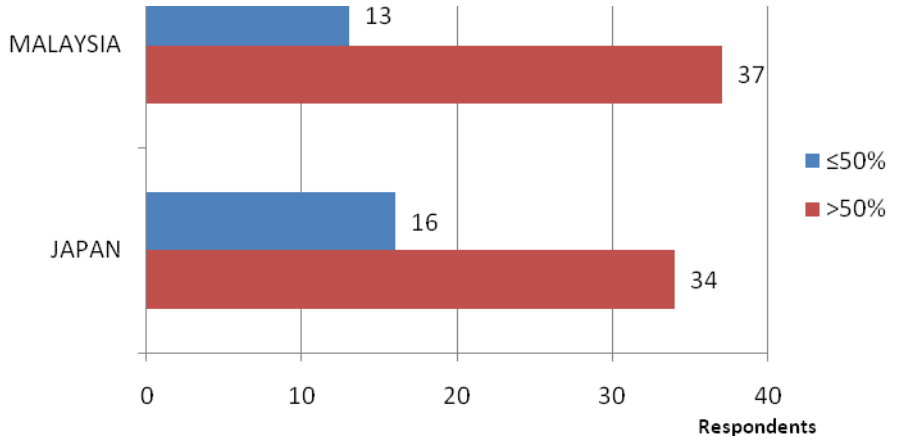


Figure 5.4: Rating in Percentage

Figure 5.5 illustrates the segregation of success- rate within the ≥50% category. For both Malaysia and Japan, it clearly showed that most respondents have rated approximately 80%. However, the 'success rate' encompasses a wide definition. Success rate of a project can be measured with few criteria that could cover schedule overrun, cost overrun, technical performances and customer satisfaction (Zwikael et al., 2005). There is no one definition that describes project success (Neverauskas et al., 2013). Moreover, the skills and behaviour of a project manager will also play a role in contributing to the improvement of delivering a project successfully (Fisher, 2011). Therefore, the definition of success rate is quite wide, and no specific specifications were made to define success rate in this research. Project managers were asked to evaluate based on their overall perception of successfully managed projects.

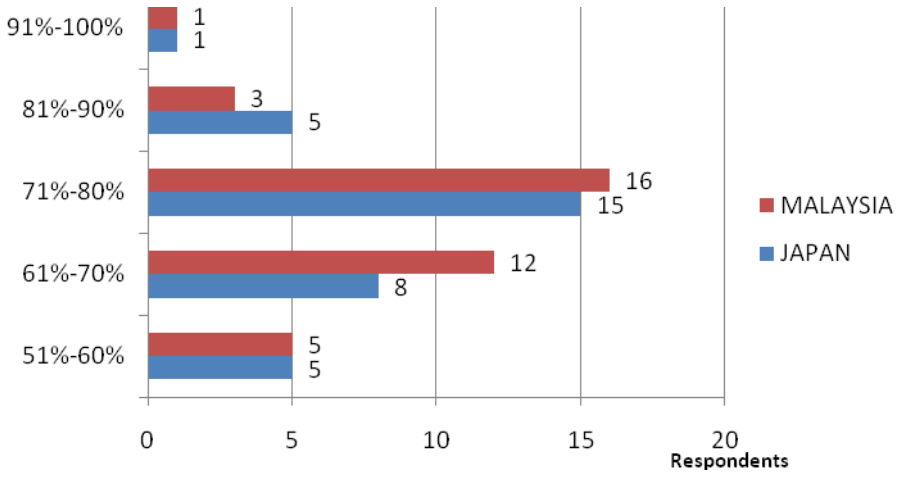


Figure 5.5: Success Rate Above 50%

5.2.2.9 To Analyse the Relationship between Success Rates and Management Methods

A regression analysis was done to analyse if the 35 management methods have significant relationship or significantly contributed in realizing the project managers' expectations and achievements that were judged based on the projects that they have managed as shown in Table 5.8.

Table 5.8: Regression Analysis

	Regression test								
	Overall			Malaysia			Japan		
Factors	Coefficients B	Sign.	R^2	Coefficients B	Sign.	R^2	Coefficients B	Sign.	R^2
Phase 1: Conceptual / Formation / Initiating / Definition									
Drawn up action plan	10.27	0.000*	0.124	12.73	0.000*	0.309	8.68	0.113	0.051
Standard norm	4.32	0.068	0.034	10.80	0.000*	0.235	0.22	0.950	0.000
Conceptual plan (Scheme report)	3.56	0.061	0.035	7.17	0.002*	0.186	0.27	0.929	0.000
Inter-human relations	-2.30	0.404	0.007	2.63	0.441	0.012	-8.64	0.052	0.076
Burden distribution and risk sharing among stakeholders	8.05	0.000*	0.163	6.80	0.008*	0.139	9.04	0.002*	0.185
System support on knowledge resources	3.10	0.199	0.017	6.06	0.046*	0.080	0.98	0.795	0.001
Phase 2: Planning / Build up / Design / Start up									
Breakthrough of new knowledge	6.15	0.008*	0.071	11.91	0.000*	0.298	2.38	0.495	0.010
Visualization of objectives	3.59	0.149	0.021	14.48	0.000*	0.406	-4.38	0.245	0.028
Direct control of top management	6.80	0.001*	0.105	7.91	0.001*	0.202	5.20	0.141	0.045
Daily morning assembly	2.08	0.157	0.020	0.60	0.780	0.002	2.61	0.241	0.029
Systems approach	4.77	0.017*	0.057	3.75	0.153	0.042	5.28	0.093	0.058
Integration management	7.84	0.001*	0.099	12.32	0.000*	0.296	3.84	0.319	0.021
Phase 3: Implementation / Production / Progress									
Teamwork	4.83	0.056	0.037	13.18	0.000*	0.242	0.88	0.802	0.001
Adapting to environment changes	10.98	0.000*	0.166	12.37	0.000*	0.267	9.47	0.022*	0.104
Target management	7.59	0.000*	0.119	10.04	0.000*	0.266	5.94	0.086	0.060
Concurrent engineering	5.73	0.004*	0.082	8.97	0.000*	0.291	1.75	0.605	0.006
Value creation activities	4.04	0.081	0.031	8.91	0.001*	0.206	-0.35	0.928	0.000
Practicing innovation	4.98	0.028*	0.048	11.67	0.000*	0.319	0.49	0.891	0.000
Continuous improvement	4.26	0.090	0.029	10.68	0.001*	0.223	-1.33	0.731	0.002
Bridging cultural barriers	5.36	0.019*	0.055	12.92	0.000*	0.326	1.03	0.755	0.002
Phase 4: Acceptance / Handover									
Reflection activity	6.10	0.010*	0.066	8.35	0.004*	0.159	4.37	0.241	0.029
Possessing longer-term alliances	5.60	0.003*	0.086	7.73	0.001*	0.209	3.38	0.265	0.026
Realization of benefits of stakeholders	8.19	0.000*	0.125	11.28	0.000*	0.286	5.62	0.110	0.052
Routine work for maintenance	6.10	0.007*	0.071	11.50	0.000*	0.260	2.56	0.442	0.012
General practice in managing a project across all above phases									
Cross-departmental process	7.71	0.000*	0.136	8.68	0.000*	0.250	6.87	0.046*	0.081
Lifelong employment	1.30	0.493	0.005	3.23	0.148	0.043	-1.27	0.689	0.003
Employment of part-timers	2.92	0.109	0.026	3.67	0.081	0.062	3.17	0.333	0.020
Practicing lay-offs	0.62	0.764	0.001	0.41	0.870	0.001	0.52	0.874	0.001
Continual human development education	5.13	0.031*	0.047	8.55	0.002*	0.180	2.18	0.582	0.006
Alteration of predetermined project organization	4.91	0.036*	0.044	5.02	0.075	0.065	5.12	0.182	0.037
Emphasis on collective agreement	4.38	0.046*	0.040	9.39	0.000*	0.240	-0.74	0.833	0.001
Emphasis on personal evaluation system	4.23	0.088	0.029	6.79	0.029*	0.096	2.39	0.539	0.008
Analyzing constraint conditions and uncertainties	5.79	0.014*	0.060	11.41	0.000*	0.243	1.85	0.595	0.006
Reorganizing and restructuring of company	4.62	0.058	0.036	6.73	0.021*	0.106	2.70	0.496	0.010
Encouraged to voice out ideas for problem solving	7.66	0.003*	0.088	8.31	0.007*	0.144	8.07	0.058	0.073

Based on the results done on the overall 100 respondents, 21 out of the total 35 parameters /predictors, meaning a 60% of the management methods showed a significant ($p<0.05$) relationship with the success of a project. The responded project managers' satisfactory rate or the success rate of a certain project can be said to depend much on these management methods. Likert-type scales are technically ordinal scales, but most researchers treat them as continuous parameters and are used in normal theory statistics interpretation (Johnson and Creech, 1983; Zumbo and Zimmerman, 1993). Even Rensis Likert's original paper clearly identifies that there might be continuous

variables whose value characterizes the respondents' attitudes or opinions, and these variables are at interval levels (Clasen and Dormody, 1994). Therefore, by observing the coefficient obtained for the overall case (for 100 respondents from Malaysia and Japan combined), the success rate could approximately increase by a 10.27%, when the five-point Likert scale of 'Drawn up action plan' increases by a unit (Field, 2013). The coefficient of beta (B) value or the regression coefficient (*b*) shows the change in the outcome due to a unit change in the predictor. Similar interpretation goes to the next significant parameter of "Burden distribution and risk sharing among stakeholders". An increment of 8.05% in the success rate can be obtained with every increase of one unit in the five-point Likert scale. The same interpretation will apply to Malaysia and Japan, respectively. With the coefficient values obtained, the management methods to be emphasized could be targeted. As most parameters statistically turned out to be significantly related to the success rate of a project, further analysis has to be done to figure out the gist of the management methods mentioned.

Interpretation can also be done using the coefficient of determination, R^2 value. This is a measure of the amount of variability in one variable that is shared by the other. By looking at the R^2 value of parameter 'Drawn up action plan', and by converting the value into a percentage, it can be said that 'Drawn up action plan' can only account for 12.4% of variation in the success rate. In other words, it leaves 87.6% of the variability still to be accounted for by other variables (Field, 2013).

To further narrow down the findings, the regression analysis was done separately on the two countries. In the case for Malaysia, nearly all the parameters do show a significant relation with the success rate. All parameters in Phase 3 and Phase 4 showed that they have significant relationship with the success rate.

As for Japan, it is interesting to find that only three parameters, namely, 'Burden distribution and risk sharing among stakeholders', 'Adapting to environment changes' and 'Cross-departmental process' are significant influencing parameters. It shows that for these three parameters, with an increase of one Likert scale, an increase of 9.04%, 9.47% and 6.87% in the success rate, respectively, can be seen. Statistically, this is quite a significant finding as these three latent parameters seemed to be the essences that possess a strong influence towards the success of a certain project. Project managers can emphasize more on executing these three parameters when managing their projects for higher success rates. Based on the discussions with the experts during validation of findings, the Japanese experts mentioned that, for the case of Japan, 'Adapting to environment changes' is quite a common practice. This indicates the 'flexibility' element and *kaizen* philosophy that are profoundly observed in P2M/KPM (Ohara, 2005a). Japanese organisations in Japan practice the rotations (cross-departmental process) of departments in order for the employee to familiarize with all functional departments in the organisation. A multi-task employee or an employee, who understands well how the organisation works, will definitely have more potential to successfully manage a project. Generally, no one individual is held responsible for an organisation

in Japan. Any burdens or risks are distributed and shared among stakeholders of the organisation (Yamamoto, 2006).

The *honne-tatemae* behaviour of Japanese people is quite prominently observed within their society. Based on the findings, although most of the mean scored above 3.00, the actual parameters that strongly relate to the success of a project directly were only a handful. This can be justified by the fact that, the project managers were expected to apply certain management methods when managing their projects, therefore they chose a higher point in the Likert scale (*tatemae*). However in reality, they have certain methods that they *actually* wanted to apply as being in the position of an individual who is managing the project (*honne*). *Honne-tatemae* is a Japanese culture that one needs to place great stress on distinguishing the *honne* that is one's genuine feelings, from the *tatemae* which is what one must say publicly. Being candour is not a Japanese custom and to them, it is considered a virtue not to directly reveal one's real feelings and intentions (Davies and Ikeno, 2002). Based on the comment of an expert, another reason could be the following. P2M/KPM has been practiced in Japan since its establishment in 2001, and therefore, it has been in the history for more than a decade. Japanese project managers in Japan have more experience in identifying the more important management methods and could pin-point the essences that are useful. Therefore, the wide range of management methods could be narrowed down to three main outstanding parameters.

In the case of Malaysia, Malaysian society is mostly frank and

straightforward in their actions and opinions. Therefore, the applied management methods can be understood to directly contribute to the success rates of the projects. No complicated interpretations were required.

Once the results are understood, this knowledge can be used in the managing of projects. Project management is widely known as a knowledge-based process; hence, the findings from this research can be used as guidelines for future project managers (Akbar and Mandurah, 2014).

The findings clearly show that by enhancing and focusing on certain individual parameters that are found to be influential, the project performance and its success rate could be increased. This confirmed the sixth hypothesis of the research.

5.2.3 Management Methods Adopted by High Performance Companies

A summary of the management methods adopted by high performance Japanese organisations in both Malaysia and Japan are distinguished and tabled in the following to render a deeper insight on which management methods are more useful for a better success rate. High performance companies are defined to have rated a success rate above 80% and applied management methods are those with a score of >4 on the five-point Likert scale. Table 5.9 shows the management methods adopted (highlighted in yellow) by high performance Japanese organisations in Malaysia and Japan.

Table 5.9: P2M/KPM Management Methods Adopted by High Performance Japanese Organisations in Malaysia

Malaysia	Japan
Management methods	
Phase 1: Conceptual / Formation / Initiating / Definition	
Drawn up action plan	Drawn up action plan
Standard norm	Standard norm
Conceptual plan (Scheme report)	Conceptual plan (Scheme report)
Inter-human relations	Inter-human relations
Burden distribution and risk sharing among stakeholders	Burden distribution and risk sharing among stakeholders
System support on knowledge resources	System support on knowledge resources
Phase 2: Planning / Build up / Design / Start up	
Breakthrough of new knowledge	Breakthrough of new knowledge
Visualization of objectives	Visualization of objectives
Direct control of top management	Direct control of top management
Daily morning assembly	Daily morning assembly
Systems approach	Systems approach
Integration management	Integration management
Phase 3: Implementation / Production / Progress	
Teamwork	Teamwork
Adapting to environment changes	Adapting to environment changes
Target management	Target management
Concurrent engineering	Concurrent engineering
Value creation activities	Value creation activities
Practicing innovation	Practicing innovation
Continuous improvement	Continuous improvement
Bridging cultural barriers	Bridging cultural barriers
Phase 4: Acceptance / Handover	
Reflection activity	Reflection activity
Possessing longer-term alliances	Possessing longer-term alliances
Realization of benefits of stakeholders	Realization of benefits of stakeholders
Routine work for maintenance	Routine work for maintenance
General practice in managing a project across all above phases	
Cross-departmental process	Cross-departmental process
Lifelong employment	Lifelong employment
Employment of part-timers	Employment of part-timers
Practicing lay-offs	Practicing lay-offs
Continual human development education	Continual human development education
Alteration of predetermined project organization	Alteration of predetermined project organization
Emphasis on collective agreement	Emphasis on collective agreement
Emphasis on personal evaluation system	Emphasis on personal evaluation system
Analyzing constraint conditions and uncertainties	Analyzing constraint conditions and uncertainties
Reorganizing and restructuring of company	Reorganizing and restructuring of company
Encouraged to voice out ideas for problem solving	Encouraged to voice out ideas for problem solving

5.3 Conclusion of the Findings from Semi-structured Interviews and Questionnaire

Based on the findings obtained from the questionnaire, it also validates some of the interview contents gained from the semi-structured interviews conducted. It is clear that the findings from the questionnaire survey are on par with the commented results from the semi-structured interviews. This indicates that the managers who were interviewed shared the same perspective with the respondents from the questionnaire survey, as most of the applied management methods mentioned in the questionnaires while managing projects were also executed in the respective interviewed Japanese organisations.

5.4 Future References

In the open-ended question session, there was a question enquiring the opinions of the project managers as to whether there is still room for improvement in the project management methods applied in their organisation based on the five phases mentioned. Figure 5.6 summarized the results for Malaysia and Japan, respectively. From the graph, in the case of Malaysia, it was obvious that Phase 2 and Phase 3 were thought to have potential for further improvements. A similar tendency can also be seen from Japan's results. However, for Japan's case, apart from Phases 2 and 3, Phase 1 also received a high concern for further improvement. The results obtained here can be used for future references. Project managers will at least know in which

phase more attention and emphasis are needed. Progressive enhancement can be implemented particularly in those phases, in order to have smoother process of management and obtaining a higher success rate when dealing with projects.

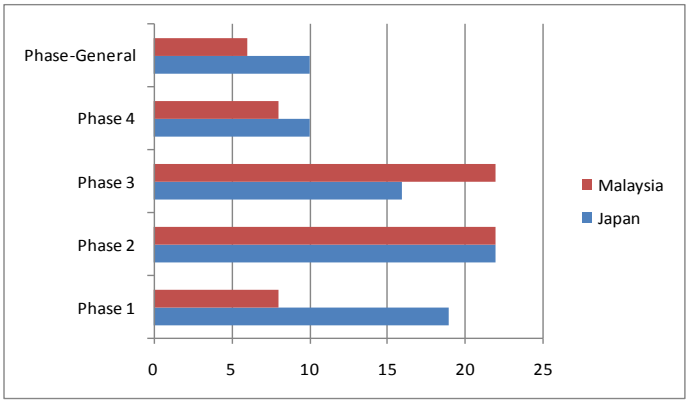


Figure 5.6: Potential Phases for Improvement

As for the other open-ended questions on opinions related to other unmentioned principles/management methods based on the project practitioners' personal discretion and actual experience, there were no particular suggestions or methods mentioned.

5.5 Verification of Results

5.5.1 Profile of Experts

Table 5.10 briefly introduces the profile of the experts invited to verify the results for this research.

Table 5.10: Profile of Experts

Experts	Brief background
1. Expert 1	The founder of P2M/KPM
2. Expert 2	A Japanese project manager who has experience in handling projects for more than 20 years and who has experience in managing projects based in Japan, USA and Malaysia.
3. Expert 3	A Japanese professional who has more than 20 years of experience managing projects. He has been based in Japan, USA and Malaysia before.
4. Expert 4	A Japanese project manager who is familiar in both local Japanese projects and international joint-venture projects. Involved in Japan-Malaysia projects as well.
5. Expert 5	A Malaysian project manager who has more than 15 years of experience, who is involved in projects with Japan, Malaysia, Europe, China and Korea.

5.5.2 Feedbacks and Comments from the Experts

Table 5.11 shows the feedback of the experts on the findings of the survey. Basically, they are asked to comment and elaborate on the following few questions:

- Q1: Overall opinion on the research findings; including comparative opinion of the outcome between Malaysia and Japan
- Q2: Opinions on tests analysis results (mean, Mann-Whitney U, etc) based on the management methods/parameters
- Q3: Comments on the relationship between the influential parameters and success rate. Comments on the highly rated success rate of 80%, if any.
- Q4: Others, if any.

Table 5.11: The Summarization of the Comments from the Experts

Q1	Expert 1: He very much agreed with the findings of the research results, especially on the results of the questionnaire. Interesting to find that there were differences in certain application of P2M/KPM methods in the Japanese organisations in Malaysia and Japan. Also, the respondents seemed to be experienced, and has provided quite a good insight on project management that covered information on team cooperation, risk management, communication management etc. Communication management is actually a very important aspect in project management, and glad that it has been discussed.
	Expert 2: He agreed with the obtained outcome. It was rather interesting to find that the Japanese organisations in Malaysia and Japan still share a lot of similarities, despite the Japanese organisations in Malaysia might have already received influences from local Malaysian culture of managing projects.
	Expert 3: He found the results to be very interesting, and an eye-opener.
	Expert 4: He learned a lot from the outcome. Providing a better insight on the whole P2M/KPM.
	Expert 5: The findings can be used as a reference in managing projects in the future. Especially a young startup company.
Summary: All experts agreed unanimously on the findings of the research. It provided a clearer picture on the overall management philosophy of P2M/KPM in the Japanese organisations in Malaysia and Japan.	

Q2	Expert 1: Results obtained from the statistical analysis showed rather interesting findings, especially when there exist similarities and differences between Malaysia and Japan. For instance, emphasis on teamwork scored high in the mean for both countries. This is rather true in Japanese organisations where teamwork among fellow colleagues is encouraged. They prefer to work in a team, working hand-in-hand and cooperating with other teammates, as this will enable an easier path to achieve group goals. Another point is the flexibility or the ability to adapt to environment changes. This is actively practiced in P2M/KPM.
	Expert 2: The mean score for 'Daily morning assembly' in Japan is a bit lower than 3. The practice of having a daily morning meeting totally depends on the nature of the organisations or divisions. If it is in a factory, they should still be practicing it. If it is a sales division, they could be practicing it too, but seldom. However, if for other management or R&D division, no practice of regular morning meetings, or even if there is, it is quite rare. In Malaysia, the mean score was higher, as the respondents were mainly from manufacturing sectors.
	Expert 3: He agreed on the mean score for 'Practicing lay-offs'. A low score is expected as Japanese are quite loyal to the company, and thus, the company will seldom lay them off, even in difficult times such as in an economic crisis. Although this is rarely practiced, some organisations do execute them when they have no other choices. Next is flexibility. It is important to adopt this practice as unforeseen circumstances are inevitable when handling projects, therefore it is commonly applied.
	Expert 4: Although the exact statistic is unknown, there is a tendency that shows that organisations that practice daily morning assembly are decreasing. The reason could be due to the following: • The introduction of flexible time system in organisations, working from home, core time. • Nowadays, messages are also being announced through within the organisations using local area network (LAN) etc. Moreover, the daily morning assembly might be a practice depending on divisions of the organisation. It may not be compulsory for the whole organisation to follow. Divisions/departments have freedom to choose whether to adopt the morning meeting or not.

