People and Places in Project Management Research

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TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

LIST OF TABLES

FOREWORD

Project management continues to develop and evolve, as too does the use of project management across a range of industries, disciplines and domains.

As the discipline continues to evolve, it is critical that we explore new ideas, develop new approaches and techniques and build the collective body of knowledge in the practice of project management. Research also provides a window into broader trends within our sector, and provides empirical data that helps us challenge the thinking of stakeholders for the paths they are choosing.

The chapters within this monograph provide some of the current thinking, concepts and research within the Australian project management academic community. It is through such research that we re-examine our assumptions, uncover new applications and solve problems that may have been present for some time.

I commend this monograph to you and in doing so I challenge you to broaden your thinking and understanding of project management and to help improve what is done in practice.

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INTRODUCTION

This book has been structured into five parts.

Part I

The two chapters in Part I introduce and provide definitions for common terms surrounding Project Management (PM) and Project Management Offices (PMO). Chapter One, by Sokhanvar and Trigunarsyah, evaluates project management (PM) and offsets it against knowledge management (KM), demonstrating how PM and KM work both with and against each other in a project knowledge management environment. Chapter Two, by Wood and Shelbourn, aims to more deeply define the PMO concept in terms of current documentation in the literature coupled with industry understanding or acceptance of PMO nomenclature and its constituent parts and functions. Together, these two chapters provide a solid definitional foundation for the subsequent chapters.

Part II

The two chapters in Part II focus on stakeholders, both who they are (Chapter Three) and an effective and convenient way to communicate with them (Chapter Four). Chapter Three, by Nalewaik and Mills, identifies and focuses on the various stakeholders in a project, and emphasises the importance of communicating clearly with stakeholders in order to establish reasonable project expectations. Chapter Four, contributed by Overton, extends this idea of clear communication with a focus on visual representations, including the power of visual metaphor to represent complex concepts simply.

Part III

Part III addresses project complexity in its various facets. In Chapter Five, Remington discusses leadership for complex projects through distinctions of charismatic, human-oriented, and task-oriented leadership styles as established through interviews with senior leaders. In Chapter Six, Ireland presents multiple aspects of project complexity. Chapter Seven, contributed

by Zolin, offers scales for measuring and monitoring the success of complex projects as developed from interviews with project managers and directors. Together, these chapters shed light on project complexity and how best to navigate the challenges complexity brings.

Part IV

Part IV addresses risk management. Leading off this three-chapter section with a conceptual chapter, D'Cruz, Fragomeni and Sarma take on concepts of due diligence, the precautionary principle, and Enterprise Risk Management in Chapter Eight. Sihombing analyses risk impact on Indonesia road development in Chapter Nine, focusing on project risk management, commenting on the project life cycle, and concluding positive and challenging project impacts as based on survey data. Mosly focuses on critical risks involved in greening office buildings in Chapter Ten, identifying numerous critical risks related to Energy Efficient and Renewable Technologies (EERTs) in Australian green office buildings as indicated by survey responses. Thus, the three chapters in Part IV move from the conceptual to an industry-specific application of risk and risk management.

Part V

Part V concludes this project management monograph with three chapters of case studies. In Chapter Eleven, Duffield and Wilson target Public Private Partnerships (PPPs) with an evaluation of the success of seven of Australia's road projects. Duffield, Atmo, and Zarei then closely examine three large international PPP-style projects in Chapter Twelve, looking for similarities and differences among nations and national economic positions. Drawing our look at project management to a close and bringing our attention back to the classroom, where it all begins, Wood presents a case study of online graduate-level project management courses, illuminating tips for success in Chapter Thirteen. After a foray into various aspects of theory and application in the previous sections, this final section brings the reader's focus to some very specific project management phenomena aimed to elucidate successful processes of project management education and practice.

PART I

PROJECT MANAGEMENT OFFICES

CHAPTER ONE

THE ROLE OF KNOWLEDGE AND THE PROJECT MANAGEMENT OFFICE

SHAHRAM SOKHANVAR
AND DR. BAMBANG TRIGUNARSYAH

Since Aristotle's time, the importance of knowledge has been widely discussed by a plethora of authors (Drucker, 1993; Porter, 1985; Wiig, 1997b). Peter Drucker (1993), as a highly accredited academic, has strongly accentuated the role of individuals' knowledge for improving organisational competitive advantages. In his latest publication he proposes "intellectual property" as a nonphysical and intangible asset of organisations (Drucker, 1993).

It is widely accepted that individuals' knowledge significantly impacts on improving the quality of services and products (Drucker, 1993; Wiig, 1997b). In the last ten years, decision makers have realised the crucial impact of human beings' knowledge on organisational performance; therefore, organisations have changed their strategies from "being product-oriented" to "adopting knowledge-driven" approaches (Wiig, 1997b).