	Expert 5: He has been working with the Japanese for more than a decade, and laying-off their employees is certainly the last resort for them. They really do invest a lot on their human resources by providing training, human development education etc. to their employees. Human resources are considered as assets to their organisation.
Summary: From the test analyses results, precise and accurate findings could be obtained. Analysed data generated outcome in figures which were useful and reliable to convey specific messages.	

Q3	Expert 1: The influential parameters/management methods on the success rates for both countries turned out to be different, although both countries indicated an average of 80% success rate. The reason could be how success rate is being defined. In Japan, the quality management control is very stringent, and if the quality or outcome is not met 100%, the project for the product cannot be considered to be 'successful'. Other than quality, the budget, cost and schedule are also points to measure in determining if the project is successful or not. For example, the project will still be considered successful even if the cost incurred was more than the initial budget, for as long as there was still profit generated. So despite on how precise the project managers define success rate, the most important thing is whether the project managers or owner or stakeholder is satisfied with the project results or outcome. Most respondents replied with a 80% success rate, indicating that they are quite satisfied with the project outcome. Looking at the first parameter of the three latent parameters, 'In managing financial matters of a project, reasonable burden distribution and risk sharing among stakeholders are practiced' in Phase 1, the outcome obtained is very agreeable and important. There are cases where changes are needed in the specifications in a technical system. In these cases, the three main items i.e., cost, schedule and quality will be affected. All these will incur financial issues such as the costs and risks in the project. Nevertheless, the responsibility will not be placed upon an individual, but fairly distributed among all the stakeholders or project initiators. On the second parameter 'When managing a project, adapting to changes in environment when necessary is practiced. This means the possibility of deviating from the initial plans and objectives', is also a very important finding. There are times when changes in the situation or environment cannot be foreseen and the main thing is how to overcome it. Learning to overcome this is risk management which can be evaluated based on two points i.e., reoccurrence and repercussions. If the reoccurrence rate is high with a low repercussion rate, normal standard measures such as empowerment to employees is practiced. However, for cases where repercussion rates are high, it will give big impacts to the projects, especially when it involves large sums of money such as the need to pay contingency fees, etc. Therefore, delay in dealing with such circumstances will only lead to further loss. To prevent such losses from increasing, a flexible response with swift decisions are essential to handle such scenarios and to ensure a win-win situation. This finding is indeed very important. From the results obtained, the third latent parameter turned out to be 'Encouraging cross-divisional project team system/ cross-departmental process'. In order to achieve total optimization, employees from different divisions/teams are rotated. This practice will induce more cooperation among the team members, apart from having capable employees to help out the rest. This is a very important management attitude that ought to be adopted and applied throughout. However, organisations with different types of organisational structures such as resource organisation, functional organisation or matrix, may face some difficulties in adapting when they are switched from one type to another.
	Expert 2: Very much agreed on the three latent parameters discovered from the results. All three parameters are very much the practice in Japanese organisations in

	Japan. In Japanese organisations, no one party or individual is given responsibility if there are matters arising with regard to the finances of the project. Risks are shared within the management team who are involved in the project, being flexible enough to adapt to changes that are unforeseen or unpredictable in order to ensure the project can still run smoothly. Employees who have the opportunity to work in other divisions are more aware of how the whole organisation runs and operates. Having a deeper understanding on the entire organisation system will assist them in managing a project better. The *honne-tatemae* mindset that Japanese possesses has strong influence on the research results. More interestingly, the Japanese from different parts of Japan have different levels of perception on this *honne-tatemae* mindset. For instance, the difference can be seen widely in organisations located west of Japan; the gap is lesser for companies in east Japan, and a big difference can be seen in Kyoto (middle of Japan).
	Expert 3: P2M/KPM has been practiced for more than a decade in Japan. Japanese project managers in Japan are more experienced in identifying the more important management methods, and are aware which are the important elements. A more narrowed down findings can be observed. A young company may manage projects mainly by using theory and be not aware of workable parameters. However, an old company may have undergone experiences and have learned the art of survival to sustain. They may have at least 10-15 years of experience, and might have realized the important methods that are useful to deal with a project successfully.
	Expert 4: If the project managers aim to produce successful projects, all the 35 management methods are prerequisites. If those methods are not applied, a project may not be successful. This could explain on the success rate of 80% that most of the respondents rated. On the other hand, the definition of success is also very important. Taking an extreme example for instance, if a profit-making enterprise is not making any profit, they would consider themselves a failure. But this is not the same with projects. Especially for projects, not only the inner details of the project itself are considered, but the impact from outside factors such as the surroundings should also be taken into consideration, as different conditions will give different impact. All these have to be factored in when defining project success.
	Expert 5: The results for Japanese organisations in Malaysia indicated that most of the management methods are influential in determining the success rates of a project. This will certainly be a useful guideline to project managers, especially new project managers, as a general rule of thumb to follow when they manage a project. The listed management methods are useful and when applied accordingly, should lead to better outcome of a project.
Summary: The experts opined that the research produced significant findings. By narrowing down on the influential parameters, and focusing on them when managing certain projects (depending on whether if it deals with projects of Japanese organisations in Malaysia or Japan), a higher successful rate of managing the project could be expected. Project managers would be more aware as to which principles should be concentrated on.	

Q4	Expert 1: Project management is applied in various industries such as construction, ICT system and agriculture. Innovation in P2M/KPM includes drawing up of new industrial policies, merging and acquisition of companies, injecting new ideas and technologies in R&D, reformation of management, etc. From the results of this questionnaire, it is understood that innovation is being effectively practiced. This questionnaire on P2M/KPM has further verified that Japan with an innovative mindset, is capable and has the potential of facing global competitiveness, developing new businesses, expanding in overseas activities, etc. When the owner of a project needs to plan and fix the specification documentations of a certain project in the beginning, such as the objectives of the project and the technical system solution, etc., they need a suitable candidate that has the awareness, action and skills of a professional. This questionnaire, helps to give the relevant information to that candidate and mould him/her to be the potential project manager. The findings obtained are useful, especially on the three latent parameters. Those are indeed the main points of project management. As a project manager who is alert in practicing innovation, he/she has the role of taking responsibility on the whole investment-return lifecycle of a business/project. He/she has to be capable of proposing statements such as 'Why this project has to be executed? Is it worth the investment?', executing them and also be able to accomplish them.
	Expert 2: Generally, Japanese would not like to express a strong word. For example, they may say that a certain proposal is interesting and would be available for discussion, but, in reality, it is merely for discussion and no firm decisions thereinafter. This means it is clearly negative. So with regard to decision making, it may seems clear in general. But the words used may be vague. With r those vague words, a decision is still uncertain. Up to now, Japanese companies especially enterprises seem to be following a big family culture. Decisions are collective. However, this situation is gradually changing, especially among the younger generation, who do not have much confidence in their organisation in certain aspects. Thus, individuality may emerge when they tend to voice out their opinions and make their own decisions.
	Expert 3: Thinks that Japanese organisations are doing the correct thing in having the flexibility and adapting to environmental changes, which is a key factor of P2M/KPM. Some Japanese organisations are restructuring and relocating to China/Vietnam to have better future prospects.
	Expert 4: Will take extra note of the influential parameters, especially the three parameters observed from the Japanese organisations in Japan. By putting extra emphasis on those parameters and ensuring they are applied properly, better success rates of projects can be expected.
	Expert 5: Sometimes, the management of a project depends on the background and structure of the company. If the company is family based, the top head's decision or opinion is important. But if the company is big, corporate based, CEO or the President may only offer suggestions, but the actual action starts from the bottom of the company.
Summary: It shows a deeper and better understanding towards the cultural differences between the two countries; Malaysia and Japan based on P2M/KPM - in terms of their practices, mindset, philosophy, ways of handling projects and application. Although the information obtained may be general, it is more than enough to give a generic guideline as reference to project managers worldwide, especially those who are liaising with Japanese organisations.	

Overall, the feedback and comments were positive and constructive. The results of the survey and statistical analyses were explained and justified

from different perspectives by the experts. The research has successfully rendered numerous insights into JPM's P2M/KPM.

5.6 Summary

The critical review had identified the management methods practiced in P2M/KPM. The semi-structured interviews held with the experts had further provided a better insight and clearer view on the project management style of P2M/KPM. The ethnomethodology of the interviews and field conversations were concisely elaborated for the validation and approval of questionnaire. The statistical results obtained from the data analyses of the questionnaire were interesting and showed a certain pattern on the application of P2M/KPM management methods in Japanese organisations in Malaysia and Japan. Triangulation technique was used to facilitate the validation of data. This was done by inviting experts in the project management field, especially those who are familiar with JPM, to further verify the research findings. Eventually, with the positive justifications from the experts, it renders an important insight into the current trend of P2M/KPM management tendency found in Japanese organisations in Malaysia and Japan.

CHAPTER 6

CONCLUSION

6.1 Introduction

This topic concludes the results of the whole research. It restates the findings of each objective of the study in a systematic way for easier understanding. It also elaborates on the limitations found in this research and recommendations for future studies.

6.2 Summary of Findings

This research has successfully achieved all three objectives as stated in the first chapter, namely:

Objective 1: To conduct a critical review on P2M/KPM.

Objective 2: To identify the application of P2M/KPM from the view of Japanese organisations in Japan and Malaysia.

Objective 3: To develop a regression model by identifying the influential parameters of P2M/KPM that correlate with the success of the project.

6.2.1 Objective 1: To Conduct a Critical Review on P2M/KPM

A thorough study on P2M/KPM were conducted based on the document analysis and literature review of secondary sources such as journals, articles, conference proceedings, books and relevant websites. The critical review included background interpretations of P2M/KPM, which covered its origin, history, philosophy, ideology, concept, cultural differences and management behaviour/methods. From the critical review, 35 management methods of P2M/KPM were identified and utilized in the questionnaire design. There is an explanation attached to each method/parameter to understand why it was structured in the questionnaire survey form. The implications from this review were vital to further elucidate the management methods of P2M/KPM. The identified management methods are shown in Table 6.1.

Table 6.1: Identified Management Methods

	Management methods
	Phase 1: Conceptual / Formation / Initiating / Definition
1.	Clarifying strategic targets and setting short-term targets to achieve them. An action plan is drawn up to realize the targets.
2.	Analyzing the current organisational characteristics such as values and norms; and clarifying the difference between the ideal and present standard norm, before designing a suitable norm for the organisation.
3.	A conceptual plan is used to develop a report of feasibility study (scheme report) with the intention to facilitate flexible adaption to possible occurrence of changes.
4.	When making a difficult decision, established relationships with the vendors/clients (inter-human relations) will be prioritized.
5.	In managing financial matters of a project, reasonable burden distribution and risk sharing among stakeholders are practiced.
6.	Having a system to support each management work and the results of each management will be accumulated and reused as knowledge resources.
	Phase 2: Planning / Build up / Design / Start up
7.	Encouraging comprehensive breakthrough by application and combination of new knowledge to upgrade the performance.
8.	Project information is shared and all data of the project is displayed. Emphasizing on transparency and visualization of objectives.
9.	Setting up a project organisation that is under the direct control of top management. Project managers receive missions conveyed directly from top

	management.
10.	Daily morning assembly / group meeting is conducted before the start of a working day.
11.	Systems approach to systematically design the details for implementation of work processes and engineering techniques in the project.
12.	To plan, organize, adjust and control all the required resources such as workforce, materials, finances, time, fundamental resources and intellectual resources in an integrated manner.
Phase 3: Implementation / Production / Progress	
13.	Emphasis on teamwork and achieving group goals.
14.	When managing a project, adapting to changes in environment when necessary is practiced. This means the possibility of deviating from the initial plans and objectives.
15.	Practicing 'target management' in handling projects where time limit for each milestone is set and the starting date is decided counting backward from that deadline. Also known as backward operation process planning system.
16.	Applying concurrent engineering / simultaneous parallel development.
17.	Emphasizing value creation activities such as development of new products/business models, operational innovation, through continuous improvement in routine processes.
18.	Acquiring new knowledge and information through practicing innovation is often encouraged to enhance competitive advantage.
19.	Encouraging continuous improvement at the work-floor level to find ways of making new knowledge become beneficial.
20.	To bridge cultural barriers between different groups, mutual trust and respect to each other in a complex project environment are practiced.
Phase 4: Acceptance / Handover	
21.	Upon project completion, a lessons-learned review or reflection activity is conducted.
22.	Possessing longer-term alliances (e.g., with suppliers, clients) and ability to obtain informal relational contracts in future.
23.	Upon completion of a certain project, consideration of short-term and long-term effects, and verification of risk and effect is done to ensure the realization of benefits and satisfaction of stakeholders.
24.	After a completion of product/services provided, a routine work is designed in a work program for maintenance based on knowledge management.
General practice in managing a project across all above phases	
25.	Encouraging cross-divisional project team system / cross-departmental process.
26.	Encouraging lifelong employment.
27.	Employing part-timers / contract workers/temporary staffs.
28.	Practicing lay-offs when the organisation or economy is facing downturn.
29.	Emphasizing on continual training and human development education.
30.	The predetermined project organisation structure can be altered due to situation changes in midst of project.
31.	Decision making tend to be uncertain because of collective agreement and group verdict are emphasized.
32.	Emphasizing personal evaluation system/evaluation on individual KPI (key performance index) as individual job tasks and roles in a project are clearly defined and highlighted.
33.	Emphasis on identifying and analyzing constraint conditions and uncertainties from all aspects of a project.
34.	In order to cope with the environmental changes, reorganizing and

	restructuring of company/business are practiced.
35.	Team members and those from other divisions are encouraged to voice out ideas for problem solving and improvement.

6.2.2 Objective 2: To Identify the Application of P2M/KPM from the View of Japanese Organisations in Japan and Malaysia

The identified management methods of P2M/KPM were then used to structure the questionnaire form that was used to survey on the application of the methods in Japanese organisations in Japan and Malaysia. From the results of the survey, it was understood that most of the management methods were applied and practiced in Japanese organisations in Japan and Malaysia, despite the cultural differences found in both countries. The Cronbach's alpha coefficients were calculated to check the reliability of the management methods extracted from multi-point formatted questionnaire. For Malaysia and Japan, the Cronbach's alpha coefficients were 0.923 and 0.870, respectively. As for combined Malaysia and Japan, the coefficient value was 0.898. They show a good internal consistency and reliability as the values were much higher than the threshold value of 0.70. This assures the accuracy of the data and could proceed with further statistical analysis. The mean value for both Malaysia and Japan showed the highest in Phase 3 of implementation/progress, where management methods such as teamwork, mutual trust, adapting to environmental changes, target management, concurrent engineering, innovation and *kaizen* ideology were emphasized. In Malaysia, the top management methods turned out to be emphasis on teamwork, drawing up an action plan to realize targets, and achieving group goals. The management

method with the least mean score was the practicing lay-offs. In Japan, the top management method also emphasizes on drawing up the action plan, followed by emphasis on teamwork. Practicing lay-offs came out last as well. Based on the results from the Kendall's coefficient concordance, it showed that respondents from Japan and Malaysia, respectively, have a high degree of agreement on the rankings of the management methods. The ranking of the mean scores on the management methods for both countries were similar, which indicates their perceptions on the application and importance of the management methods were unanimously agreed upon. Spearman's rank correlation analysis was done to test whether there is any substantial relationship between Malaysia and Japan, and from the analysis results, there was adequate evidence to conclude that there was significant correlation between Malaysian project managers and Japanese project managers on the execution of management methods. A positive correlation was obtained between Malaysia and Japan, which interprets that when Malaysia's project managers apply certain P2M/KPM methods in managing their projects, Japan's project managers have a tendency in applying the same methods as well. Although the perceptions of the project managers from both countries were similar, there were still some significant differences in their management ways. Further tests were done to discover the similarity and differences on the degree of application of each management method. The results from the Mann-Whitney U test did not detect a large variation in the median values and the actual calculated *p*-values for most of the management methods were more than the prescribed significance level of 0.05. For this scenario, H_0 was not rejected, which means the result has further reinforced that both countries do

not show a significant difference in their management perceptions. However, there were three management methods, i.e., 'daily morning assembly', 'practicing innovation' and 'employment of part-timers' that rejected H_0, indicating that there is statistical evidence stating a significant difference in perceptions of the project managers in Malaysia and Japan for these three management methods. To check if there were differences in perceptions on the management methods among the different organisations, namely manufacturing, construction, IT, engineering and others, a Kruskal-Wallis test was conducted on the 100 respondents. Based on the results obtained from this test, most of the management methods do not have significant differences in perceptions among the different organisations. However, there were three management methods that indicated a difference in terms of mean values. Since Kruskal-Wallis test will only show that a difference exists, and does not tell exactly where the differences lie, Mann-Whitney U tests were used as further *post hoc* tests to identify where the differences were found. Table 6.2 summarizes the management methods that showed difference in perceptions among the industries.

Table 6.2: Management Methods with Different Perceptions among Industries

Management methods	Industries
Daily morning assembly	Manufacturing and Others
Target management	Manufacturing and IT
Reflection activity	IT and Engineering

The conclusions drawn were not just based on observations but were supported with empirical evidence from the statistical analyses conducted. Experts from the project management field also validated the findings and

their feedbacks were positive. Based on the cross-country cultural studies, it can be said that the project managers in different countries may have different approaches when managing a project. However, even if the practice of project management is affected by the cultural dimension, project managers in different countries run projects in a similar nature.

6.2.3 Objective 3: To Develop a Regression Model by Identifying the Influential Parameters of P2M/KPM that Correlate with the Success of the Project

By utilizing the regression analysis, the influential parameters of P2M/KPM management methods that correlate with the success rate were identified. Among the 35 management methods/parameters, 21 parameters were found to be significantly related with the success rates for the overall 100 respondents. By only considering respondents from Malaysia, nearly all (approximately 28 parameters) the parameters are strongly correlated with the success rates. For Japan, only three parameters, namely, 'Burden distribution and risk sharing among stakeholders', 'Adapting to environment changes' and 'Cross-departmental process' are significantly related to success rates. These three latent parameters seemed to be the essences that possess a strong influence towards the success of a certain project. Project managers can emphasize more on executing these three parameters when managing their projects for higher success rates. The behavioural aspects of project managers, such as their management skills or leadership, also play an important role in determining the success of a project. Project managers may consider adopting

people skills or associated behaviours of the characteristics of an effective project manager with the intention to have a more successful project outcome. Project managers who have strong people managing skills in areas such as communication, teamwork and cooperation, could improve the delivery of successful projects.

A regression model was developed from the regression analysis. The regression model renders the information of how much percentage of success rates can be increased if certain management methods were focused or executed. Looking at the first parameter 'Drawn up action plan' for instance, by observing the coefficient obtained for the overall case (for 100 respondents of Malaysian and Japan combined), the success rate could approximately increase by a 10.27%, when the five-point Likert scale increases by a unit. A similar interpretation can be applied to the other significant parameters. Another way to interpret the results data is to use the coefficient of determination, R^2 value. R^2 is defined to measure the amount of variability in one variable that is shared by the other. By looking at the R^2 value of parameter ‘Drawn up action plan’, and by converting the value into a percentage, it can be interpreted that ‘Drawn up action plan’ can only account for 12.4% of variation in the success rate. It still leaves 87.6% of the variance yet to be explained which depends on parameters other than 'Drawn up action plan'. This information obtained is significant and relevant to project managers as they will know which segment to pin-point or put more concentration on when managing a project to ascertain a better success rate. These empirical findings will be very useful. Experts also elaborated on the three latent

parameters and verified the findings to be in accordance with the current practice in the project management field.

6.2.4 Summary of the findings

In conclusion, all three objectives were achieved. The identified management methods of P2M/KPM through critical review were found to be relevant and Japanese organizations do apply them when managing their projects. A clear picture on which management methods are applied is obtained. Based on the developed regression model, parameters that influence the success rate of a project for both countries were identified. The outcome provides a guideline on which management methods are essential and worth to be applied.

6.3 Conclusion of Research

JPM is a project management approach that is comprehensive and adaptable to flexible environments. Through this research, it can create awareness on the JPM approach. Most of the identified P2M/KPM management methods have been applied by the Japanese organisations in Japan and Malaysia, regardless of the nature of the organisations in general. The significant differences between Malaysia and Japan could be rooted in environment, ethical or behavioural influences. These identified differences in culture will lead to competitive advantages in terms of better learning and

innovative practices within the organisation. The results indicate that these management methods are quite influential in determining the success rate of the project. Project managers can concentrate on the identified influential parameters and place more emphasis on them when managing projects in order to obtain higher success rates. The research signifies that P2M/KPM is quite an effective method and is practiced in Japanese organisations both in Malaysia and Japan. The research outcome would determine the feasible use or incorporation of JPM principles with the existing management principles in their organisations. It renders a useful insight into the discovery of yet another best practice in project management, and to develop a mutual or complimentary model for the existing project management model to cope with the current global recession.

6.4 Contributions to the Existing Knowledge/ Research Area

6.4.1 Significance of Study

The findings obtained from this research have few contributions to the existing knowledge area. It is inferred that the importance of this study is to understand and give an insight into the clarity of the philosophy and ideology of P2M/KPM. A better understanding on the behavioural aspects of project managers in Japanese organisations in Malaysia and Japan can be acquired. This information will come in handy for those who are not just liaising with Japanese organisations, but also to those who are dealing with non-Japanese organisations. It could work as a reference base or a benchmark in project

managing especially when it involves cross-country projects. Joint projects with different countries are already difficult as it involves different stakeholders from various backgrounds and cultures. Once they capture the whole idea of the different management methods, its practice patterns, the tendency of their applications and cultural differences, the understanding will act as a fundamental to prevent the manifestation of disputes when managing a project. The role of cultural orientation in managing a project is significant and has proven to influence the business performance (Yazici, 2009). Therefore, this study can be used as a basic guide, probably as a tool to understand the managing of cultural patterns and resolving disputes, if any. When all parties perceive the management methods of P2M/KPM, projects could be managed smoothly.

This research stresses the relevancy of P2M/KPM and through this study awareness could be brought upon on the existence and application of P2M/KPM methods in manufacturing, construction, IT and engineering industries. The analysis of the results and findings from this research will provide a general and clearer guideline to project managers, whether they are new or experienced project managers on the management methods of P2M/KPM. Project managers can apply the identified feasible management methods when managing their incoming projects to obtain higher success rates.

From this study, apart from obtaining deeper understanding on the management methods of P2M/KPM, the influential parameters that could assist in making a projects' success rate higher were identified. This

information is crucial and important. It is very useful to project managers as to target which management method to concentrate and to place more focus on. Through the regression model, one can foresee how much percentage of increase in the success rate one could estimate when that certain management method is executed. Hence, this is a significant finding as it reveals a clear picture on the influential parameters or the influential management methods when handling projects with Japanese organisations in Malaysia and Japan.

Identifying the features and essence of P2M/KPM could lead to enhancement of existing project management methods that will eventually assist in managing projects to obtain ultimate results. The existing methods of handling projects are at present found to be workable in some ways or another. The identified features and essences of P2M/KPM are not replacing the existing methods but may help in improving the methods that are being practiced all these while, in order to obtain better outcome. This study also further contributes to the limited previous research conducted in the area of JPM, specifically P2M/KPM, as seen from the table in Bibliography A. The list showed limited research was done in this area in particular. This further reinforces the intention of this research to explore deeper in JPM especially P2M/KPM in terms of its philosophy, cultural studies and correlation with project success. From the list, there is also adequate evidence indicating very limited studies have been conducted in terms of P2M/KPM correlation with manufacturing, construction, IT and engineering industries. This fact further supports the importance of this research as there are scarce resources and studies in this area.

6.4.2 Practical Contributions

Project managers can use the findings from this research in managing their projects as a practical guideline when they handle projects associated with Japanese organisations. A deeper understanding of the management patterns in Japanese organisations in Malaysia and Japan can be acquired. It is understood that mismanaging cultural differences can lead otherwise successful managers and organisations to be ineffective and frustrated when working across cultures (Zwikael et al., 2005). However, when these cultural differences are successfully managed, innovative business practices, better learning within the enterprise and sustainable sources of competitive advantage could be achieved (Hoecklin, 1996). Therefore, it is important to learn the management of cultural characteristics, and by understanding the cultural differences and behaviours of the Japanese society, it can aid in communications with them in terms of project management and handling business deals. Project managers from both countries are able to learn from each other and adopt suitable management methods when dealing with projects in different circumstances. The results show the management method of "To bridge cultural barriers between different groups, mutual trust and respect to each other in a complex project environment are practiced" was one of the significant parameters that influences the success of a project. Hence, managing cultural differences is rather an important skill to possess.

Japanese engineers and also technical project managers want to identify knowledge and information retrieved from past projects to be captured

for future project purposes as part of their knowledge management activities (Watanabe and Benton, 2013). From the findings of this research, the loop holes and problems that project managers faced from past projects could be understood. A deeper understanding on which management skills to apply could lead to better performances or vice versa could also be obtained. Based on the respondents' past experiences and their access to knowledge from past projects, the findings from this research will help in moulding the theoretical guidelines for future development tasks. Apart from that, the information obtained from the open-ended questions as to which phases in a project have potential room for improvements, it could assist other project practitioners to have a better perspective and idea on where to place more concentration when managing a project.

In addition, the workable project management skills acquired can also be applied to non-Japanese organisations according to the influential parameters for managing a project. The capability of each management method could be highlighted and measured from the regression analysis model when information on how much weightage it carries in percentage on the success rates are known. The findings are able to draw more attention to project managers and they will know where to place more focus when managing a project. It then leads to a greater awareness of specific management methods that can contribute to higher success rates in project management, especially in dealing with Japanese organisations.

6.4.3 Theoretical Contributions

The research findings project an overall picture on how Japanese organisations in Japan and Malaysia manage their projects and have important theoretical implications. Based on the questionnaire survey, it has been found that most of the organisations apply the JPM approach or adopt the Japanese body of knowledge, namely P2M/KPM ideology when managing projects. The research has indirectly discovered the philosophies on P2M/KPM in overall project management knowledge. This research is able to provide a clearer and informative insight into the philosophy and ideology of P2M/KPM. P2M/KPM framework can be adopted as a reference or benchmark in project management, especially when liaising with projects owned by Japanese stakeholders. From the test hypotheses results, it indicates that Japanese organisations in Malaysia and Japan showed a similar trend and their perceptions are positively correlated. Therefore, the management methods of P2M/KPM that have been summarized here are applicable for projects related to Japanese organisations in both Malaysia and Japan.

The Japanese body of knowledge in project management, namely P2M/KPM is relatively new as only limited articles and journals have been published in Japanese for P2M/KPM, and can hardly find any published articles or journals in English. Language has at present become a barrier for the outside world to learn more about the topic. Hence, it is imperative to bridge this language gap as English language dominates the business world and international managers do believe that if they have attained English

language proficiency, they will have the ability in global business communication (Kameda, 2014). In this research, concepts and principles of P2M/KPM were clearly outlined in English language. Therefore, this research has opened up windows and created opportunities to further understand P2M/KPM from more precise angles.

Referring to the table in Bibliography A on the cross-cultural studies, the previous researches on JPM were mostly focussed on Toyota-based concepts such as Toyota Production System (TPS), just-in-time (JIT) or lean. There was lack of studies done on JPM from other aspects of management method philosophies, especially on P2M/KPM. Even if there were researches on management methods, most of the management style studied were based on PMBOK management style. In addition, new project management theories or a broadening of project management concepts are being conducted. The research findings have helped to fill the gap in this sense by contributing and extending the current research capacity in terms of information and knowledge on P2M/KPM.

P2M places more emphasis on solving complex projects and there is a need to have further studies on P2M to manage mega and complex projects so that a new successful management paradigm could be created (Tanaka, 2014). This research has contributed to a better understanding on the basic theories and philosophies of P2M/KPM that could assist in developing this new management paradigm. The findings can act as empirical evidence and the information can reflect the present project management conditions. A

conclusion can be drawn from this study that shows the influential parameters have key relationships with project performances.

Figure 6.1 illustrates how management method relates and how much weightage it contributes into the project success rate. This developed model works as a conceptual framework or rather a checklist manual where one can immediately capture the importance of the management methods involved in each phase when managing projects. The legend represents the impact in percentage it has on project success. A project can be very complex and this framework could facilitate in tackling such complicated projects. This framework will enhance the managerial confidence of project practitioners as they will realise which area to place attention for a more efficient and effective project management. The implications of this research can also add significant knowledge and details for building a holistic academic view on P2M/KPM. It is apparent how this framework advances management theories/practices and contributed in extending the existing theories; as the identified management methods now not only act as mere management methods, but also measurable parameters for project success. For example, if the project manager is managing a cross-country project between Japanese organisations in Malaysia and Japan, he/she may utilize the framework shown in Figure 6.1(a) as reference. If the project revolves only around Japanese organisations in Malaysia, Figure 6.1(b) might turn out handy. Similarly, if the project is mainly liaising with Japanese organisations in Japan alone, information from framework Figure 6.1(c) will be useful. Therefore, by documenting this information obtained across organisations, this study contributes to the

development of P2M/KPM theory. This can also imply directions for future empirical research.

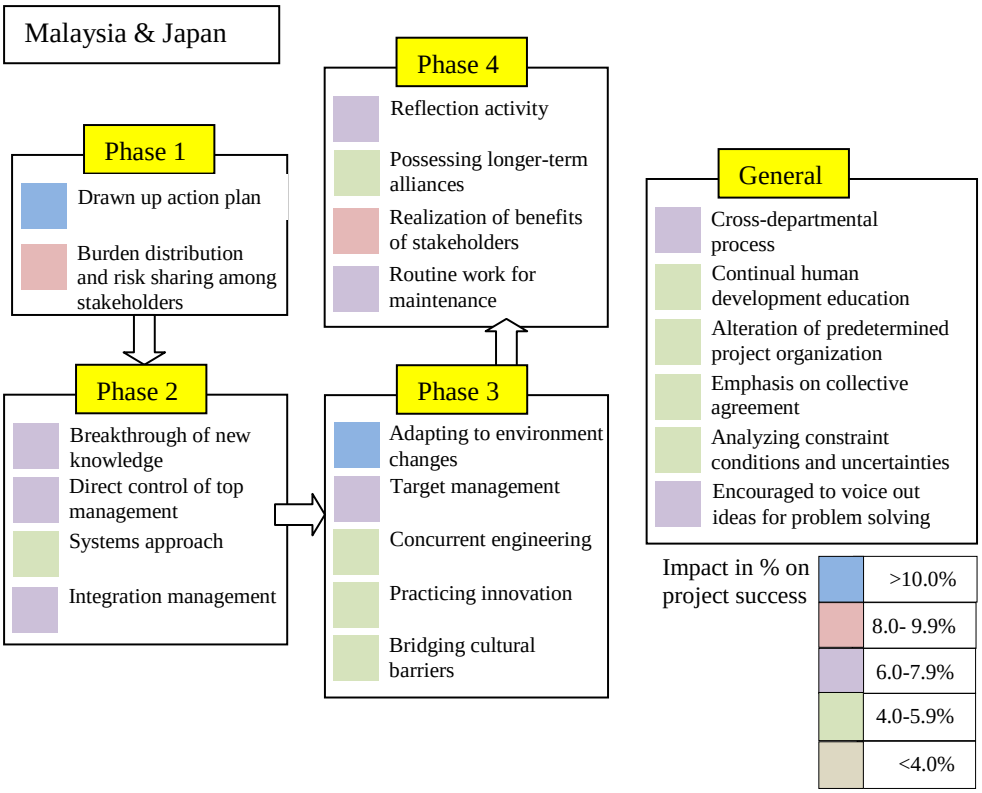


Figure 6.1(a): For the Case of Malaysia and Japan

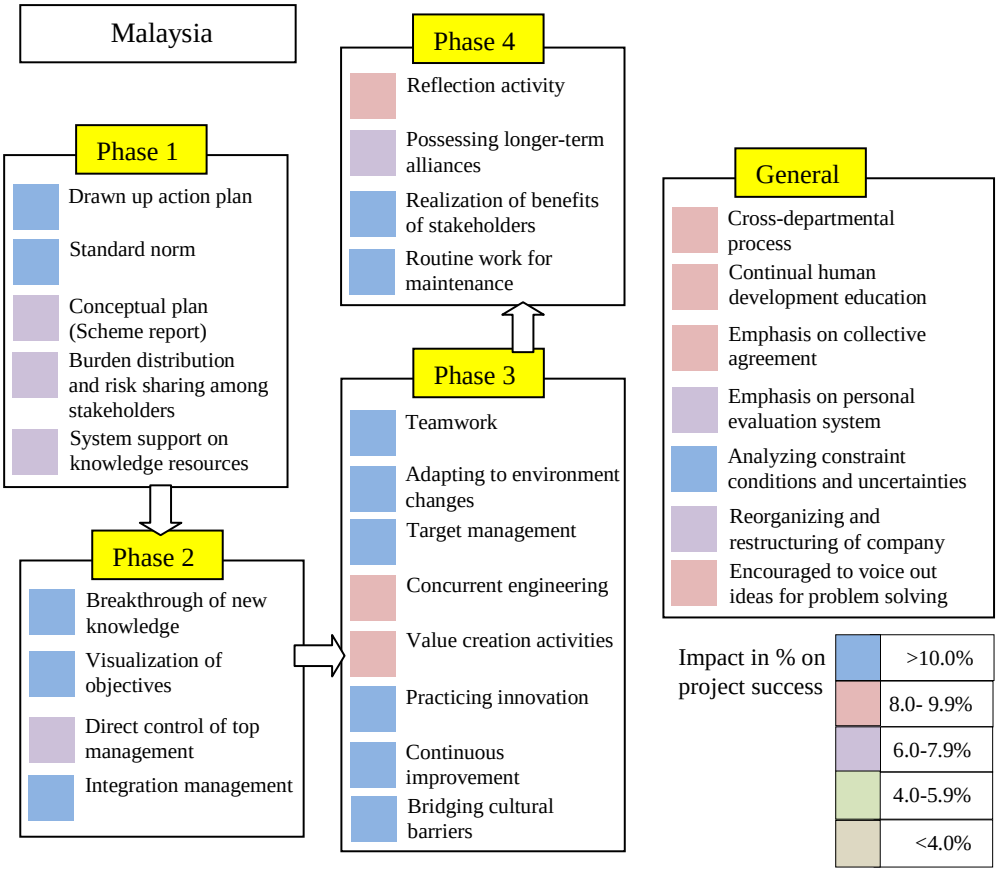


Figure 6.1(b): For the Case of Malaysia Only

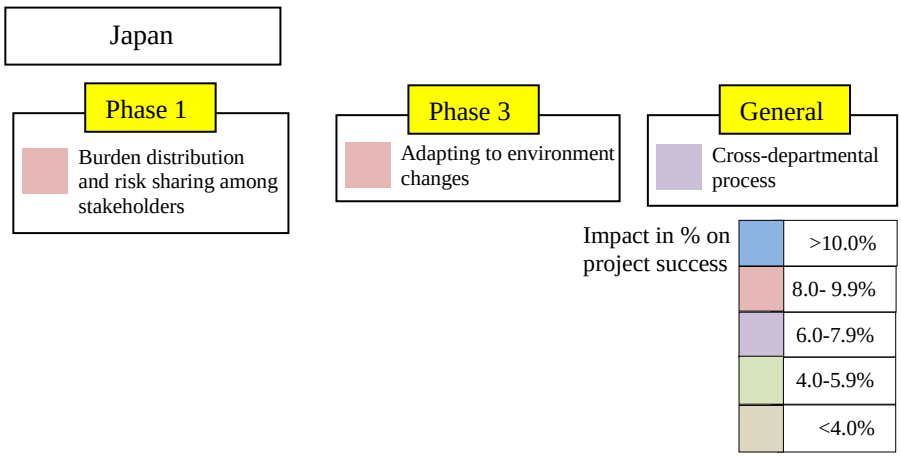


Figure 6.1(c): For the Case of Japan Only

Figure 6.1: Conceptual Framework on Correlation between Influential Parameters with Project Success Rate in %

The identified features and essences of P2M/KPM could be used to enhance the existing international project management methods. The highlighted elements and principles of P2M/KPM are not in anyway replacing the existing project management methods, but might instead help in improving the existing methods to achieve a more promising outcome.

6.5 Limitations and Recommendations

There are however, some limitations to this study. The research was done based on Japanese organisations in two countries, Japan and Malaysia only. For future studies, a wider scope could be proposed, covering other organisations as well, such as multinational organisations or local organisations, and not only limited to Japanese organisations. Japanese or non-Japanese organisations in other countries can also be considered to be researched to obtain more information on the application of P2M/KPM in the region. From this study, feedbacks on which phases in the project management process that could be improved in order to increase the success rates of a project were also received. More detailed studies could be done on each management techniques in that particular phase to allow accessibilities into obtaining a wider range of knowledge and information in that area. It will be of increasing interest to international project practitioner community to learn from it and to polish their management skills for better performance. Possessing good management techniques and skills will reflect on their best work practices. There are few avenues for future research based on this study.

A more detailed segregation of project success could be done. For example, project success can be defined according to few categories such as time, cost, quality, technical performances and customer satisfaction. It will be intriguing to be able to identify which categories of project success that these influential parameters are contributing. Then, the area to focus in order to achieve an even higher project success rate could be narrowed down. Apart from that, studies on non-JPM project management methods could also be considered for future objectives. With the information obtained, the conceptual model itself could be enhanced or a more comprehensive model could be developed and used as reference to have smoother management processes when dealing with projects.

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Appendix A

List of published journal articles/conference proceedings by the author

#	Year	Author(s)	Journals	Title of Articles
Journal ariticles				
1	2012	Low,F.S. and Chong,H. Y.	Procedia - Social and Behavioral Sciences	A Comparative Approach of Japanese Project Management in Construction, Manufacturing and IT Industries
2	2012	Low,F.S. and Chong,H. Y.	Trends and Development in Management Studies	A review towards the new Japanese project management: P2M and KPM
3	2012	Low,F.S. and Chong,H. Y.	Wulfenia Journal	Innovative project managing methods in automotive industry: A case study of Japanese organisations in Malaysia
4	2013	Low,F.S., Chong,H. Y. and Lee,W.P.	Journal of Advanced Management Science	Identifying key features of the innovated Japanese Project Management: A critical review on its philosophy
Conference proceedings				
1	2011	Low,F.S. and Chong,H. Y.	6th International Conference on Construction in the 21st Century: Construction Challenges in the New Decade	Approach of Japanese Project Management - P2M/KPM Method in Construction Industry
2	2012	Low,F.S. and Chong,H. Y.	2nd International Conference on Engineering and Technology Innovation 2012 (ICETI2012)	A critical review into the evolution of Japanese Project Management: A comparative approach
3	2013	Low,F.S., Chong,H. Y. and Lee,W.P.	3rd International Conference on Management and Service Science - ICMSS 2013	Identifying key features of the innovated Japanese Project Management: A critical review on its philosophy
4	2014/ 2015	Low,F.S., Chong,H. Y. and Lee,W.P.	International Conference on Applied Sciences & Industrial Technology 2015 - Industrial Technology & Engineering Symposium (24^{th} -26^{th} February 2015)	The innovated Japanese project management principles on its industrial applications (Accepted articles to be published in selected journal indexed by Scopus and/or ISI)
Journal articles (under review)				
1	*2014*	Low,F.S., Chong,H. Y. and Lee,W.P.	International Journal of Project Management	Application of Japanese Project Management Methods (P2M/KPM) of Japanese Organisations in Japan and Malaysia

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Appendix B

Semi-structured interview questions for Japanese organisations in Malaysia

UNIVERSITI TUNKU ABDUL RAHMAN
Wholly Owned by UTAR Education Foundation (Company No. 578227-M)

Questions on Project Management

1) What are the project management methods/theories that your organisation practicing currently? If not applicable, is there any informal management style or method applied in managing projects?

2) If there is such practice, how do your really practise this theory or management method in your projects? Kindly explain in detail or you may give examples of the scenarios.

3) In managing a project, there are different phases or stages involved. How many phases/stages do your projects normally have and what are the phases encountered?

4) In each different stage, what are features/characteristics of the management style that being applied/emphasized?

5) Is the idea of localization important in your project management? To what extend is localization being practiced? For example, in subsidiaries of Japanese organisation abroad, is Japanese **OR** local style/method of managing people or production being prioritized?

6) Have you come across any other project management methods? Does your organisation practice Project & Program Management (P2M) or *Kaikaku* Project Management (KPM) of Japanese Project Management.

7) Are your projects mission oriented* or goal oriented**?
   * ***mission oriented****: In order to accomplish a mission or achieve a target, this mission oriented approach not only takes into account each process that comes along the way, but also involves the detailed content of each process.*
   ** ***goal oriented****: In order to reach a goal or achieve a target, the process along the way is not so important, as long as the end results are delivered.*

Address: No.9, Jalan Bersatu 13/4, 46200 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Postal Address: PO Box 11384, 50744 Kuala Lumpur, Malaysia.
Tel: (603) 7958 2628 **Fax:** (603)7956 1923 **Homepage:** http://www.utar.edu.my

Appendix C

Semi-structured interview questions for Japanese organisations in Japan

UNIVERSITI TUNKU ABDUL RAHMAN
Wholly Owned by UTAR Education Foundation (Company No. 578227-M)

Questions on Project Management

1) What are the project management methods/theories that your organisation practicing currently? If not applicable, is there any informal management style or method applied in managing projects?

2) If there is such practice, how do your really practise this theory or management method in your projects? Kindly explain in detail or you may give examples of the scenarios.

3) In managing a project, there are different phases or stages involved. How many phases/stages do your projects normally have and what are the phases encountered?

4) In each different stage, what are features/characteristics of the management style that being applied/emphasized?

5) Have you come across any other project management methods? Does your organisation practice Project & Program Management (P2M) or *Kaikaku* Project Management (KPM) of Japanese Project Management.

6) Are your projects mission oriented* or goal oriented**?
** **mission oriented**: In order to accomplish a mission or achieve a target, this mission oriented approach not only takes into account each process that comes along the way, but also involves the detailed content of each process.*
*** **goal oriented**: In order to reach a goal or achieve a target, the process along the way is not so important, as long as the end results are delivered.*

Address: No.9, Jalan Bersatu 13/4, 46200 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Postal Address: PO Box 11384, 50744 Kuala Lumpur, Malaysia.
Tel: (603) 7958 2628 **Fax:** (603)7956 1923 **Homepage:** http://www.utar.edu.my

Appendix D

Questionnaire Form

UNIVERSITI TUNKU ABDUL RAHMAN
Wholly Owned by UTAR Education Foundation (Company No. 578227-M)

Jaslyn Low Foon Siang
Faculty of Engineering & Science,
Universiti Tunku Abdul Rahman,
Jalan Genting Kelang, Setapak,
53300 Kuala Lumpur.
Date:

To Human Resource Department /人事部御中

Research on Project Management

With regards to above-mentioned matter, I, Jaslyn Low, am a graduate student seeking my Doctor of Philosophy (PhD) degree in Science (Project Management) at Universiti Tunku Abdul Rahman. Concurrently, I am also a lecturer at the same university.