From another perspective, organisations have faced a number of challenges in order to both reduce their costs and respond to market demand in a timely manner (Project Management Institute, 2012). A project–oriented strategy has been adopted to not only tackle the mentioned problems but also to develop competitive advantages. This approach gives organisations the opportunity to act productively in various circumstances.

Project is defined as the application of knowledge, skills, tools, and techniques to meet project requirements as well as objectives, whereas Project Management (PM) comprises methods, procedures and processes

to utilize knowledge of project team members for delivering a quality product or service (PRINCE2 Foundation, 2008; Project Management Institute, 2012). The notion of the Project Management Office (PMO) has been recently proposed to institutionalize and develop PM practices within organisations. To do so, Project Management Maturity Models (PMMMs) have been developed for establishing and, then, improving PMOs as well as PM practices in enterprises.

Current PMMMs (see Table 1-2) are comprised of a number of levels and criteria to determine the degree of quality of PM. The greater the level of maturity, the better the quality of project management. Similar to other maturity models, they entail a number of criteria from the PM point of view to examine the status of PM practices or processes against appropriate PM methodology. However, existing PMMMs do not analyse maturity of PM from the knowledge management (KM) point of view. This means that proper KM practices and processes have not been addressed for each level of maturity.

We aim to cover this gap through both developing a framework to address KM practices in different levels of PMMM, and, ultimately, proposing appropriate criteria to assess the maturity of PMOs from a KM point of view.

This chapter aims to discuss undertaken investigations of KM in both functional and project organisations. First, discussions in knowledge management are presented followed by existing arguments on project management and the project management office. This will be followed by current discussions of project knowledge management and findings. At the end, contributions and significances are explained.

The Emergence of Project Knowledge Management

There are a number of definitions in the current literature that illustrate knowledge from different points of view. Some of these have epistemological perspectives while some others present ontological views of knowledge. Basically, data and information are two main constituents of knowledge in which "Data is a simple observation of states of the world" and "Information is data endowed with relevance and purpose" (Knight & Howes, 2003, p. 13). According to Knight and Howes (2003), knowledge is valuable information which comes from an individual's mind.

From another point of view, Davenport and Prusak (2000, p. 5) define knowledge as "a fluid mix of experiences, values, contextual information, and expert insights that provides a framework for evaluation and incorporating new experiences and information." Nonaka and Takeuchi (1995) believe that knowledge is subjective, process-relational, and aesthetic which is created through human being interactions.

To sum up, knowledge entails the followings characteristics (Alavi & Leidner, 1999; Arora, Owens, & Khazanchi, 2010; Davenport & Prusak, 2000; Nonaka, 1994; Wiig, 1997a):

- Valuable information which comes from an individual's mind, belief or values;
- An individual's ability to generate new knowledge from existing information, experience, insight or knowledge; and
- Value creation for organisations to develop their competencies and, consequently, competitive advantages.

Knowledge has two main dimensions: explicit and tacit. The first type of knowledge is articulated and codified in organisational documents, forms and instructions while tacit knowledge is embedded in an individual's mind, beliefs and thoughts which could not be easily codified. In other words, tacit knowledge is known as the hidden side of an individual's knowledge, deeply rooted in his/her actions, ideals, and commitments (Nonaka, 1994).

In order to define knowledge management, Alavi and Leidner (2001) discuss five views of knowledge as: *a state of mind; an object; a process; a condition of having access to proper information; and a capability.*

They illustrate that if knowledge is a process, then KM is defined as the process of creation, sharing, and distributing knowledge; in contrast, if knowledge is a capability, then KM is considered as the building of organisational core competencies and understanding of strategic know-how (Alavi & Leidner, 2001).

In conclusion, they (Alavi & Leidner, 1999, p. 6) define KM as "A systemic and organisationally specified process for acquiring, organizing and communicating both tacit and explicit knowledge of employees so that other employees may make use of it to be more effective and productive in their work."

From another perspective, KM could be classified *into technical and non-technical enhancements*. Technical development activities focus on improving the Information and Communication Technology (ICT) aspect of KM while a nontechnical approach deals with both social science and the managerial side of KM.

From a process point of view, KM has been discussed by a number of authors. In order to propose a generic KM process, Nissen et al. (2000) conducted a comprehensive study, and they propose an "amalgamated KM process framework" which is comprised of creating; organizing; formalizing; distributing; applying; and evolving processes. Later on, a complementary work was undertaken by Lytras et al. (2002) to improve the previously mentioned model. This research team has developed a comprehensive framework which they believe is applicable for both academic and business organisations (Lytras et al., 2002). Despite their claim about validity of their model, however, it has not been examined yet for project-based organisations.

Project is a temporary activity and it requires different practices for managing project knowledge (Kasvi, Vartiainen, & Hailikari, 2003). Kasvi et al. (2003) defined three types of knowledge in project environments: technical knowledge; procedural knowledge; and organisational knowledge. This typology has been adopted and further developed by Wiewiora et al. (2010). They substituted "organizational knowledge" with "about customer requirement" in compliance with PMBOK (Wiewiora et al., 2010).