I am conducting a research on project management and the purpose of the enclosed questionnaire is to gather information about the practice of project management in Japanese organisations locally and overseas. This research is solely for academic research purposes. The findings will be used to disseminate knowledge about project management in the education field. All your responses will be kept confidential without disclosing the profile and information as to the organisation or the respondent. Kindly reply as detailed as possible for better and deeper understanding on the matter. We would appreciate it if this questionnaire can be answered by top managerial personnel or project related managers such as plan, production, plant or construction managers, etc.

We understand that you have a tight schedule, but this questionnaire may only take up 15 to 20 minutes of your time. We are grateful for your kindness to allocate some of your precious time for us. Your cooperation is much appreciated. We hope to receive your reply in 2 weeks.

Queries or further information about this research can be directed to me at email: lowfs@utar.edu.my or cell phone: +6012-2949109.

Thank you very much.
Company Name

人事部御中
件名：プロジェクト・マネージメントに関する研究

私、ジャスリン・ロウと申しまして、現在マレーシアの Universiti Tunku Abdul Rahman に博士課程（プロジェクトマネジメント）に在籍しております。また、同大学の講師としても働いております。

現在、私はプロジェクトマネジメントの研究を行っております。添付したアンケートは、日本とマレーシアの日経企業におけるプロジェクトマネジメントの実践の情報を収集する目的としております。ご協力いただく情報は、すべて本研究目的であり、調査結果は教育分野のみに使用させていただきます。貴社の全ての回答は厳密に取り扱われ、また企業とご回答いただく方の情報は一切公開いたしません。この研究レポートをより詳細に理解できるよう、できるだけ詳しくお答え願います。本アンケートは経営トップ又はプロジェクト関連マネジャー、例えば企画、生産、プラント或いは建築などの部署に携わっていらっしゃる方々などに答えていただけると幸いです。

このアンケートを回答するにあたり、約 15～20 分かかると思われます。お手数をおかけして誠に恐縮ですが、ご協力をお願い申し上げます。尚、お忙しいところ申し訳ありませんが、本回答は 2 週間以内にご返信いただきますようお願い申し上げます。

この研究に関するご質問・お問い合わせは、直接私宛にメール：lowfs@utar.edu.my　又は携帯電話：+6012-2949109 までお願いします（日本語可）。
どうもありがとうございます。
Yours sincerely,
Jaslyn Low

Section A – General Information/一般情報

1. Years of tenure with the company.
   貴方在職年数
   ☐ < 5 years ☐ 5-10 years ☐ 11-15 years ☐ 16-20 years ☐ >20 years

2. Years of working experience related to project management.
   プロジェクトマネジメントに関する経験期間
   ☐ < 5 years ☐ 5-10 years ☐ 11-15 years ☐ 16-20 years ☐ >20 years

3. The nature of your organisation.
   貴社の業種
   ☐ Manufacturing ☐ Construction ☐ Information Technology ☐ Engineering
   ☐ Others: (please specify)_____

4. Type of organisation. (apply to Malaysian questionnaire only)
   貴社の企業タイプ（マレーシアの企業のみ）
   ☐ 100% Japanese owned / 100% subsidiary of Japanese parent company
   ☐ Joint venture; ___% Japanese, ___% Local (Malaysia), ___% Others
   ☐ Others (please specify):_____

Section B – Project management methods applied / プロジェクトマネジメントの応用方法

Please share with us the methodologies practiced by you or your organisation when managing projects.
Kindly rate on the following criteria by circling the appropriate option.
プロジェクト管理の際の、貴方・貴社が実践する方法を教えてください。
下記の基準を評価し、当てはまるものを○を付けてください。

1: *never practice* 全く実践しない　2: *rarely practice* めったに実践しない　3: *practice sometimes (neutral)* 時々実践する（ニュートラル）　4: *Often practice* しばしば実践する　5: *Very often/Always practice* 常に実践する

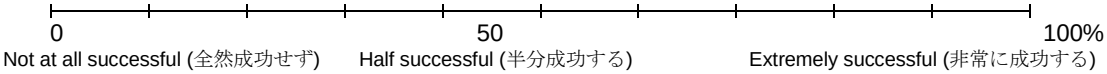
Phase 1: Conceptual / Formation / Initiating / Definition　フェーズ 1 : 概念 / 設立 / 開始 / 定義						
1.	Clarifying strategic targets and setting short-term targets to achieve them. An action plan is drawn up to realize the targets. 戦略ターゲットを明確にし、それらを達成するのに短期ターゲットをセットする。ターゲットを実現するため、実行計画が作成される。	1	2	3	4	5
2.	Analyzing the current organisational characteristics such as values and norms; and clarifying the difference between the ideal and present standard norm, before designing a suitable norm for the organisation. 価値観や規範といった組織の特性を分析し、組織に適切な規範をデザインする前に理想と現在の標準の相違点を明確する。	1	2	3	4	5
3.	A conceptual plan is used to develop a report of feasibility study (scheme report) with the intention to facilitate flexible adaption to possible occurrence of changes. 起き得る変化に適合することを促進するため、ある概念プランを用いた実現可能性調査報告書（スキーム報告書）を作成する。	1	2	3	4	5
4.	When making a difficult decision, established relationships with the vendors/clients (inter-human relations) will be prioritized. 難しい決断をする際、ベンダーや顧客との既存の関係 (人間主義) が優先される。	1	2	3	4	5
5.	In managing financial matters of a project, reasonable burden distribution and risk sharing among stakeholders are practiced. プロジェクトにおける金融上の問題を管理する際、利害関係者の負担分布と危険分担が実施される。	1	2	3	4	5
6.	Having a system to support each management work and the results of each management will be accumulated and reused as knowledge resources. 各マネジメント・ワークを支援するシステムを備えて、各マネジメントから得られ	1	2	3	4	5

	る結果は知識源として累積され、また再利用される。	
Phase 2: Planning / Build up / Design / Start up　フェーズ 2：計画 / 設計 / 構築 / デザイン / スタートアップ		
1.	Encouraging comprehensive breakthrough by application and combination of new knowledge to upgrade the performance. 能力をアップグレードするのに新たな知識の応用とコンビネーションによる総合ブレイクスルーを奨励する。	1 2 3 4 5
2.	Project information is shared and all data of the project is displayed. Emphasizing on transparency and visualization of objectives. プロジェクトの情報やデータは共有され展示される。目的の透明性と可視化を強調する。	1 2 3 4 5
3.	Setting up a project organisation that is under the direct control of top management. Project managers receive missions conveyed directly from top management. トップマネジメントが直接コントロールするプロジェクト組織を設置する。プロジェクト・マネジャーは直接トップマネジメントから任務を受ける。	1 2 3 4 5
4.	Daily morning assembly/group meeting is conducted before the start of a working day. 仕事開始前に、その日の朝礼/会議が行われる。	1 2 3 4 5
5.	Systems approach to systematically design the details for implementation of work processes and engineering techniques in the project. プロジェクトにおけるワーク・プロセスとエンジニアリング技術の実施の詳細を系統的にデザインするためシステムアプローチが使用される。	1 2 3 4 5
6.	To plan, organize, adjust and control all the required resources in an integrated manner. 必要とする資源を統合された方法を用いて計画・調節・コントロールする。	1 2 3 4 5
Phase 3: Implementation/ Production/ Progress　フェーズ 3：実施 / 生産 / 進展		
1.	Emphasis on teamwork and achieving group goals. チームワークとグループのゴールを達成させることを強調する。	1 2 3 4 5
2.	When managing a project, adapting to changes in environment when necessary is practiced. This means the possibility of deviating from the initial plans and objectives. プロジェクトを管理する際、必要に応じて環境変化に合わせる。その場合、初計画や目的から外れる可能性を意味する。	1 2 3 4 5
3.	Practicing 'target management' in handling projects where time limit for each milestone is set and the starting date is decided counting backward from that deadline. Also known as backward operation process planning system. プロジェクト遂行においては、各マイルストーンごとの期限を切って、そこから逆算して、各々の作業の開始日を決める「ターゲットマネジメント」が行われる。	1 2 3 4 5
4.	Applying concurrent engineering/simultaneous parallel development. コンカレントエンジニアリング/同時並行開発方式を活用する。	1 2 3 4 5
5.	Emphasizing value creation activities such as development of new products/business models, operational innovation, through continuous improvement in routine processes. ルーチン・プロセスにおける継続的改善で新製品/ビジネスモデルの開発や運用のイノベーションのような価値創造活動を薦める。	1 2 3 4 5
6.	Acquiring new knowledge and information through practicing innovation is often encouraged to enhance competitive advantage. 競争優位性を高めるのに、イノベーションを活用することによって取得する新たな知識と情報はしばしば奨励される。	1 2 3 4 5
7.	Encouraging continuous improvement at the work-floor level to find ways of making new knowledge become beneficial. 新たな知識が有益になる方法を求めるのにワークフロア・レベルにおける継続的改善を重視する。	1 2 3 4 5
8.	To bridge cultural barriers between different groups, mutual trust and respect to each other in a complex project environment are practiced.	1 2 3 4 5

	個別グループ間の文化の壁の架け橋となるよう、我々は複雑なプロジェクト環境内においてお互いに対する尊敬と信頼性を実行する。	
Phase 4: Acceptance / Handover　フェーズ 4：受け取り / 引き渡し		
1.	Upon project completion, a lessons-learned review or reflection activity is conducted. プロジェクト完成後、その結果に関する検討会や反省会が行われる。	1 2 3 4 5
2.	Possessing longer-term alliances (e.g., with suppliers, clients) and ability to obtain informal relational contracts in future. 長期提携（例えばサプライヤーや顧客など）を持ち、将来、非公式契約を結ぶ。	1 2 3 4 5
3.	Upon completion of a certain project, consideration of short-term and long-term effects, and verification of risk and effect is done to ensure the realization of benefits and satisfaction of stakeholders. プロジェクト完成時、利害関係者が利益と満足感をどう得たか、また短期・長期効果、またはリスクとその影響をどう受けたか、確認する。	1 2 3 4 5
4.	After a completion of product / services provided, a routine work is designed in a work program for maintenance based on knowledge management. 製品 / サービスの提供完了後、ワークプログラム内にルーチン・ワークがデザインされる。これは知識マネジメントに基づいたメンテナンスのためである。	1 2 3 4 5
General practice in managing a project across all above phases　上記のフェーズ全般にわたってプロジェクトの管理における一般実践方法		
1.	Encouraging cross-divisional project team system / cross-departmental process. クロス事業プロジェクト・チーム・システム / クロス部門プロセスを奨励している。	1 2 3 4 5
2.	Encouraging lifelong employment. 終身雇用を奨励している。	1 2 3 4 5
3.	Employing part-timers / contract workers / temporary staffs. パート / 契約スタッフ / テンプ社員を雇用している。	1 2 3 4 5
4.	Practicing lay-offs when the organisation or economy is facing downturn. 企業景気の低迷時、従業員を一時解雇することを実施している。	1 2 3 4 5
5.	Emphasizing on continual training and human development education. 頻繁なトレーニングと人材育成開発を推進している。	1 2 3 4 5
6.	The predetermined project organisation structure can be altered due to situation changes in midst of project. プロジェクトの進行中に状況が変化してしまうことによって、プロジェクトの所定組織構造は変更されることが許される。	1 2 3 4 5
7.	Decision making tend to be uncertain because of collective agreement and group verdict are emphasized. 意思決定は集団同意やグループ判決のような集団主義が強調されるため、「曖昧性」を導入する傾向を持つ。	1 2 3 4 5
8.	Emphasizing personal evaluation system / evaluation on individual KPI (key performance index) as individual job tasks and roles in a project are clearly defined and highlighted. 個人の仕事任務と役割分担が明確に指示されるため、メンバーの人事評価制度 / 個人の重要業績評価指標を強調している。	1 2 3 4 5
9.	Emphasis on identifying and analyzing constraint conditions and uncertainties from all aspects of a project. プロジェクトのいかなる面から起き得る制約条件や不確実性の特定と分析を強調している。	1 2 3 4 5
10.	In order to cope with the environmental changes, reorganizing and restructuring of company / business are practiced. 周りの変化に対応するため、会社 / 事業の再編成や改革が実践される。	1 2 3 4 5
11.	Team members and those from other divisions are encouraged to voice out ideas for problem solving and improvement. チームメンバーや他部門からの意見/改善に関する発言が奨励される。	1 2 3 4 5

Open-ended questions

1. By applying the above-mentioned management methods, did you successfully achieve what you want and expect in the project? Please judge based only on the projects that you managed, excluding other external factors such as economy, natural disaster, political issues, etc. *Rate your satisfaction / score by crossing the line below.*
上述のマネジメント法を応用することによるあなたのプロジェクトは期待通りにいきましたか。あなたがマネージしたプロジェクトに基づいて評価してください。景気、天災、政治問題などのような他の外部の要因を外してお答えてください。貴方の満足感 / スコアを評価し下記の線をつけてください。



Not at all successful (全然成功せず) Half successful (半分成功する) Extremely successful (非常に成功する)

2. In your opinion, do you think there is still room for improvement in the project management methods applied in your organisation? If yes, in which phase?
あなたの意見で、貴社が実践しているプロジェクトマネジメント方法に対し改善する余裕がまだあると思いますか。あるとしたら、どこのフェーズですか。

☐ Phase 1 Conceptual / Formation / Initiating / Definition ☐ Phase 2 Planning / Build up / Design / Start up ☐ Phase 3 Implementation / Production / Progress ☐ Phase 4 Acceptance / Handover ☐ Phase – General practice

3. Are there any other principles / methods that you have applied but not shown here, that you would like to share with us?
上記に述べられていないけれども、あなたが応用した他の方針 / 方法がありますか。よろしければ、教えてください。

----------**Thank you very much for your cooperation** ご協力どうもありがとうございました----------

Appendix E

Questionnaire and Explanation

Section A – General Information

Explanation: This section is to obtain a brief idea on the background of the respondent and the organization.

1. Years of tenure with the company.

☐ < 5 years ☐ 5-10 years ☐ 11-15 years ☐ 16-20 years ☐ >20 years

To know about the respondent's understanding towards the organization.

2. Years of working experience related to project management.

☐ < 5 years ☐ 5-10 years ☐ 11-15 years ☐ 16-20 years ☐ >20 years

To understand the respondent's years of experience.

3. The nature of your organization.

☐ Manufacturing ☐ Construction ☐ Information Technology ☐ Engineering

☐ Others: (please specify)_____

To get an idea of the management methods that are practiced in the corresponding industry.

4. Type of organization (apply to Malaysian questionnaire only).

☐ 100% Japanese owned/ 100% subsidiary of Japanese parent company
☐ Joint venture; ___% Japanese, ___% Local (Malaysia), ___% Others
☐ Others (please specify):_____

To identify the influences that the stakeholders might have upon the organization.

Section B– Project management methods applied

Please share with us the methodologies practiced by you or your organization when managing projects.

Kindly rate on the following criteria by circling the appropriate option.

1: *never practice* 決して実践せず 2: *rarely practice* めったに実践せず 3: *practice sometimes (neutral)* 時々実践する（ニュートラル） 4: *Often practice* しばしば実践する 5: *Very often/Always practice* 常に実践する

	1	2	3	4	5
Phase 1: Conceptual / Formation / Initiating / Definition					
1. Clarifying strategic targets and setting short-term targets to achieve them. An action plan is drawn up to realize the targets.	1	2	3	4	5

The first step to be carried out in the 4 steps of a *kaikaku* process. For example, the usage of project & program balanced scorecard (PBSC) for strategic planning and concept control of projects. PBSC is a strategic planning and control concept for projects, was established by the Japanese study group. Project-BSC is also used for evaluating projects in multi-measures

2.	Analyzing the current organizational characteristics such as values and norms; and clarifying the difference between the ideal and present standard norm, before designing a suitable norm for the organization. The subsequent 3 steps of a *kaikaku* process.	1 2 3 4 5
3.	A conceptual plan is used to develop a report of feasibility study (scheme report) with the intention to facilitate flexible adaption to possible occurrence of changes. To assess if scheme model is applied. (KPM)	1 2 3 4 5
4.	When making a difficult decision, established relationships with the vendors/clients (inter-human relations) will be prioritized. Japanese business leaders tend to give priority to inter-human relations.	1 2 3 4 5
5.	In managing financial matters of a project, reasonable burden distribution and risk sharing among stakeholders are practiced. A feature of ①project finance management in P2M. Also indicates part of ②risk management.	1 2 3 4 5
6.	Having a system to support each management work and the results of each management will be accumulated and reused as knowledge resources. Role of information systems in project management. Utilization of ③ project information technology management (Feature of P2M)	1 2 3 4 5
Phase 2: Planning / Build up / Design / Start up		
1.	Encouraging comprehensive breakthrough by application and combination of new knowledge to upgrade the performance. Feature of innovation. *Kakusin* that includes long and short-term innovation.	1 2 3 4 5
2.	Project information is shared and all data of the project is displayed. Emphasizing on transparency and visualization of objectives. Visual management is known to be an effective vehicle for continuous improvement activities or *kaizen*. Also, exhibits ④project objective management featuring visualization of objectives, transparency and accountability. (KPM)	1 2 3 4 5
3.	Setting up a project organization that is under the direct control of top management. Project managers receive missions conveyed directly from top management. Exhibiting *kaikaku* project organization that is used to solve two-boss problems (matrix-style organization) .Aims at managing a project smoothly and also changing the company culture. Having the top management oversees the progression of a certain project is a feature of *kaikaku* project organization. The role of top management is vital to lead *kaikaku* ideas such as business reforms and management innovation in an organization, and to achieve corporate vision. *Kaikaku* can be defined as reformation of value creation that includes enterprise, organizations, technology, etc, by the leading HQ or top management.	1 2 3 4 5
4.	Daily morning assembly / group meeting is conducted before the start of a working day. Morning assemblies are normally adopted by Japanese companies and Japanese organizations in Malaysia. This encourages communication and relations among co-workers. P2M encourages communication skills.	1 2 3 4 5

5.	Systems approach to systematically design the details for implementation of work processes and engineering techniques in the project. To assess if system model is applied. (KPM) Indicates ⑤project systems management.	1 2 3 4 5
6.	To plan, organize, adjust and control all the required resources such as workforce, materials, finances, time, fundamental resources and intellectual resources in an integrated manner. Indicates the application of ⑥project resources management (a feature of P2M).	1 2 3 4 5
Phase 3: Implementation / Production / Progress		
1.	Emphasis on teamwork and achieving group goals. Feature of P2M/KPM – teamwork. With good teamwork, *kaizen* can be achieved.	1 2 3 4 5
2.	When managing a project, adapting to changes in environment when necessary is practiced. This means the possibility of deviating from the initial plans and objectives. Evidence of having flexibility and adaptability to environmental changes. KPM's flexible philosophy, *kaizen.*	1 2 3 4 5
3.	Practicing 'target management' in handling projects where time limit for each milestone is set and the starting date is decided counting backward from that deadline. Also known as backward operation process planning system. *Kaikaku* or *kaihatsu* style project management found in KPM. Backward operation system is also 1 of the 2 originalities of KPM.	1 2 3 4 5
4.	Applying concurrent engineering / simultaneous parallel development. P2M/KPM basically emphasizes parallel development.	1 2 3 4 5
5.	Emphasizing value creation activities such as development of new products/business models, operational innovation, through continuous improvement in routine processes. P2M/KPM emphasizes value creation activities.(⑦Value management)	1 2 3 4 5
6.	Acquiring new knowledge and information through practicing innovation is often encouraged to enhance competitive advantage. *Kaihatsu* definition. *Kaihatsu* includes the market that realizes innovation, technology, development of knowledge and techniques among government, industry and academia. Examples of innovation include upgrade of performance on the whole and integration of projects.	1 2 3 4 5
7.	Encouraging continuous improvement at the work-floor level to find ways of making new knowledge become beneficial. *Kaizen* definition. *Kaizen* is improvement on knowledge at work-floor level or cross-sectional establishments. For example, *kaizen* approach to improve the performance of manufacturers in quality and productivity. Applies to other industries as well.	1 2 3 4 5
8.	To bridge cultural barriers between different groups, mutual trust and respect to each other in a complex project environment are practiced. This is a practice in hybrid management, which is an effective method of bridging cultural barriers between different groups or when dealing with a complex project environment. In a hybrid management relationship, it is important to respect and trust each other and not to push one-sided views on another person. By adopting hybrid model is	1 2 3 4 5

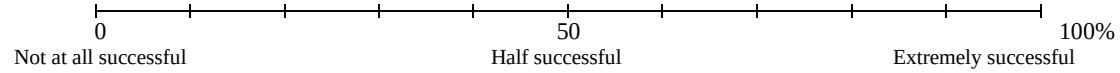
away to realize total optimization.

Phase 4: Acceptance / Handover		
1.	Upon project completion, a lessons-learned review or reflection activity is conducted. A practice that is applied by both PMBOK and P2M/KPM. A practice in ⑦project value management.	1 2 3 4 5
2.	Possessing longer-term alliances (e.g., with suppliers, clients) and ability to obtain informal relational contracts in future. Good ⑧relationship management facilitates trust that will lead to the formation of long-term relationships. (P2M/KPM) Relationship management is 1 of the knowledge areas emphasized in P2M.	1 2 3 4 5
3.	Upon completion of a certain project, consideration of short-term and long-term effects, and verification of risk and effect is done to ensure the realization of benefits and satisfaction of stakeholders. Applying ⑨strategy management as practiced in P2M.	1 2 3 4 5
4.	After a completion of product/services provided, a routine work is designed in a work program for maintenance based on knowledge management. To assess if service model is applied. (KPM)	1 2 3 4 5
General practice in managing a project across all above phases		
1.	Encouraging cross-divisional project team system / cross-departmental process. In order to make total optimization possible by having better communications. Ideas can be exchanged, part of organization management.	1 2 3 4 5
2.	Encouraging lifelong employment. Conventional Japanese management that has been changing based on KPM. KPM requires reformation for the better and adaptability to changes in time. Therefore, restructuring is practiced too.	1 2 3 4 5
3.	Employing part-timers / contract workers/temporary staffs. Conventional Japanese management that has been changing based on KPM. KPM requires reformation for the better and adaptability to changes in time. Therefore, restructuring is practiced too.(This is not JPM, but it may state that they are accepting restructuring and no longer sticking to lifelong employment like previous practice. This can further assess Q2 on encouraging lifelong employment)	1 2 3 4 5
4.	Practicing lay-offs when the organization or economy is facing downturn. Japanese conventional model has to be reformed in order to survive the recession – with KPM method, lay-offs exist.	1 2 3 4 5
5.	Emphasizing on continual training and human development education. Japanese companies consider training and human development education to be a prime responsibility.	1 2 3 4 5
6.	The predetermined project organization structure can be altered due to situation changes in midst of project. Indicates the ⑩project organization management in P2M.	1 2 3 4 5
7.	Decision making tend to be uncertain because of collective agreement and group verdict are emphasized. Tendency in P2M/KPM practitioners. P2M/KPM has more tendencies	1 2 3 4 5

	to prioritizing group decisions. Japanese people tend to practice collectivism and humanism.	
8.	Emphasizing personal evaluation system/evaluation on individual KPI (key performance index) as individual job tasks and roles in a project are clearly defined and highlighted KPM and *kaihatsu* –style projects to have project system functions well especially in matrix organizations.	1 2 3 4 5
9.	Emphasis on identifying and analyzing constraint conditions and uncertainties from all aspects of a project. ②Risk management activities.	1 2 3 4 5
10.	In order to cope with the environmental changes, reorganizing and restructuring of company/business are practiced. Exhibiting adaptability to environmental changes, a feature of KPM. Part of *kaikaku* activity.	1 2 3 4 5
11.	Team members and those from other divisions are encouraged to voice out ideas for problem solving and improvement. Emphasis on inputs of comments and opinions show that the organization is flexible in terms of changes, and is willing to adapt to necessary conditions. This will leave room for innovative ideas that are the roots of further development and exploitation. Good communications system enables employees to voice ideas. ⑪ communications management is one of the knowledge areas in P2M.	1 2 3 4 5

Open-ended questions

1. By applying the above-mentioned management methods, did you successfully achieve what you want and expect in the project? Please judge based only on the projects that you managed, excluding other external factors such as economy, natural disaster, political issues, etc.
   Rate your satisfaction/score by crossing the line below.



We can predict their project successful rates based on the %.

2. In your opinion, do you think there is still room for improvement in the project management methods applied in your organization? If yes, in which phase?

☐ Phase 1 Conceptual / Formation / Initiating / Definition ☐ Phase 2 (Planning / Build up / Design / Start up) ☐ Phase 3 (Implement ation / Production / Progress) ☐ Phase 4 (Accepta nce / Handove r) ☐ Phase – general practice

This question will give an idea on which area they would think that their management methods has flaws, and how those methods can be substituted with other better options to gain higher successful projects.

3. Are there any other principles/methods that you have applied but not shown here, that you would care to share with us?

To understand other management methods that they are applying, those that we have not assessed.

----------**Thank you very much for your cooperation**----------

* ○ : 11 P2M Segment Management Frames

Appendix F

Transcripts of Semi-Structured Interview

Topic 1: Application of Project Management Methods

The following shows the current practice of project management methods/theories in the organisation and their applications.

Company A:

- Basically, the ISO/TS14969 quality management system was adopted in managing projects and in the business flow of the organisation.
- Ensuring customers' needs were met while meeting statutory and regulatory requirements related to the product.
- In order to ensure the smoothness of the business flow, internal standards were implemented by the quality management team. For example, (i) to determine the design of different types of forms, such as in planning and execution of schedules, meeting minutes, reports on results, etc. (ii) to decide on the approval authorities (iii) to assign the functions of each department.
- Reporting directly to the immediate superior.
- The need to report and discuss the progress of projects with top management before any execution.
- Opinions and suggestions from subordinates were welcomed by top management.
- Projects were mission-oriented.

Company B:

- Managing method was based on the international quality management standard, specifically written to assure the integrity and quality of supplies to the current automotive industry.
- Emphasized on research management. The needs of the customers were identified by conducting market research.
- Focused on strategies and planning. The SWOT (strength, weaknesses, opportunities, threats) analyses were utilized in project planning and evaluations.
- Approval from top management was needed to proceed concerning any progress of the project; otherwise, activities were prohibited to be continued. Decisions were made between the management teams from

both sides. (Japan and their counterparts)

- Encouraged comprehensive breakthrough and combination of new knowledge to upgrade performance.
- Indicators were tracked monthly to identify delays, potential budget or constraints etc.
- For improvement, a suggestion system was introduced, where employees were encouraged to voice out their opinions and ideas monthly.
- Minority groups stand firm with their decision if they think that it will be the best for the organisation even if it was against the top management's approval. They dare to challenge the top management in a positive manner in order to draw the best conclusion.
- Project information was shared and all data obtained from the project was displayed. Emphasized on transparency and visualization of objectives.
- Projects were both mission-oriented and goal-oriented.

Company C:

- Project based. Mostly mission-oriented.
- Stringent on safety at the site. Aimed for zero accidents.
- Places weight on high quality management standards.
- Stringent management methods to ensure progress were concurrent with initial plans.
- Practiced suggestion system to allow site workers to voice out their concerns and opinions for improvement. However, final decisions will be decided by site managers, and they directly report to top management in headquarters.
- Upon completion of a project, verification of risks and effects were done. Accumulated information will be used as knowledge for maintenance purposes and future projects.

Company D:

- A specific action plan (SAP) in managing projects was used.
- SAP was carried out prior to the commencement of a project.
- SAP contained the main schedule and items that were specific, measurable and which have a timeline for execution.
- Each subsequent action was based on initial plans.
- SAP was shared among sub-division heads for comments and inputs, was subsequently sent to the division head or the senior general manager for consent, and finally to the vice president for endorsement.
- A system was implemented to record all suggestions voiced out. Used as knowledge resources.
- A mission-oriented organisation, which regards itself as a 'vision-driven' organisation.

Company E:

- Managed projects with an Operation Program (OP)
- OP was very specific and only targeted certain areas of project management.
- In the case of introducing/developing a new model, a specific OP was designed based on standard general guidelines.
- Inside this OP, the planning of lead time requirements, targets, aim and objectives were defined.
- In the execution of a certain project, the sequence of priority was: safety, quality, productivity, cost and human development.
- Prior to commencement of a certain project, all detailed information such as production planning, production control and human issues were discussed and explained to members of top management.
- The participation of team members and those from other divisions was encouraged in order to receive opinions/concerns.
- Information was shared and collective agreement was essential.
- All data was displayed and visualization was practised.
- Organized internal competitions to encourage co-workers to come up with new ideas of products. These are part of the innovation and discovery activities held for *kaizen* or continuous improvement events in the company.
- Mission-driven approach was adopted.

Company F:

- The guidelines given from headquarters in Japan were strictly followed in management of projects. Fully adapted Japanese working styles. For example, employees have to be very punctual and time management was important.
- Practiced lean manufacturing, just in time (JIT), 5S (*seiri*: tidiness, *seiketsu*: standardization, *seiton*: orderliness, *seiso*: cleanliness, *shitsuke*: discipline), *Kanban* in their manufacturing and production management system.
- Work-floor level employees were encouraged to give opinions and suggestions for improvements.
- Open to flexibility.
- Projects were managed based on both mission and goal approach.

Outcome: Individual terms have been applied in their project management style, but they possess similar practice methods. Follows a standard quality management system that forms the basis of the organisation.

Topic 2: Phases or Stages Involved In a Project

The phases or stages involved in managing a project are displayed as below.

Company A:

- Stage 1: Design and Planning

To review and discuss on how the targeted product should be developed. For instance, the selection of materials, the layout of various measurements, etc. Topics discussed were mainly on the operations in the laboratory.

- Stage 2:Trial manufacture/Test production

To verify the efficiency. The designed product will be tested in the factory. This trial product will be evaluated in the laboratory, and to validate - performance of the product and manufacturing facility. Proceed to the next stage, if there are no persistent problems with the performance.

- Stage 3: Trial mass- production

To sell the developed products to selected customers. To assess the variation in quality due to the high-volume production. To confirm that there are no problems on the products at the customer side.

- Stage 4: Mass-production

To sell the developed products to all customers. To ensure target quality of the product is achieved.

- Each level has different points that need to be verified, but the management style is the same in all levels. Basically the verifications were done based on the company's internal regulations.

Company B:

- Basically, there are 3 phases: basics, application and practicability.
- Basics – Research, Quote, Project Planning

The focus was on business scope, costs (budget management) and profitability. Market research was done to study its feasibility. Researches were conducted, verification of concepts was done, and mock prototypes were made with prototype facilities. After the concept verification, product and process were defined. The prototype will then mature to near production intention mode and tests were conducted according to limit tests. Improvement actions were taken if specification observed failure or when necessary. Company B rarely conducted research done solely by themselves, as working with other institutions or collaborations with government and university were common.

- Application – Product and Process Validation

Once concept was verified, it can proceed to validation phase, where products must be built on actual production facilities, and tested according to customer requirements.

Before the build, approval to purchase production tools and facilities were required.

Trials were conducted to optimize production indicators such as cycle time, bottlenecks, etc. Customer audits were performed and final approvals were obtained. Applications of the earlier concepts were tested.

- Practicability – Production Starts

Saleable products for customers are built when production starts. Surveys were executed to obtain feedbacks from end-consumers on its practicability.

Company C:

- Stage 1: Conceptual or Initiating

Drawings and design/architecture meetings to discuss on the safety of building structure, budget, costs, timeline, materials etc.

- Stage 2: Planning, Build up and Progress

Starting of construction until completion.

- Stage 3: Handover

Acceptance or handover after completion.

- Stage 4: Verification

Checking of buildings and structures to verify all criteria were met.

Company D:

- Stage 1: Focused on both basic and specific forms of planning, identifying objectives, target setting, budgeting and costs.
- Stage 2: Refinement of Stage 1. If everything went as planned, a 'proceed' or 'GO' sign will be issued.
- Stage 3: Trial 'GO', wherein specific planning and itemization for each trial event were tabled and explained in detail.
- Stage 4: Mass production 'GO', where outcomes and results from each trial event were tabled to the vice president. Problems were analysed and rectified. Countermeasures were reported.
- Stage 5: Evaluation of actual results.

Company E:

- 4 stages of PDCA (Plan-Do-Check-Act).
- Plan: Targeting, budgeting, capacity planning and lead time will be discussed among top management and project team members.
- Do: If every person involved agreed to the initial plans, the execution of project will be completed according to the plan.
  - The involvement of 2 major stages: development and feasibility study; executed concurrently. Plant engineers will study and give feedbacks to the designers, if any. This was known as simultaneous engineering activity.
  - Tooling, mould making and equipment sourcing. Parallel to this phase, a prototype was built and the actual car investigation was carried out.
  - Production, preparation and trial.
  - Start of volume production.
- Checking: Reviewing processes, product verification and analyses of actual results.

- Act: Corrective actions and *hansei* or reflection were carried out to improve the process or product.

Company F:

- Stage 1: Planning
- Stage 2: Material systems, Procuring of items
- Stage 3: Parts inspection and inventory
- Stage 4: Sorting out based on lot size/amount. Ready for commencement of production**.**
- Stage 5: Production, assembly testing. Bulk production of daily target.
- Stage 6: Completion. Evaluation, verification and packing of finished goods.
- Stage 7: Shipment, logistic.

Outcome: The stages are quite standardized, starting with planning, verification, execution, review, evaluation and improvements.

Topic 3: Features/Characteristics of the Management Style Practiced at Each Phase

Other features applied in managing projects.

Company A:

- Accentuated respect for all levels of the organisation.
- Providing training and mentoring. A must for new employees to go through on-the-job training. Each new employee was assigned with a mentor while handling projects.
- Communication was prominent. Morning assemblies were conducted.
- Teamwork and cooperation from other teams were essential.
- Emphasized *kaizen* or continuous improvement.

Company B:

- The Japanese managing cultures were adopted, such as the practice of morning meetings and assemblies.
- Acquiring new knowledge and information through practicing innovation was often encouraged to enhance competitive advantage.
- However, rarely work as a team. Poor leadership. Lack of communications among co-workers, therefore, emphasized the importance of teamwork and achieving group goals.
- Compulsory for new employees to undergo on-the-job training for the first 6 months upon entrée into the company.
- Time-to-time structured trainings and overseas trainings were provided as

emphasis was put on human development.
- Upon project completion, a lessons-learned review or reflection activity was conducted.

Company C:

- Emphasized on safety. Well-ordered and organized working environment was prioritised.
- Relationships among co-workers were emphasized to encourage teamwork.
- Custom of on-the-job training were practised.
- Putting importance on meeting each milestone of the project on time.

Company D:

- Emphasized on human development and managing people.
- Mentoring and on-the-job training were provided.
- Rotation of co-workers among departments to expose them to the functions of each department.
- Practised teamwork.

Company E:

- Communication was prominent.
- The importance of human relations in the organisation was stressed. Work tasks tend to overlap and cooperation from other team members was substantial.
- Emphasized on teamwork
- Accentuated respect for all levels of the organisation.
- *Kaihatsu* in terms of human development was very important as human resources are assets for a company. Training was constantly provided for staff improvement.
- New staff was rotated to familiarize with all tasks in the company.

Company F:

- As communication among employees was prioritised, daily meetings were held in order to understand the work task of each department and their main daily activities.
- Responsibilities were distributed among members of the top management and stakeholders.
- Decisions on main issues such as costs, manpower, quality, timing, lead time, and inventory were all under the control of head of department and top management. Issues that do not affect safety, planning and total quality can be managed by the staff.
- Quality control was headed by Japanese managers.
- Opened for discussions with team-members for product quality, improvements and enhancement or upgrade of products.

Outcome: Human development, *kaizen*, communication and relationship management are the main features of P2M/KPM.

Topic 4: Extent of Localization

The following shows the results of the survey on the importance of localization in project management.

Company A:

- A wholly owned Japanese company was managed with JPM method.
- Company's organisational structure comprised of Japanese only. Emphasized on organisational hierarchy.
- Handled local and international market demand.

Company B:

- Human resources were a mixture of Japanese and foreigners. Foreign partners were also assigned to high and important positions in the organisation. Therefore, a balanced ratio of Japanese and their foreign counterparts made up the top management team. Subordinates were majority Japanese.
- Seniority based on organisational hierarchy was practiced. Directly reporting to immediate key functional managers.
- For technical know-how and R&D, internal regulatory set by the headquarters were to be followed. Customized based on the needs of customers. As long as internal requirements were met, they were good to take own actions in order to fulfil local customers' demands. Innovation was the key, and they amended accordingly based on the customers' needs.
- The company handled local and international market.

Company C:

- Reporting to top management. Site managers were Japanese, both in Japan and overseas (for projects in Malaysia).
- Local safety requirements were met apart from implementing basic international safety measures.
- In Japan, hands-on workers were Japanese. In Malaysia, locals and foreigners such as Indonesians, Bangladesh, Myanmar were employed to work on site.

Company D:

- To a certain extent, the company's global guidelines were followed, but local requirements were often injected into areas of managing people and

human resources.

- The top management were still mostly Japanese.
- Positions such as head of divisions or managers were gradually substituted by locals.
- In terms of technical know-how, R&D and running of the production systems, the Japanese method was still being strictly used, even though the staffs on the production line at the work-floor level were local.
- The company handled mainly local market.

Company E:

- Projects in the production system were strictly managed using the JPM method.
- Top management team was mainly Japanese.
- Localization was dominant in human resources, especially in terms of marketing, sales, services teams and work-floor staff on the production lines. Departmental heads were a mixture of locals and Japanese.
- In short, the human side was managed by locals, while the Japanese will only be concerned with technical issues.
- Statistics showed that only 0.2% of personnel in Company B were Japanese.
- The company handled mainly local market demand.

Company F:

- Managers handling projects or managers from the planning, production, finance, R&D, technical, engineering department were Japanese. Top management was a team of Japanese.
- Sales and marketing team, members of the internal management were locals.
- Purchasing and human resources were handled by locals. Workers at the work-floor level in production lines and packaging were locals as well.

Outcome: JPM is still the core management method in terms of managing production systems and technically-related projects, while localization has been focused on human resources management.

Topic 5: Recognition of P2M/KPM

Below explains the recognition of P2M/KPM with regard to the companies.

Company A:

- Not aware of the term P2M/KPM.
- However it was obvious that they were utilizing the JPM methods in managing their manufacturing projects.

Company B:

- Not aware of P2MKPM.
- Practically applying JPM methods in their project management.

Company C:

- Not aware of P2MKPM.
- Practically applying JPM methods in their project management.

Company D:

- The term P2M/KPM had not been introduced in this organisation.
- Basic management methods rooted in JPM.

Company E:

- Employees had never come across the term P2M/KPM.
- At present, a few subsidiaries are operating production systems based on the JPM method but they do not call it 'P2M/KPM'.

Company F:

- Operating based wholly on JPM method.
- Not really aware of the term P2M/KPM, but agreed that the current management systems are consistent with it.

Outcome: The manufacturing plants basically operate in accordance with the Japanese management culture, although they do not have a specific term for their management method or call it 'P2M/KPM'.

Bibliography A

List of published journal articles/conference proceedings from 2000-2014

#	Year	Author(s)	Journals	Research Areas	Title of Articles	Methods	Brief Review
	Journal articles						
1	2000	Dirks,D., Hemmert, M.,Legewie,J.,Meyer-Ohle,H. and Waldenberger,F.	International Business Review	Philosophy, Body of knowledge	The Japanese employment system in transition	• Review	• The institutions and practices of the Japanese employment system are closely linked to the Japanese model of skill formation, human resource management and innovation. • Essential to see what is happening to the Japanese employment system when reflecting on the future of the skills, the innovative capacities and the commitment of Japanese employees.
2	2000	Debroux, P.	International Business Review	Philosophy, Body of knowledge	The role of the venture business culture in the renewal of Japanese industry	• Review	• Japan is now rethinking its economic and management system because they are facing the most severe economic downturn of the postwar period. • Large companies are in the process of management restructuring and many of them are launching new management programs in order to encourage entrepreneurship internally.
3	2000	Ahire,S.L. and Dreyfus,P.	Journal of Operations Management	Philosophy, Body of knowledge	The impact of design management and process management on quality: an empirical investigation	• Case study • Questionnaire survey	• Design management and process management are two important elements of total quality management (TQM) implementation. • To establish a framework for identifying the synergistic linkages of design and process management to the operational quality outcomes during the manufacturing process (internal quality) and upon the field usage of the products (external quality).
4	2000	Gonzalez-Benito, J.,Suarez-Gonzalez, I. and Spring,M.	International Journal of Production Economics	Philosophy, Body of knowledge	Complementarities between JIT purchasing practices: An economic analysis based on transaction costs	• Questionnaire survey	• To analyse the complementarities and interrelationships between the different JIT purchasing practices which have extended in industrial markets in recent years.
5	2000	Cristiano, J.J.,Liker, J.K. and	Journal of Produ	Cross-cultural studies	Customer-driven product development	• Questionnaire	• Quality Function Deployment (QFD) methodology was born out of Total Quality

		White III,C.C.	ct Innovation Management		through quality function deployment in the US and Japan	survey • Case study	Control (TQC) activities in Japan during the 1960s and has been transferred to companies in the U.S. • U.S. companies were more likely to report benefits of QFD in improving cross-functional integration and better decision-making processes compared to Japanese companies. Possible reasons for these cross-national differences as well as their implications were discussed.
6	2000	Low,S.P. and Leong,C. H.Y.	International Journal of Project Management	Cross-cultural studies	Cross-cultural project management for international construction in China	• Case study	• To examine the key concepts in cross-cultural management as well as key functions in construction project management with specific reference to China.
7	2000	Power,D. and Sohal,A.S.	Technovation	Cross-cultural studies	Human resource management strategies and practices in Just-In-Time environments: Australian case study evidence	• Case study	• To examine the current human resource management practice in three Australian companies that have been operating the JIT methodology for some years. • The study focused on practice in the areas of levels of participation, multi-skilling and flexibility, communication, employee development programs, teams, and empowerment.
8	2000	Toni,A.D. and Nassimbeni,G.	Omega	Correlation of project management performance and project success	Just-in-time purchasing: an empirical study of operational practices, supplier development and performance	• Questionnaire survey	• To develop and assess a measurement instrument for "operational" and "supplier development" just-in-time purchasing practices. • To examine the relationships between the two sets, and an investigation into whether the use of "operational" and "supplier development" practices has a bearing on higher plant performance.
9	2000	Sicotte,H. and Langley,A.	Journal of Engineering and Technology Management	Correlation of project management performance and project success	Integration mechanisms and R&D project performance	• Questionnaire survey • Interview	• To examine the use of integration mechanisms in R&D project management mechanisms. • To identify their links to project performance. • Formal leadership, planning and process specification, and to a lesser extent information technology use are related to project performance.

10	2001	Sanchez, A.M. and Perez,M.P.	International Journal of Operations and Production Management	Philosophy, Body of knowledge	Lean indicators and manufacturing strategies	• Questionnaire survey	• To develop and test an integrated check-list that assesses manufacturing changes towards lean production. • To analyse which lean production indicators are used to assess the improvements found in the production system of the company.
11	2001	White,R.E. and Prybutok, V.	Omega	Philosophy, Body of knowledge	The relationship between JIT practices and type of production system	• Questionnaire survey	• To address some of the misunderstandings associated with just-in-time (JIT) implementations. • There are association exists between implemented JIT practices and type of production system. • An article on JIT, Japanese management practices and lean manufacturing implemented in U.S. manufacturers.
12	2001	Belderbos,R.,Capannelli, G. and Fukao,K.	World Development	Philosophy, Body of knowledge	Backward Vertical Linkages of Foreign Manufacturing Affiliates: Evidence from Japanese Multinationals	• Questionnaire survey	• To examine the determinants of backward vertical linkages established by multinational firms in host economies. • Firms belonging to Japanese vertical industrial groups (*keiretsu*) show higher procurement from local clusters of affiliated Japanese suppliers.
13	2001	Nellore,R.,Chanaron,J.J., and Soderquist,K.E.	European Journal of Purchasing & Supply Management	Philosophy, Body of knowledge	Lean supply and price-based global sourcing — the interconnection	• Interviews	• To highlight the interconnection between global purchasing and lean supply. • Lean supply is affected negatively by global purchasing based on price and thus, price-based global purchasing should not be used for sourcing complex components that require early supplier involvement and intensive engineering collaboration between original equipment manufacturer (OEMs) and suppliers. Instead, it could be proactively used in the sourcing of less complex modules and simple components.
14	2001	Kua,K.O., McKone, K.E. and Schroeder,R.G.	Journals of Operations Management	Philosophy, Body of knowledge	Relationships between implementation of TQM, JIT, and TPM and manufacturing performance	• Review • Questionnaire survey	• To investigate the implementation and impact of Total Quality Management (TQM), Just-in-Time (JIT) and Total Productive Maintenance (TPM) . • To investigate the practices of the three programs simultaneously.

15	2001	Dong,Y., Carter,C. R. and Dresner, M.E.	Journals of Operations Management	Philosophy, Body of knowledge	JIT purchasing and performance: an exploratory analysis of buyer and supplier perspectives	• Questionnaire survey	• A model is developed and tested to determine whether the use of JIT purchasing reduces logistics costs for both suppliers and buyers.
16	2001	Nagy,A.L. and Neal,T.L.	The International Journal of Accounting	Cross-cultural studies	An empirical examination of corporate myopic behavior: a comparison of Japanese and U.S. companies	• To create simultaneous equations from database.	• To examine whether differences in the corporate environments of Japanese and U.S. companies are associated with differences in the extent to which Japanese and U.S. managers engage in corporate myopic behavior.
17	2002	Cooney,R.	International Journal of Operations and Production Management	Philosophy, Body of knowledge	Is "lean" a universal production system? : Batch production in the automotive industry	• Review • Case study	• To test the claim made in the lean production literature that the lean production system is universally applicable.
18	2002	Iwamoto, Y.	Journal of the Japanese and International Eco	Philosophy, Body of knowledge	The fiscal investment and loan program in transition	• Review	• To discuss the adequacy of the activities of the Fiscal Investment Loan Program based on government financial policies. • To look into infrastructure construction projects, especially in the management of expressway construction.
19	2002	Husain,Z. Sushil and Pathak,R. D.	Journal of Engineering and Technology Management	Philosophy, Body of knowledge	A technology management perspective on collaborations in the Indian automobile industry: a case study	• Case study	• To analyse technology management practices of firms in the automobile industry in India.
20	2002	Nobelius, D. and Sundgren, N.	Journal of Engineering and Technology Management	Philosophy, Body of knowledge	Managerial issues in parts sharing among product development projects: a case study	• Case study	• To explore the potential managerial difficulties associated with the parts sharing process. • The managerial difficulties have been divided into four categories, namely organisational, strategic, technology & cost related, and support system related issues.

21	2002	Gu.J. Nakamori, Y. and Zhu,Z.	Systems Research and Behavioral Science	Cross-cultural studies	A report on the China- Japan-UK systems project: Cross-cultural learning and integration	• Research visits • Case study	• Countries participated in the study: China-Japan-UK. • To initiate a cross-cultural learning and integration systems project.
22	2002	Taylor,P., Encel,S. and Oka,M.	Geneva Papers on Risk and Insurance: Issues and Practice	Cross-cultural studies	Older workers: Trends and Prospects	• Review	• Study on Australia, Japan and the United Kingdom. • Focus on policy developments and towards older workers. • Development of policies on age and employment in these countries.
23	2003	Shah,R. and Ward,P.T.	Journal of Operations Management	Philosophy, Body of knowledge	Lean manufacturing: Context, practice bundles and performance	• Utilization of previous data • Review	• To examine the effects of three contextual factors, plant size, age and unionization status by implementing the key facets of lean production systems. • There are a total of 22 manufacturing practices. • To validate and investigate the effects of the four 'bundles': just-in-time (JIT), total quality management (TQM), total preventive maintenance (TPM) and human resource management (HRM).
24	2003	Swink,M.	Journal of Engineering and Technology Management	Philosophy, Body of knowledge	Completing projects on-time: how project acceleration affects new product development	• Questionnaire survey	• To study on how accelerated time goals affect the execution and completion of new product development (NPD) projects. • Project acceleration interacts with project content, leadership, and integration variables to affect on-time performance differently across NPD project types.
25	2003	Ainscough,M.,Neailey,K. and Tennant,C.	International Journal of Project Management	Philosophy, Body of knowledge	A self-assessment tool for implementing concurrent engineering through change management	• Review	• To enable the implementation of Concurrent Engineering (CE) through a change management strategy. • The combination of self-assessment and change management enables the simultaneous measurement and deployment of practices, which can assist organisations in the project management of product development, and lead to the identification of further improvements to rigorously manage the transition to CE.
26	2003	Cooper,L. P.	Journal of Engin	Philosophy, Body of	A research agenda to reduce risk in new product	• Review	• To present a practioner view of the desired characteristics of tools to support new

			eering and Technology Management	knowledge	development through knowledge management: a practitioner perspective		product development (NPD) and suggests a research agenda for the use of knowledge-based tools from the perspective of balancing benefits and risks.
27	2003	Lee-Kelley,L. and Loong,K. L.	International Journal of Project Management	Philosophy, Body of knowledge	Turner's five-functions of project-based management and situational leadership in IT services projects	• Questionnaire survey	• This study was conducted in one of the divisions of Europe's largest IT consultancy. • To investigate the critical elements of managing IT services projects by using Turner's (Handbook of project–based management, 2nd ed, England, McGraw–Hill Publishing, 1999) five-functions model to examine the relationships between project definition and scope, project organisation and the triangle of critical project outcomes. • To identify if the project leader's orientation is related to his situational perception of project control.
28	2003	Ahmad,S., Schroeder,R.G. and Sinha,K.K.	Journal of Engineering and Technology Management	Cross-cultural studies	The role of infrastructure practices in the effectiveness of JIT practices: implications for plant competitiveness	• Questionnaire survey	• Study on US, Italy and Japan. • To examine the role of infrastructure practices in the effectiveness of JIT practices from three perspectives—universal, contingency, and configurational.
29	2003	Chevrier. S	Journal of World Business	Cross-cultural studies	Cross-cultural management in multinational project groups	• Comparative case study of international project groups.	• Study on the cross-cultural management practices of European project groups. • The effectiveness and efficiency of projects are affected by their cross-cultural characteristics.
30	2003	Yasin.M. M., Small,M. H. and Wafa,M.A.	Omega	Cross-cultural studies/Philosophy	Organisational modifications to support JIT implementation in manufacturing and service operations	• Review • Field study • Questionnaire survey	• To investigate JIT implementation practices and performance in manufacturing and service organisations in the US.
31	2003	Sun,H., Yam,R. & Ng,W.K.	The International Journal of Advanced Manufacturing Techn	Cross-cultural studies/Philosophy	The implementation and evaluation of Total Productive Maintenance (TPM)—an action case study in a Hong Kong manufacturing company	• Case study	• Records the pilot implementation and evaluation of the Japanese method: Total Productivity Maintenance (TPM) in a Hong Kong manufacturing company. • A pilot test was conducted. The TPM method turned out to be very successful. • Act as a reference for other

			ology				companies who are considering the implementation of TPM.
32	2004	Azadeh,A. ,Bidokhti, B. and Sakkaki,S. M.R.	Computers and Industrial Engineering	Philosophy, Body of knowledge	Design of practical optimum JIT systems by integration of computer simulation and analysis of variance	• Case study	• To introduce a framework for re-design of manufacturing systems into practical optimum just-in-time systems by integration of computer simulation and analysis of variance. • To design a unique practical optimum just-in-time system that considers system's limitations and its dynamic behavior.
33	2004	Brunn,P. and Mefford,R .N.	International Journal of Production Economics	Philosophy, Body of knowledge	Lean production and the Internet	• Review	• The implications for lean production systems of the Internet are explored. • The effects on supply chains, production scheduling, inventory control, procurement, quality improvement, and the workforce are some of the issues addressed.
34	2004	Alfasi,N. and Portugali, J.	Cities	Philosophy, Body of knowledge	Planning Just-in-Time versus planning Just-in-Case	• Case study	• To introduce a distinction between two forms of planning: Just-in-Case planning versus Just-in-Time planning. • Just-in-Case refers to the traditional mode of planning as currently practiced in most urban and regional planning agencies. • Just-in-Time is what planning in a self-organizing system might be. • To suggest preliminary principles for a new, Just-in-Time, planning approach.
35	2004	Evaristo,J. R.,Scudder,R., Desouza, K.C. and Sato,O.	Journal of Engineering and Technology Manag	Cross-cultural studies	A dimensional analysis of geographically distributed project teams: a case study	• Review	• Study on Japan, US and Europe organisations. • To understand what "distributed" means when discussing the management of distributed projects.

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36	2004	Chen,P. & Partington ,D.	International Journal of Project Management	Cross-cultural studies	An interpretive comparison of Chinese and Western conceptions of relationships in construction project management work	• Phenomenography-an interpretive research approach. • Open-ended interviews.	• Cultural studies between Chinese (China) and Western (United Kingdom). • Cultural values are important in shaping management beliefs. • In general, cross-cultural transfer of management processes is not always successful. • This study highlights the different forms of relationship in construction project management work. • Also highlights the cultural influences on project managers' conceptions.
37	2004	Cagliano, R., Caniato,F. and Spina,G.	Journal of Purchasing and Supply Management	Correlation of project management performance and project success	Lean, Agile and traditional supply: how do they impact manufacturing performance?	• Questionnaire survey	• The study empirically explores the supply strategies of European manufacturing firms. • The strategies are then described in terms of contingent and structural factors and manufacturing performance.
38	2005	Takahashi ,K. Myreshka and Hirotani, D.	International Journal of Production Economics	Philosophy, Body of knowledge	Comparing CONWIP, synchronized CONWIP, and Kanban in complex supply chains	• Review • Simulation experiments	• Three types of JIT ordering systems used for supply chain management were quality tested, the *Kanban*, the original constant work-in-process (CONWIP), and a synchronized CONWIP. • For the three types of systems, which system is superior and which parameter affects superiority, were investigated.
39	2005	Melton,T.	Chemical Engineering Research and Design	Philosophy, Body of knowledge	The benefits of lean manufacturing: What Lean Thinking has to offer the process industries	• Review • Case study	• A review on lean manufacturing. • To discuss the benefits of lean when implemented in process industries.
40	2005	Doolen,T. L. and Hacker,M. E.	Journal of Manufacturing Systems	Philosophy, Body of knowledge	A review of lean assessment in organisations: An exploratory study of lean practices by electronics manufacturers	• Review • Case study	• To develop an instrument to assess both the number and the level of implementation of a broad range of lean practices in an organisation.

41	2005	Da Graca Junior,J.C.	SAE Technical Papers	Philosophy, Body of knowledge	Lean Manufacturing and 6 Sigma: The Role of top management	• Review	• To study the integration of these two concepts – lean manufacturing and 6 Sigma, for improvements of organisations. • Leadership plays an important role in the organisational processes. • Implementation of the lean manufacturing and 6 Sigma by top management of an organisation.
42	2005	Zwikael,O.,Shimizu, K. & Globerson,S.	International Journal of Project Management	Cross-cultural studies	Cultural Differences in Project Management Capabilities: A Field Study	• Questionnaire survey.	• Cultural studies between Japanese and Israeli. • To identify the differences in project management style based on PMBOK's nine project management areas. • Compare performances of project management processes by measuring project success. • Identified significant differences between project managers of two countries: Israeli project managers focused on performing time and scope management, Japanese project managers concentrate on communication and cost management. • Focused only on the planning phase of the project.
43	2005	Laosirihongthong,T. and Dangayach,G.S.	Journal of Manufacturing Systems	Cross-cultural studies	A comparative study of implementation of manufacturing strategies in Thai and Indian automotive manufacturing companies	• Questionnaire survey	• To study the manufacturing strategies implementation in new industrialized countries (NICs). • Data were obtained automotive manufacturing companies in India and Thailand. • The companies are trying to enhance the competitive priorities by implementing one of two infrastructural manufacturing strategies from among total quality management (TOM), just-in-time (JIT) production, statistical process control (SPC), and material requirements planning (MRP).
44	2006	Morris,P.W.G., Crawford, L.,Hodgson,D.,Shep	International Journal of Projec	Philosophy, Body of knowledge	Exploring the role of formal bodies of knowledge in defining a profession – The	• Review	• To explore and draw insights into the development of project management as a profession. • Review on the role of the

		herd.,M. M & Thomas,J.	t Manag ement		case of project management		formal bodies of knowledge.
45	2006	Cicmil,S. & Hodgson, D.	Projec t Manag ement Journa l	Philosoph y, Body of knowledg e	New possibilities for project management theory: A critical engagement	• Revie w	• Aim to create new possibilities for researching and developing a broader conceptual consideration of projects and project management. • Obtained variety of opinions from scholarly and practitioner communities. • To draw attention to alternative theoretical and methodological propositions. • Outlining the studies of projects, project management, project performances, individual skills and their competencies.
46	2006	Aronson, Z.H., Reilly,R.R . and Lynn,G.S.	Journa l of Engin eering and Techn ology Manag ement	Philosoph y, Body of knowledg e	The impact of leader personality on new product development teamwork and performance: The moderating role of uncertainty	• Case study	• The importance of teamwork as a process variable linking leader personality to new product development (NPD) performance.
47	2006	Heller,D. A.,Mercer ,D. and Fujimoto, T.	Intern ational Journa l of Autom otive Techn ology and Manag ement	Philosoph y, Body of knowledg e	The long-term value of M&A activity that enhances learning organisations	• Case study	• To understand how merging and acquisition (M&A) activities between automakers affect an automaker's organisational learning. • M&A activity may enhance the development and learning for automakers.
48	2006	Bhasin,S. and Burcher,P.	Journa l of Manuf acturin g Techn ology Manag ement	Philosoph y, Body of knowledg e	Lean viewed as a philosophy	• Intervi ew • Questi onnair e survey • Partici pant observ ation	• A conceptual paper probing the contemporary view towards lean. • Argues that an aspiring lean enterprise will only succeed if it views lean as a philosophy rather than another strategy.
49	2006	Hyvari,I.	Intern ational Journa l of Projec	Correlatio n of project managem ent	Project management effectiveness in project-oriented business	• Revie w of previo us case	• To investigate the effectiveness of project management. • To measure project effectiveness based on

			t Management	performance and project success	organisations	study • Interview	technical competency, leadership ability, organisational structures and characteristics of an effective project manager. • Highlights on the characteristics of an effective project manager. • Study done on modern project-oriented business companies.
50	2006	Klaus,B.	Project Management Journal	Correlation of project management performance and project success	On the novelty dimension in project management.	• Review	• To understand the impact on project success by project characteristics. • The characteristics of the 'ideal' versus real project manager were tabled and discussion on how they can relate to project success was conducted. • Other parameters that will influence project success are the role structures and autonomy of project management, team performance and clarity of project objectives.
51	2007	Holweg, M.	Journal of Operations Management	Philosophy, Body of knowledge	The genealogy of lean production	• Review	• To present an historical account of the research that led to the formulation and dissemination of one of the most influential manufacturing paradigms of recent times – lean production. • Despite the pre-existing knowledge of just-in-time (JIT) – IMVP was so influential in promoting the lean production concept. • Research at the MIT International Motor Vehicle Program (IMVP) led to the conception of the term 'lean production'.
52	2007	Matsui,Y.	International Journal of Production Economics	Philosophy, Body of knowledge	An empirical analysis of just-in-time production in Japanese manufacturing companies	• Questionnaire survey	• To focus on the requirements for just-in-time (JIT) production systems and the roles and consequences of JIT production for manufacturing companies. • It is proved that JIT production systems contribute to improving competitive performance, and that efficient equipment layout has a strong impact on the competitive position of the manufacturing plant. • JIT production interacts with other operations management areas.

53	2007	Amasaka, K	Robotics and Computer – Integrated Manufacturing	Philosophy, Body of knowledge	Applying *New JIT*—Toyota's global production strategy: Epoch-making innovation of the work environment	• Review • Observations	• Development of a new management technology principle: New Just-In-Time (JIT) – a global production strategy activity. • Research on the next generation management technology under the Japanese style management.
54	2007	Schonberger, R.J.	Journal of Operations Management	Philosophy, Body of knowledge	Japanese production management: An evolution—With mixed success	• Review	• A review on the Japanese Production Management practices, which included the production system perfected by Toyota: just-in-time (JIT) or the Toyota Production System (TPS), also known as lean manufacturing. • The history and evolution on Japanese Production Management practices.
55	2007	Gao,P. Feng,J. & Wang,H.	Management Science and Engineering	Philosophy, Body of knowledge	Development and comparative analysis of t he project management bodies of knowledge	• Review	• A comparative study on the bodies of knowledge in terms of content, structure and guideline. • A review on some international-influence project management associations.
56	2007	Huemann, M.,Keegan,A. and Turner,J.R.	International Journal of Project Management	Philosophy, Body of knowledge	Human resource management in the project-oriented company: A review	• Review	• To provide an overview of past research on Human resource management (HRM) in the context of projects, published in the project management, general management, and HRM literatures. • To develop a model with critical HRM aspects of project-oriented organizing, based on prior research and use it to structure the review.
57	2007	Amasaka, K.	Robotics and Computer-Integrated Manufacturing	Philosophy, Body of knowledge	Applying *New JIT*—Toyota's global production strategy: Epoch-making innovation of the work environment	• Review	• To analyse and prove the significance of strategically applying *New JIT*—a global production strategy activity called *AWD6P/J* (*Aging & Work Development 6 Project*)—for epoch-making innovation of the work environment, as verified at Toyota. • *New JIT* is new management technology principle, based on TMS (Toyota Marketing System), TDS (Toyota Development System), TPS (Toyota Production System) and TQM-S (Total Quality Management –software system).
5	2007	Reich, B.H	Project	Cross-cultural	Managing knowledge and	• Literature	• Cultural studies between North America and New

8			Management Journal	studies	learning in IT projects: A conceptual framework and guidelines for practice	review • Field study • Interview	Zealand. • To identify the key areas where knowledge-based risks occur, which include a failure to learn from past projects. • The model compiled included project management, information system and software development.
59	2007	Crawford, L.,Pollack,J. & England, D.	Project Management Journal	Cross-cultural studies	How Standard Are Standards: An Examination of Language Emphasis in Project Management Standards	• Keyword analysis	• Countries involved in this scope of research: Australia, Japan, South Africa, United States and United Kingdom. • Global project managers face significant communication problems because the numerous project management standards used often emphasize conflicting professional competencies. Interpretation of project management culture. • Study on the differences in terminology and keyword utilized in project management standards. • Cross-cultural studies on how project managers of different national culture interpret and practice project management standards. • This research overviews how project managers of these five regions define and practice project management differently.
60	2007	Francois, C.	Project Management Journal	Correlation of project management performance and project success	Project team performance: A study of electronic task and coordination communication	• Time-series analysis • Case study	• To have an effective project management, team performance and successful project completion, communication is a key factor. • Project management standard used as reference in this paper was A Guide to the Project Management Body of Knowledge (PMBOK® Guide). • To ensure high team and project performance, project managers could benefit from monitoring the way their team members communicate.
61	2008	Schroeder,R.G.,Linderman,K., Liedtke,C. and Choo,A.S.	Journal of Operations Management	Philosophy, Body of knowledge	Six Sigma: Definition and underlying theory	• Case study • Field study	• To propose an initial definition and theory of Six Sigma. • The emergent structure for quality management helps organisations more rigorously control process improvement activities, while at the same time creating a context that enables problem exploration between disparate organisational members.

62	2008	Lenfle,S.	International Journal of Project Management	Philosophy, Body of knowledge	Exploration and project management	• Case study	• To study if project management is an adequate solution to the problems raised by innovation. • To identify the management methods suited to the most innovative projects.
63	2008	Aubry,M., Hobbs,B. and Thuillier, D.	International Journal of Project Management	Philosophy, Body of knowledge	Organisational project management: An historical approach to the study of PMOs	• Review • Case study	• To provide a theoretical foundation for a better understanding of organisational project management. • Project management offices (PMOs) and organisational project management can be understood as part of an historical process within an organisational context, departing from the traditional boundaries of positivist project management theory.
64	2008	Kaneko,J. and Nojiri,W.	Journal of Transport Geography	Philosophy, Body of knowledge	The logistics of Just-in-Time between parts suppliers and car assemblers in Japan	• Case study	• To elucidate the spatial structure of "Just-in-Time" (JIT)-based logistics for the distribution of automotive parts in Japan.
65	2008	Hobbs,B., Aubry,M. and Thuillier, D.	International Journal of Project Management	Philosophy, Body of knowledge	The project management office as an organisational innovation ***A.***	• Review	• To contribute to a better understanding of project management offices (PMOs) and the dynamic relationship between project management and the organisational context. • To integrate the examination of PMOs as an organisational innovation into the mainstream of research on the place of project management in organisations.
66	2008	Gales,L.	Journal of Engineering and Technology Management	Cross-cultural studies	The role of culture in technology management research: National Character and Cultural Distance frameworks	• Review	• To determine how specific cultural attributes affect actions, strategies and performance. • The culture study focuses on the interactions between two firms embedded in different national cultures. • To create good theory, to conduct sound research, and to efficiently manage, it is important to understand the role of national culture in that environment.
67	2008	Farris,J.A., Van Aken,E.M., Doolen,T. L. and Worley,J. M.	Engineering Management Journal	Correlation of project management performance and project	Learning from less successful Kaizen events: A case study	• Semi-structured interview • Questionnair	• Describes results from an ongoing research program focused on identifying determinants of Kaizen event effectiveness, both in terms of initial event outcomes and the sustainability of outcomes.

				success		e survey • Case study	
68	2008	Doolen,T. L., Van Aken,E.M ., Farris,J.A. , Worley,J. M. and Huwe,J.	Intern ational Journa l of Produ ctivity and Perfor mance Manag ement	Correlatio n of project managem ent performa nce and project success	Kaizen events and organisational performance: A field study	• Field study • Intervi ews • Revie w on organi sationa l docum ents	• To describe the application of an assessment methodology to measure and evaluate the impact of kaizen events. • Assessments are done on organisational performance. • Kaizen events may have varied success even within a single organisation.
69	2008	Zwikael,O .	Intern ational Journa l of Manag ing Projec ts in Busine ss	Cross-cultural studies/C orrelation of project managem ent performa nce and project success	Top management involvement in project management	• Questi onnair e survey	• Study done on Japan, Israel and New Zealand. • The support of top management is one of the critical success factors in project management. • Effective involvement of top management can significantly improve project success. • To highlight the effective top management support practices that contribute to project success.
70	2009	Browning, T.R. and Heath,R.D .	Journa l of Operat ions Manag ement	Philosoph y, Body of knowledg e	Reconceptualizing the effects of lean on production costs with evidence from the F-22 program	• Case study • Field study	•To explore how novelty, complexity, instability, and buffering affect the relationship between lean implementation and production costs. •To study the case of Lockheed Martin's production system for the F-22, an extremely complex and innovative product.
71	2009	Farris,J.A. ,Van Aken,E.M .,Doolen, T.L. and Worley,J.	Intern ational Journa l of Produ ction Econo mics	Philosoph y, Body of knowledg e	Critical success factors for human resource outcomes in Kaizen events: An empirical study	• Field study	•To identify the set of input and process factors that most strongly relate to the development of employee attitudinal outcomes and problem-solving capabilities in Kaizen events. •Results are used to develop guidelines for organisations and identify directions for future work.
72	2009	Buesa,R.J.	Annal s of Diagn ostic Pathol ogy	Philosoph y, Body of knowledg e	Adapting lean to histology laboratories	• Revie w	•Histology laboratories (histolabs) can increase productivity and reduce turnaround time and errors by using any one of several available management tools. • The management tools discussed were 5S, Six Sigma, Just-in-time, First-in-first-out, Lean.

73	2009	Scherrer-Rathje, M., Boyle,T.A.and Deflorin,P.	Business Horizons	Philosophy, Body of knowledge	Lean, take two! Reflections from the second attempt at lean implementation	• Case study	•To describe in detail two lean implementation projects within the same company: a global manufacturer of food processing machines and equipment. • By examining these projects in detail, the major criteria and conditions that led to either lean failure or lean success are identified.
74	2009	Yazici,H.J	Project Management Journal	Philosophy, Body of knowledge	The role of project management maturity and organisational culture in perceived performance	• Questionnaire survey	•To investigate the relation between project management maturity (PMM) and organisational performance. •Also to investigate cultural orientation as a contributing factor to the organisational performance. • PMM model was developed based on the nine knowledge areas as described in the A Guide to the Project Management Body of Knowledge (PMBOK® Guide). •Survey-based research on various United States (US) service and manufacturing organisations. •PMM model accompanied by an understanding on cultural orientation is a best strategy for today's project-based organisations as cultural orientation is a big contributing factor for project and business performances.
75	2009	Anand,G., Ward,P.T.,Tatikonda,M.V. and Schilling, D.A.	Journal of Operations Management	Philosophy, Body of knowledge	Dynamic capabilities through continuous improvement infrastructure	• Case study	•To present a framework of infrastructure based on the idea that continuous improvement can serve as a dynamic capability when it includes a comprehensive organisational context. •To add a conceptual understanding of continuous improvement and results in grounded propositions about critical areas of infrastructure for continuous improvement.
76	2009	Artto,K., Martinsuo,M.,Gemunden,H.G. and Murtoaro, J.	International Journal of Project Management	Philosophy, Body of knowledge	Foundations of program management: A bibliometric view	• Review	• To identify the similarities and differences in project and program management. Eleven distinctive characteristics of program and project management research were elaborated. •Programs have several theoretical bases, such as organisational theories, strategy, product development, manufacturing and change. Programs take an

							open system view and seek change in permanent organisations. • Projects have product development as the dominant theory basis.
77	2009	Wad,P.	Journal of the Asia Pacific Economy	Cross-cultural studies	The automobile industry of Southeast Asia: Malaysia and Thailand	• Review	• A comparative study between Malaysia and Thailand. • Thai-based automobile industry appears as a success story pertaining to the export success obtained via the Japanese and American MNCs.
78	2009	Saurin,T. A. and Ferreira,C .F.	International Journal of Industrial Ergonomics	Cross-cultural studies	The impacts of lean production on working conditions: A case study of a harvester assembly line in Brazil	• Interview • Questionnaire survey	• To assess the impacts of lean production (LP) on working conditions in a harvester assembly line of an American-owned plant in Brazil.
79	2009	Haried, P. & Ramamurthy,K.	Project Management Journal	Correlation of project management performance and project success	Evaluating the Success in International Sourcing of Information Technology Projects: The Need for a Relational Client-Vendor Approach	• Case study	• To look into the factors that is related to success of a project apart from financial or operational outcomes. • To view project success from the angle of relational/process dimensions.
80	2009	Rosenzweig,E.D.	Journal of Operations Management	Correlation of project management performance and project success	A contingent view of e-collaboration and performance in manufacturing	• Interview • Questionnaire survey	• To specify how various product and market characteristics may influence the nature of the expected positive relationship between e-collaboration and performance.
81	2009	Panayides ,P.M. and Venus Lun,Y.H.	International Journal of Production Economics	Correlation of project management performance and project success	The impact of trust on innovativeness and supply chain performance	• Questionnaire survey	• To investigate the effects of trust on innovativeness and supply chain performance as trust is identified as a significant predictor of positive performance in business relationships.
82	2010	Jayaram,J. Das,A. & Nicolae,M.	International Journal of Production Economics	Philosophy, Body of knowledge	Looking beyond the obvious: Unraveling the Toyota production system	• Discussions • Questionnaire survey	• To study the main effects of Toyota Production System (TPS) in manufacturing performances. • Highlighting lean philosophy.
83	2010	Wang,Y.	Journal of Business Ethics	Philosophy, Body of knowledge	Mission-driven organisations in Japan: Management philosophy and individual outcomes	• Questionnaire survey	• Research on how management philosophy is influential to individuals • Study done on Japanese employees. • To analyse the adoption of management philosophy and

							also the individual attitudinal and behavioral outcomes.
84	2010	Numagami, T.,Karube, M. & Kato,T.	Academy of Management	Philosophy, Body of knowledge	Organisational Deadweight: Learning From Japan	• Questionnaire survey	• To rectify the indifferences toward Japanese management. • To gain insight into organisational decay of Japanese organisations. • Offers valuable information to practitioners in deteriorated firms or those intend to revamp their organisations.
85	2010	Dwivedula,R. and Bredillet, C.N.	International Journal of Project Management	Philosophy, Body of knowledge	Profiling work motivation of project workers	• Questionnaire survey	• To understand the constructs of work motivation in project-based organisations. • To explore the relationship between work motivation and project management.
86	2010	Aubry,M., Muller,R., Hobbs,B. and Blomquist,T.	International Journal of Project Management	Philosophy, Body of knowledge	Project management offices in transition	• Case study	• To adopt a process view of Project Management Offices (PMO) in transition. • To gain a better understanding of the dynamic evolution of PMOs.
87	2010	Huemann, M.	International Journal of Project Management	Philosophy, Body of knowledge	Considering Human Resource Management when developing a project-oriented company: Case study of a telecommunication company	• Case study	• In a project-oriented company Human Resource Management also needs to change from an administration function to become a proactive business partner supporting project-oriented management.
88	2010	Lage Junior,M. Filho,M.G.	International Journal of Production Economics	Philosophy, Body of knowledge	Variations of the kanban system: Literature review and classification	• Review	• To conduct a literature review regarding variations of the kanban system, i.e. to focus only the modified kanban systems.
89	2010	Muller,R. and Turner,R.	International Journal of Project Management	Correlation of project management performance and project success	Leadership competency profiles of successful project managers	• Questionnaire survey	• To examine the leadership competency profiles of successful project managers in different types of projects, i.e., engineering & construction, information & telecommunication technology, organisational change.
90	2010	Menezes, L.M.D., Wood,S. and	Journal of Operations	Correlation of project managem	The integration of human resource and operation management	• Review • Intervi	• To review the literature on the association between lean production and performance. • The integration and evolution

		Gelade,G.	Management	ent performance and project success	practices and its link with performance: A longitudinal latent class study	ew	of operation and human resource management practices associated with the lean production concept are developed.
91	2010	Mackelprang,A.W. and Nair,A.	Journal of Operations Management	Correlation of project management performance and project success	Relationship between just-in-time manufacturing practices and performance: A meta-analytic investigation	• Review	• To examine the relationship between JIT manufacturing practices and performance outcomes by means of meta-analysis of correlations approach. • This study highlights the JIT practices that have the greatest impact on individual performance outcomes and emphasizes the role of moderating factors in the relationship between JIT practices and performance.
92	2011	Ko,C.H., Wang,W. C. and Kuo,J.D.	Journal of Engineering, Project, and Production Management	Philosophy, Body of knowledge	Improving Formwork Engineering Using the Toyota Way	• Review	• To adapt production concepts pioneered by Toyota (the "Toyota Way") to improve formwork engineering. • The Toyota Way of production consists of four tiers of management philosophy, known as the "4Ps" model. This research adopts the 4Ps as steps for formwork improvement.
93	2011	Parast,M. M.	International Journal of Project Management	Philosophy, Body of knowledge	The effect of Six Sigma projects on innovation and firm performance	• Review	• To develop a theoretical base for the effect of Six Sigma projects on innovation and firm performance. • It has been proposed that Six Sigma projects enhance technological innovation of the firms.
94	2011	Stanislaw, G.	Project Management Journal	Philosophy, Body of knowledge	A model of project knowledge management	• Review	• Highlighted that knowledge is the most important resource required for project management. • This paper aims to present a full and consistent model of project knowledge management.
95	2011	Phan,A.C., Abdallah, A.B., Matsui,Y.	International Journal of Production Economics	Philosophy, Body of knowledge	Quality management practices and competitive performance: Empirical evidence from Japanese manufacturing companies	• Questionnaire survey • Case study	• To study the relationship between competitive performance in Japanese manufacturing companies and practices of quality management. • The stability and consistency of Japanese quality management were highlighted.
96	2011	Glover,W. J., Farris,J.A., Van Aken,E.M. and Doolen,T.	International Journal of Production Econo	Philosophy, Body of knowledge	Critical success factors for the sustainability of Kaizen event human resource outcomes: An empirical study	• Multi-site field study	• To identify the factors that influence the sustainability of work area. • The attitudes and commitment to Kaizen in manufacturing organisations. • To present guidelines on

		L.	mics				Kaizen for organisations for future research.
97	2011	Nam,K.M.	Industrial and Corporate Change	Cross-cultural studies	Learning through the international joint venture: Lessons from the experience of China's automotive sector	• Case study	• Country of study: China • To study technological capabilities between alliance partners under international joint venture conditions.
98	2011	Fisher,E.	International Journal of Project Management	Correlation of project management performance and project success	What practitioners consider to be the skills and behaviours of an effective people project manager	• Review • Interviews • Group meetings	• Based on the opinions of project management practitioners, skills and behaviours of an effective people project manager were proposed. • To identify the skills and associated behaviours that could be adopted by project managers for a higher delivery rate of successful projects.
99	2011	Al-Tmeemy, S.M.H.M.,Abdul-Rahman, H. and Harun,Z.	International Journal of Project Management	Correlation of project management performance and project success	Future criteria for success of building projects in Malaysia	• Questionnaire survey	• To propose a framework to categorize project success for building projects in Malaysia from the contractors' perspective. • The study indicated that a categorization scheme for success criteria for building projects should include the categories of project management success, product success, along with market success.
100	2011	Din,S.,Abd-Hamid,Z. and Bryde,D.J.	International Journal of Project Management	Correlation of project management performance and project success	ISO 9000 certification and construction project performance: The Malaysian experience	• Questionnaire survey	• To explore the relationship between an ISO 9000 certified quality management system (QMS) and elements of performance in construction project environments.
101	2011	Yang,M.G.M., Hong,P. and Modi,S.B.	International Journal of Production Economics	Correlation of project management performance and project success	Impact of lean manufacturing and environmental management on business performance: An empirical study of manufacturing firms	• Questionnaire survey	• To explore relationships between lean manufacturing practices, environmental management (e.g., environmental management practices and environmental performance) and business performance outcomes (e.g., market and financial performance). • The paper provides empirical evidences with large sample size that environmental management practices become an important mediating variable to resolve the conflicts between lean manufacturing and environmental performance.

102	2011	Yang,L.R., Huang,C. F. and Wu,K.S.	International Journal of Project Management	Correlation of project management performance and project success	The association among project manager's leadership style, teamwork and project success	• Questionnaire survey	• To examine whether the impact of teamwork on project performance was moderated by the following data class variables: industry sector, total installed cost, owner regulation, initial site, team size, complexity, project type, and international involvement. • To investigate the relationships among the project manager's leadership style, teamwork, and project success.
103	2012	Bakri,A.H. Abdul Rahim,A. R., Yusof,N. M. and Ahmad,R.	Procedia – Social and Behavioral Sciences	Philosophy, Body of knowledge	Boosting Lean Production via TPM	• Review	• To study on the literature related to the application of TPM in the manufacturing industry. • Focuses on the main role of TPM in supporting the established quality improvement initiative such as lean production.
104	2012	Dombrowski,U., Mielke,T. & Engel,C.	Procedia CIRP	Philosophy, Body of knowledge	Knowledge Management in Lean Production Systems	• Review	• Discussion on the knowledge required in the implementation of Lean Production Systems. • Approaches to knowledge management.
105	2012	Simon,R. W & Canacari, E.G.	AORN Journal	Philosophy, Body of knowledge	A Practical Guide to Applying Lean Tools and Management Principles to Health Care Improvement Projects	• Review	• Discussion on lean manufacturing principles. • Application of lean thinking to improve project management. • Applying lean in health care industries apart from the usual manufacturing industry. • Kaizen events, quality improvements
106	2012	Low,F.S. and Chong,H. Y.	Procedia - Social and Behavioral Sciences	Philosophy, Body of knowledge	A Comparative Approach of Japanese Project Management in Construction, Manufacturing and IT Industries	• Review	• To focus on the application of Japanese project management (JPM) methods, namely Project and Program Management (P2M)/*Kaikaku* Project Management (KPM) in construction, manufacturing and information technology (IT) industries. • KPM evolves from P2M, and KPM's 3K- *kakusin* (innovation), *kaihatsu* (development) and *kaizen*(improvement) are the essences applied when practicing JPM style.
107	2012	Pohl,H. & Yarime,M.	Technological Forecasting	Philosophy, Body of knowledge	Integrating innovation system and management concepts: The development of	• Case study • Semi-structured	• To study on the innovation management in manufacturing of automobiles.

			and Social Change		electric and hybrid electric vehicles in Japan	interviews	• Discussion on the success factors that contribute to the rapid development of Japanese industry. • Japanese management system such as Toyota's management practice.
108	2012	Voss,M.	International Journal of Project Management	Philosophy, Body of knowledge	Impact of customer integration on project portfolio management and its success—Developing a conceptual framework	• Review	• Company projects require comprehensive management, project portfolio management (PPM), for strategic alignment and efficient use of resources. • To describe the relevant aspects for customer integration on the project portfolio level and identifies interfaces for cross-functional integration of a customer portfolio representative within the PPM process.
109	2012	Reich,B.H.Gemino, A. and Sauer,C.	International Journal of Project Management	Philosophy, Body of knowledge	Knowledge management and project-based knowledge in it projects: A model and preliminary empirical results	• Questionnaire survey	• To investigate how IT-enabled business projects can be managed to contribute value to the client organisation.
110	2012	Shih,H.Y.	Journal of Engineering and Technology Management	Philosophy, Body of knowledge	The dynamics of local and interactive effects on innovation adoption: The case of electronic commerce	• Case study	• To examine the dynamics of innovation adoption by considering both local and interactive effects in early adopters relative to later adopters. • To investigate the electronic commerce adoption as an empirical example.
111	2012	Low,F.S. and Chong,H.Y.	Trends and Development in Management Studies	Philosophy, Body of knowledge	A review towards the new Japanese project management: P2M and KPM	• Review	• To do a thorough review on Project and Program Management (P2M) and *Kaikaku* Project Management (KPM).
112	2012	Low,F.S. and Chong,H.Y.	Wulfenia Journal	Philosophy, Body of knowledge	Innovative project managing methods in automotive industry: A case study of Japanese organisations in Malaysia	• Semi-structured interviews	• To determine the extent of the use of KPM in Japanese organisations in Malaysia • To identify the level for localization in Japanese subsidiaries abroad.
113	2012	Ngai,E.W.T.,Chau,D.C.K., Poon,J.K.L., Chan,A.Y.M., Chan,B.C.M. and	Journal of Engineering and Technology Management	Correlation of project management performance and project success	Implementing an RFID-based manufacturing process management system: Lessons learned and success factors	• Case study	• To explore the development of an radio frequency identification (RFID)-based manufacturing process management system in a garment factory in China. • Eight factors for the successful implementation of an RFID-based

		Wu,W.W.S.					manufacturing process management system, namely, vendor selection, organisational motivation, cost/benefit evaluation, top management support, user involvement, the extent of progress supervision, staff competence and training, and policy, structure and operating process compatibility were identified.
114	2012	Ahmad,M.F. ,Zakuan,N., Jusoh,A. and Takala,J.	Procedia - Social and Behavioral Sciences	Correlation of project management performance and project success	Relationship of TQM and Business Performance with Mediators of SPC, Lean Production and TPM	• Review	• To propose relationship between TQM practices and business performance with mediators of Statistical Process Control (SPC), Lean Production (LP) and Total Productive Maintenance (TPM). • To identify the relationships among TQM, TPM, SPC and Lean Production practices as a conceptual model.
115	2012	Bolivar-Ramos,M.T.,Garcia-Morales,V,J. and Garcia-Sanchez,E.	Journal of Engineering and Technology Management	Correlation of project management performance and project success	Technological distinctive competencies and organisational learning: Effects on organisational innovation to improve firm performance	• Questionnaire survey	• To analyse how top management support of technology influences the generation of technological skills, technological distinctive competencies and organisational learning. • To examine the effects of technological distinctive competencies and organisational learning on organisational innovation and reflects how all of these variables impact organisational performance.
116	2012	Heising, W.	International Journal of Project Management	Philosophy, Body of knowledge/Correlation of project management performance and project success	The integration of ideation and project portfolio management — A key factor for sustainable success	• Review	• Contributes to the project management body of knowledge by combining the front end view on projects with the holistic view of managing project portfolio landscapes. • To establish a framework for conceptualization of the relationship between ideation and project portfolio management in product development environment by relating *ideation portfolio management*, *front end success*, and *project portfolio success*, and lays the groundwork for further empirical research.
117	2012	Sun,H., Wong,S.Y., Zhao,Y. and Yam,R.	Journal of Engineering and Technology Manag	Cross-cultural studies	A systematic model for assessing innovation competence of Hong Kong/China manufacturing companies: A case	• Case study • Structured interview	• To analyse the innovation competence in Hong Kong manufacturing companies. • To evaluate the innovation competence via a training and consultancy program.

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118	2013	Reich,B.H., Liu,L.,Sauer,C., Bannerman,P.,Cicmil,S.,Cooke-Davis,S., Gemino,A., Hobbs,B, Maylor,H.,Messikomer,C., Pasian,B., Semeniuk, M. and Thomas,J.	International Journal of Project Management	Philosophy, Body of knowledge	Developing better theory about project organisations	• Case study • Discussions	• To develop a comprehensive set of theories to describe, explain and predict aspects of projects and project management.
119	2013	Johnson,S.B.	International Journal of Project Management	Philosophy, Body of knowledge	Technical and institutional factors in the emergence of project management	• Review	• Argues that technical complexity and novelty were the primary factors driving project management. • To identify the fundamental technical and institutional factors that led to the emergence of project management.
120	2013	Glover,W.J.,Liu,W.H., Farris,J.A. and Van Aken, E.M.	International Journal of Operations and Production Management	Philosophy, Body of knowledge	Characteristics of established kaizen event programs: An empirical study	• Semi-structured interviews	• To identify areas for future research on Kaizen event programs including attributes that support program success, and the outcomes and implementation problems experienced. • Findings were used to develop propositions for future research.
121	2013	Low,F.S., Chong,H.Y. and Lee,W.P.	Journal of Advanced Management Science	Philosophy, Body of knowledge	Identifying key features of the innovated Japanese Project Management: A critical review on its philosophy	• Review	• To present a critical review of P2M/KPM's key features and elements in terms of its philosophy, management tools and project models. • The findings will eventually bring awareness and provoke interest in organisations worldwide to implement or apply the methods if found to be suitable in their project management processes.
122	2013	Rees-Caldwell, K. and Pinnington, A.H.	International Journal of Project Management	Cross-cultural studies	National culture differences in project management: Comparing British and Arab project managers' perceptions of different planning areas	• Questionnaire survey	• Cultural studies between the British and Arab. • To investigate National Culture (NC) and the integrity of Planning processes. • Differences between the Arab and British attitudes and perceptions of planning were analysed. • Ratings in Scope, Time planning, Innovation/Technology, Integration, and Communication variables

							significantly differed between both groups, with the Arab group rating Communication higher and the British group rating the remaining variables higher.
123	2013	Noma, H.	Japanese Journal of Human Geography	Cross-cultural studies	Japanese Geographers' Contribution to East and Southeast Asian Studies since the 1980s	• Review	• To review the research trends in matters pertaining to East Asia and Southeast Asia by Japanese geographers. • Countries involving China, Vietnam, Laos, Cambodia, and some parts of Myanmar.
124	2013	Johnson, W.H.A. and Filippini, R.	Journal of Engineering and Technology Management	Cross-cultural studies	Integration capabilities as mediator of product development practices–performance	• Questionnaire survey	• To introduce the concept of integration capabilities to explain the relationship between use of integration practices and new product development (NPD) performance. • Study between Japanese and American firms.
125	2013	Hazama,Y. & Ota, M.	International Journal of Operations and Production Management	Correlation of project management performance and project success	Japanese innovation processes	• Questionnaire survey • Case study	• To propose an innovated management process. • To clarify the managerial strategies in order to achieve success in Japanese enterprises.
126	2013	Neverauska,B., Bakinaite, L. & Meiliene, E.	Economics and Management	Correlation of project management performance and project success	Contemporary approach to the possibility of projects success increase	• Scientific analysis of the literature • Questionnaire survey	• To determine and analyse the success factors and criteria of a project. • To investigate the management instruments involved that will lead to the success of a project. • There are studies suggest that success factors are strongly related to project manager, environment, team and organisation. Meanwhile, there were other sources affirm that success of a project should be viewed through project life cycle stages.
127	2013	Martinez Leon,H.C., Farris,J.A., Letens,G. and Hernandez,A.	Journal of Engineering and Technology Management	Correlation of project management performance and project success	An analytical management framework for new product development processes featuring uncertain iterations	• Case study • Review	• To present an analytical framework for effective management of projects with combination of two complementary techniques, one focused on improving iterative process architectures, the Design Structure Matrix, and one focused on predicting project performance, the Graphical Evaluation Review Technique.

128	2014	Kull,T.J., Yan,T.,Liu, Z. and Wacker,J. G.	International Journal of Production Economics	Philosophy, Body of knowledge	The moderation of lean manufacturing effectiveness by dimensions of national culture: Testing practice-culture congruence hypotheses	• Review • Questionnaire survey	• To study how lean manufacturing (LM) effectiveness is sensitive to national cultural dimensions. • Findings will help production managers adapt LM practices worldwide.
129	2014	Ika,L.A. and Hodgson, D.	International Journal of Project Management	Philosophy, Body of knowledge	Learning from international development projects: Blending Critical Project Studies and Critical Development Studies	• Review	• To make international development projects critical. • Project management approaches (PMBOK, PRINCE II) towards Critical Project Studies and Critical Development Studies.
130	2014	Akbar,H. and Mandurah ,S.	International Journal of Project Management	Philosophy, Body of knowledge	Project-conceptualisation in technological innovations: A knowledge-based perspective	• Multi-case study approach	• To contribute a knowledge-based project-conceptualisation framework that deepens the appreciation of the evolving nature of the critical project management aspects across the highly uncertain project-conceptualisation phase. • To offer practical steps for project managers to effectively manage this project management phase.
131	2014	Glover,W. J., Farris,J.A. and Van Aken,E.M.	Engineering Management Journal	Philosophy, Body of knowledge	Kaizen events: Assessing the existing literature and convergence of practices	• Review	• The popularity of Kaizen events as a process improvement is increasing. • To conduct a literature review of the Kaizen event body of knowledge.
132	2014	Svejvig,P. and Andersen, P.	International Journal of Project Management	Philosophy, Body of knowledge	Rethinking project management: A structured literature review with a critical look at the brave new world	• Review	• To construct a structured review of the rethinking project management: A structured literature review with a critical look at the brave new world • Analyzing its contextualization, social and political aspects, rethinking practice, complexity and uncertainty, actuality of projects and broader conceptualization.
133	2014	Lappe,M. and Spang,K.	International Journal of Project Management	Philosophy, Body of knowledge	Investments in project management are profitable: A case study-based analysis of the relationship between the costs and benefits of project management	• Case study	• To develop a model to determine the return on investment (ROI) of project management (PM) and to unite the costs and benefits of PM. • There were clear relationships both between the costs of and investments in PM as well as between the qualitative and quantitative benefits of PM.

134	2014	Garcia,J.L.,Maldonado,A.A.,Alvarado,A., and Rivera,D. G.	International Journal of Advanced Manufacturing Technology	Philosophy, Body of knowledge	Human critical success factors for kaizen and its impacts in industrial performance	• Questionnaire survey	• To investigate related human factors that are executed during kaizen implementation process. • Management commitment and education are the main factors that guarantee the success for kaizen implementation programs.
135	2014	Tanaka,H.	Procedia - Social and Behavioral Sciences	Philosophy, Body of knowledge	Toward project and program management paradigm in the space of complexity: a case study of mega and complex oil and gas development and infrastructure projects	• Review	• Project and program management research on complex projects. • New ideas of project and program management are needed to manage mega and complex projects. • However, these new thoughts are preliminary and should be evolved with further studies to build a new adaptive management paradigm. • To elucidate the dimensions and characteristics of complex projects.
136	2014	Khanchanapong,T.,Prajogo,D., Sohal,A.S., Cooper,B. K., Yeung,A. C.L. and Cheng,T.C. E.	International Journal of Production Economics	Philosophy, Body of knowledge	The unique and complementary effects of manufacturing technologies and lean practices on manufacturing operational performance	• Questionnaire survey	• To investigate the complementary effects of manufacturing technologies and also lean practices on operational performance of manufacturing firms. • To maximize operational performance, it is important to build strong manufacturing technologies and lean practices. • Study done on manufacturing firms in Thailand.
137	2014	Shehu,Z., Endut,I.R., Akintoye, A. and Holt,G.D.	International Journal of Project Management	Philosophy, Body of knowledge	Cost overrun in the Malaysian construction industry projects: A deeper insight	• Questionnaire survey	• To obtain project characteristics and cost performance data for construction projects in Malaysia. • The findings will statistics will support first-order project management decision-making within Malaysia particularly.
138	2014	Magnaye, R.,Sauser, B.,Patanakul,P.Nowicki,D. and Randall, W.	International Journal of Project Management	Philosophy, Body of knowledge	Earned readiness management for scheduling, monitoring and evaluating the development of complex product systems	• Review • Case study	• Project management tools and techniques have been inadequate for monitoring technology development in a complex product system (CPS). • To address this important gap, this study developed a new maturity-focused methodology for scheduling, monitoring and evaluating the development of a system.

139	2014	Maniak,R and Midler,C.	International Journal of Project Management	Philosophy, Body of knowledge	Multiproject lineage management: Bridging project management and design-based innovation strategy	• Case study	• Innovation management. • To propose a model of *multiproject lineage management* (MPLM), which focuses on the key processes that drive exploration efforts and shape innovation. • From analysis, the principles of MPLM were exposed, mapping the roles of corporate, program and project management within a global expansion project.
140	2014	Hossain, M.A. and Chua,D.K.H.	International Journal of Project Management	Philosophy, Body of knowledge	Overlapping design and construction activities and an optimization approach to minimize rework	• Simulation model	• This study presents an integrated framework to overlap design and construction activities using the concepts of upstream evaluation and downstream sensitivity characteristics (concurrent execution). • Reduction in project duration and expected rework amount vary based on the accuracy of upstream early information and sensitivity of downstream activities.
141	2014	Yang,L.R., Huang,C.F. and Hsu,T.J.	International Journal of Project Management	Philosophy, Body of knowledge	Knowledge leadership to improve project and organisational performance	• Questionnaire survey	• To assess the associations among knowledge leadership, customer knowledge management, the performance of a precision instrument sales (PIS) project, and organisational performance. • To determine whether project performance may mediate the effect of customer knowledge management on organisational performance. • To examine the moderating role of data complexity in the relationship between customer knowledge management and project performance.
142	2014	Shimizu,T., Park,Y, & Choi,S.	International Journal of Production Economics	Cross-cultural studies	Project managers and risk management: A comparative study between Japanese and Korean firms	• Questionnaire survey	• Cultural studies between Japan and Korea. • Comparative study on risk management practices in Japanese and Korean firms. • Project managers of these two countries are granted with different authority level when managing risks.
143	2014	Ofotokun, O.S., Enudu,T.O.,Chukwu,B.A. and Fadejin,J.T.	Asian Journal of Business Management	Cross-cultural studies	The Critical Factors Responsible for Fairness in Managing Employee Dismissal in Some Textile	• Questionnaire survey	• To investigate the critical factors responsible for fairness in managing dismissal of employee in Textile industries in Nigeria.

					Manufacturing Industries in Nigeria		
144	2014	Lee,J.Y.,Park,Y.R., Ghauri,P.N. and Park, B.II.	Journal of International Management	Cross-cultural studies	Innovative Knowledge Transfer Patterns of Group-Affiliated Companies: The effects on the Performance of Foreign Subsidiaries	• Structured, interview-based questionnaire	• To study the patterns of innovative knowledge transfer strategies. • To access the effects of these patterns at foreign subsidiaries based on the performance. • Study done on Korean business groups.
145	2014	Staeblein, T & Aoki, K.	International Journal of Production Economics	Cross-cultural studies	Planning and scheduling in the automotive industry: A comparison of industrial practice at German and Japanese makers	• Factory observations • Semi-structured interviews • Case study • Joint field research	• Cultural studies between Japanese and German. • A comparison of managerial practices and industrial practices of German and Japanese makers in the automobile industry.
146	2014	Ling,F.L.L.,Ong,S.Y.,Ke,Y., Wang,S. and Zou,P.	International Journal of Production Economics	Cross-cultural studies	Drivers and barriers to adopting relational contracting practices in public projects: Comparative study of Beijing and Sydney	• Questionnaire survey	• Cultural studies between Australia (Sydney) and China (Beijing). • To cultivate readiness to embrace relational contracting practices, it is suggested that industry professionals and the government adopt recommendations highlighted in this study according to the type of market structure.
147	2014	Borjesson, S.,Elmquist,M. and Hooge,S.	Journal of Engineering and Technology Management	Philosophy, Body of knowledge/Cross-cultural studies	The challenges of innovation capability building: Learning from longitudinal studies of innovation efforts at Renault and Volvo Cars	• Case study	• To manage an innovation portfolio and to systematically build capabilities for innovation. • Innovation capabilities.
148	2014	Alcaraz,J.L.G., Maldonado,A.A.,Iniesta,A.A. , Robles, G.C. and Hernandez,G.A.	Computers in Industry	Philosophy, Body of knowledge/Cross-cultural studies	A systematic review/survey for JIT implementation: Mexican*maquiladoras* as case study	• Questionnaire survey	• This study concerns foreign companies established in the Mexican-USA border. • Management commitment and education are the basis for a successful JIT implementation. • Communication among workers is necessary for JIT success.
14	2014	Ahadzie, D.K.,	International	Philosophy,	Competencies required of project	• Questionnair	• Study on Property Developers

9		Proverbs, D.G. and Sarkodie-Poku,I.	Journal of Project Management	Body of knowledge/Cross-cultural studies	managers at the design phase of mass house building projects	e survey	in Ghana. • To study on what are considered to be the core competencies that PMs must possess at the design phase of Mass House Building projects (MHBPs).
150	2014	Leal-Rodriguez,A.L., Roldan,J.L.,Ariza-Montes,J.A. and Leal-Millan,A.	International Journal of Project Management	Philosophy, Body of knowledge/Cross-cultural studies	From potential absorptive capacity to innovation outcomes in project teams: The conditional mediating role of the realized absorptive capacity in a relational learning context	• Questionnaire survey	• To analyse the influence of potential absorptive capacity (PACAP) and realized absorptive capacity (RACAP) on innovation outcomes (IO) in project teams. • Study on Spanish firms.
151	2014	Nagano,M.S.,Stefanovitz,J.P. and Vick,T.E.	Journal of Engineering and Technology Management	Philosophy, Body of knowledge/Cross-cultural studies	Innovation management processes, their internal organisational elements and contextual factors: An investigation in Brazil	• Case study	• To analyse the relationships between internal organisational elements and the influence of contextual factors related to innovation management and its challenges. • To analyse the reality of innovation practices in Brazil.
152	2014	Gao,S. and Low,S.P.	International Journal of Project Management	Philosophy, Body of knowledge/Cross-cultural studies	The Last Planner System in China's construction industry — A SWOT analysis on implementation	• In-depth interviews • On-site observations	• The Last Planner System™ (LPS) has been used to represent lean construction or lean project management. • LPS aims to achieve reliable workflow by encouraging foremen to have a sense of ownership of the project programme and to build-in their commitment into it. • Reports on the perceptions of Chinese building professionals of the application of LPS in Chinese construction projects. • To develop practical and theoretical of LPS and to study their relevance to project management.
153	2014	Birasnav, M.	International Journal of Project Management	Correlation of project management performance and project success	Knowledge management and organisational performance in the service industry: The role of transformational leadership beyond the effects of transactional leadership	• Questionnaire survey	• To examine a comprehensive model comprising of various relationships between transformational and transactional leadership, knowledge management (KM) process, and organisational performance. • It indicated that transformational leadership has strong and positive effects on KM process and organisational performance after controlling for the

							effects of transactional leadership.
154	2014	Sage,D., Dainty,A. and Brookes, N.	International Journal of Project Management	Correlation of project management performance and project success	A critical argument in favor of theoretical pluralism: Project failure and the many and varied limitations of project management	• Semi-structured interview	• To analyse project failure from four different perspective (positivism, structural Marxism, interpretivism and actor–network theory) • The study proposed that practitioner and scholarly concerns with project failure (and success), can actively contribute to attempts to reflect upon various matters of political concern as developed within the Making Projects Critical community, and by extension Critical Management Studies.
155	2014	Yang,L.R., Chen,J.H. and Wang,X.L.	International Journal of Project Management	Correlation of project management performance and project success	Assessing the effect of requirement definition and management on performance outcomes: Role of interpersonal conflict, product advantage and project type	• Questionnaire survey • Case study	• To investigate the relationships among requirement definition and management (RDM) practice, interpersonal conflict, product advantage, and new product development (NPD) performance in terms of project and market performance. • RDM implementation process and training & improvement is associated with requirement quality and stability of NPD.
156	2014	Asad Mir,F. & Pinnington,A.H.	International Journal of Project Management	Correlation of project management performance and project success	Exploring the value of project management: Linking Project Management Performance and Project Success	• Questionnaire survey.	• To measure project management performance and its linkage with project success • Conducting regression analysis to identify the influence of project management performance and its contributing individual variables on project success. • Scope of survey was a group of project management professionals working in UAE project-based organisations.
157	2014	Basu,R.	International Journal of Project Management	Correlation of project management performance and project success	Managing quality in projects: An empirical study	• Semi-structured interviews • Questionnaire	• To establish the key role of quality in the cost, time and quality. • To highlight the importance of implementing the people related 'organisation quality' amongst key stakeholders to deliver the success criteria of

						survey • Case study	a project. • Summarizes the best practices for managing quality.
	2014	Reich,B.H .Gemino, A. and Sauer,C.	International Journal of Project Management	Correlation of project management performance and project success	How knowledge management impacts performance in projects: An empirical study	• Questionnaire survey	• To develop theory and tests the relationships between knowledge management and various aspects of performance in IT-enabled business projects. • Project managers who achieve Knowledge Alignment among the people and the artefacts from three parts of the project – the IT team, the business change team, and the governance team – can have a significant positive impact on the achievement of business value from the project.
159	2014	Cserháti, G. & Szabó, L.	International Journal of Project Management	Correlation of project management performance and project success	The relationship between success criteria and success factors in organisational event projects	• Questionnaire survey	• To develop and investigate the attributes of the success factors and criteria of organisational event projects. • To analyse the relationship between the success criteria and factor areas. • In this research, it suggests that relationship-oriented success factors, such as project leadership, communication and cooperation, play a crucial role in carrying out successful organisational event projects.
160	***C. 2014***	Popaitoon ,S. and Siengthai, S.	International Journal of Project Management	Correlation of project management performance and project success/Corss-cultural study	The moderating effect of human resource management practices on the relationship between knowledge absorptive capacity and project performance in project-oriented companies	• Questionnaire survey	• Survey data obtained from multinational companies (MNCs) in the Thai automotive industry. • Discovered that human resource management (HRM) practices moderate the effects of a project team's knowledge absorptive capacity (ACAP) on project performance. • HRM practices not only facilitate knowledge management from the current project to future projects but also strengthen the relationship between ACAP and long-term project performance.
Conference proceedings							

1	2006	Letens,G., Farris,J.A. and Van Aken,E.M.	27th Annual National Conference of the American Society for Engineering Management 2006 – Managing Change: Managing People and Technology in a Rapidly Changing World, ASEM 2006.	Philosophy, Body of knowledge	Development and application of a framework for the design and assessment of a kaizen event program	• Review • Case study	• Introduces a framework for the design and management of Kaizen event program. • Describes the development and application of an assessment approach based on this framework.
2	2007	Worley,J.M., Doolen, T.L., Van Aken,E.M. and Farris,J.	IIE Annual Conference and Expo 2007 – Industrial Engineering's Critical Role in a Flat World	Philosophy, Body of knowledge	A comparative assessment of Kaizen events within an organisation	• Case study	• To identify the key variables that should be considered in the design and management of Kaizen events. • Variables identified are considerable in planning and conducting Kaizen events for organisational leaders.
3	2007	Bredillet, C.	EURAM 2007 : Current Management Thinking : Drawing from Social	Philosophy, Body of knowledge	'Kaikaku' project management : investigating the Japanese answer to the 90s depression.	• Case study	• To investigate the Japanese answer to the 90s depression. • To study and develop a framework to address new business challenges and value creation in complex, ambiguous and uncertain environment. • The findings are assumed to be helpful to transpose the Japanese experience to other analogical contexts and situations.

			Sciences and Humanities to Address Contemporary Challenges, European Academy of Management.				
4	2008	Glover,W. J.	29th Annual National Conference of the American Society for Engineering Management, 2008 ASEM 2008.	Philosophy, Body of knowledge	Assessing the maturity of kaizen event research stream	• Review	• Includes a systematic review of the practitioner and academic Kaizen event literature. • Explores techniques to assess the research stream's maturity. • To combine several existing maturity assessment methods to crease a maturity assessment framework for the Kaizen event field.
5	2011	Shirai,K., Koshijima ,I. and Umeda,T.	Proceedings of the 1st International Technology Management Conference, ITMC 2011	Philosophy, Body of knowledge	Technology and human resource management methodology in "kaikaku" (corporate innovation) program	• Case study	• To disclose the successful implication of "Pinch Technology" and human resource management based on the study of rationale to the generic task assignment problem. • To propose a strategic planning procedure.
6	2011	Low,F.S. and Chong,H. Y.	6th International Conference on Construction in the 21st Century: Construction Challenges	Philosophy, Body of knowledge	Approach of Japanese Project Management - P2M/KPM Method in Construction Industry	• Review	• To identify the behavior and practice of Japanese project management methods. • To compare PMBOK® and P2M/KPM in the construction industry. • The features and essence are highlighted, discussed, and reviewed to identify if they are applicable in construction field.

			in the New Decade				
7	2012	Low,F.S. and Chong,H. Y.	2nd International Conference on Engineering and Technology Innovation 2012 (ICETI2012)	Philosophy, Body of knowledge	A critical review into the evolution of Japanese Project Management: A comparative approach	• Review	• To understand the importance of discovering more about the two globally renowned project management methods, namely the United States (US) method (Project Management Body of Knowledge (PMBOK)) and the Japanese method (Project & Program Management (P2M) and *Kaikaku* (reform) Project Management (KPM)). • To identify the features and essence of P2M/KPM. • To compare them with those of PMBOK.
8	2013	Low,F.S., Chong,H. Y. and Lee,W.P.	3rd International Conference on Management and Service Science - ICMSS 2013	Philosophy, Body of knowledge	Identifying key features of the innovated Japanese Project Management: A critical review on its philosophy	• Review	• To present a critical review of P2M/KPM's key features and elements in terms of its philosophy, management tools and project models. • The findings will eventually bring awareness and provoke interest in organisations worldwide to implement or apply the methods if found to be suitable in their project management processes.
9	2014	Low,F.S., Chong,H. Y. and Lee,W.P.	International Conference on Applied Sciences & Industrial Technology 2015 - Industrial Technology & Engineering Symposium	Cross-cultural studies	The innovated Japanese project management principles on its industrial applications	• Interview	• To discover the management methods applied in Japanese organisations in Japan and Malaysia. • The findings will give an insight on the management mindset of the organisations.