In order to address KM processes in a project environment, Owen and Burstein (2005) have conducted research and then proposed a framework for addressing KM processes in project-based organisations. This model entails four major KM processes, namely: creation; capture; transfer; and reuse (Owen & Burstein, 2005). Although the mentioned framework was examined, it has not been accredited yet as a generic KM process framework.

To summarise the current KM processes frameworks, Table 1-1 depicts proposed frameworks in two different contexts: functional and project-based organisations. In summary, knowledge is an important factor for developing organisations and delivering successful projects. From a process point of view, knowledge management is the process of creating, capturing, transferring and reusing project knowledge from initiation to the closing phase. In our research, the main focus has been on investigating

Proposed Context	Authors	Processes and their underpinnings					
		Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6
Functional Organisations	**Nissen et al. (2000)**	Create	Organize	Formalize	Distribute	Apply	Evolve
	Lytras et al. (2002)	Relate/value	Acquire	Organize	Enable Reuse	Transfer	Use
Project–based Organisation	**Owen & Burstein (2005)**	Create	Capture	Transfer	Reuse	****	****
	Kasvi et al. (2003)	Creation	Administration	Retrieval	Utilization	****	****

Table 1-1. KM processes frameworks

the managerial aspect rather than the technical point of view. Also, we have mainly investigated the process management aspect of KM in project environments.

Project Knowledge Management

According to Koskinen et al. (2003), there is a strong correlation between knowledge management (KM) and project success/failure. This means that utilizing appropriate KM practices in projects contributes to exploitation of proper knowledge/experience in proper time, which improves performance of activities and, ultimately, success of the project (Davidson & Jillian, 2009; Kasvi et al., 2003; Owen, Burstein, & Mitchell, 2004). In other words, managing project knowledge significantly contributes to delivering quality products/services in order to achieve project objectives.

Differences between a project and an organisation's operation from a KM point of view have come into consideration since the early 2000s. Bresnen et al. (2003) discuss the following to emphasise differences of KM in mentioned contexts:

- Projects are finite and their personnel disband or leave after project termination; therefore the created knowledge is not utilized in similar projects if:
- There are difficulties to develop and disseminate knowledge within and between projects (inter and intra project).
- Fragmentation of project team members into different groups causes a number of difficulties for flowing knowledge among groups.
- KM and organisational learning across the projects and between individuals have many difficulties.

Given the importance of KM for project success, the proposed KM practices for functional organisations are not necessarily appropriate for utilizing in project-based environments. The temporary nature of the project is one of the main reasons of the mentioned differences. This means that project-based organisations require proper solutions to tackle KM issues within project contexts.

This issue has led a number of studies to investigate KM in project environments and its related challenges and issues. One of the earliest studies was carried out by Brown and Duguid (1998), by which they raised

the issue of leakiness and stickiness of knowledge in project environments. In their study, the main focus was on single projects but this approach has been subsequently improved by considerations of investigating KM practices intra and inter projects.

Despite the increasing attention of KM studies in project environments, however, the existing literature is not rich enough, in comparison to KM studies in functional organisations (Bresnen et al., 2003; Koskinen K U & Pihlanto, 2008; Owen et al., 2004). The following are major studies of KM in project–based organisations that have been undertaken to cover some recognized gaps in the existing literature:

- Lack of appropriate knowledge sharing and acquisition systems (Koskinen et al., 2003)
- Repetitive works or rework because of lack of effective knowledge reuse and transferring system (Desouza & Evaristo, 2006; Love, Irani, & Edwards, 2003; Owen et al., 2004);
- Lack of wisdom in projects because of inappropriate knowledge management system in the project environment (Walker & Christenson, 2005)
- Poor system to collect and assimilate lessons learned between and within projects (Goffin, Koners, Baxter & Van der Hoven, 2010; Newell, Bresnen, Edelman, Scarbrough & Swan , 2006); and
- Lack of collaboration because of unsystematic KM in project environment (Davidson & Jillian, 2009);

To sum up, managing knowledge in project environments is a relatively new subject and it could be investigated in several directions, from proposing the proper KM processes to designing practical systems to prevent knowledge loss and improve project success. In our study we have focused on proposing the proper framework to address the KM practices in PMOs which will be discussed later.

The notion of Project Management Office

Given the importance of PM for improving organisational competitive advantage, the dramatic increase of attention to PM necessitates development of appropriate methodologies (Grant & Pennypacker, 2006). According to Kerzner (2009), PMO is the valid and practical solution to establish, develop and institutionalise PM methodologies within

organisations. PMOs are responsible for (Desouza & Evaristo, 2006; Project Management Institute, 2008):

- Aligning projects with organisational strategies;
- Developing standards, processes, and methods of PM and improving organisational capacities;
- Monitoring and controlling organisational projects;
- Training project stakeholders, especially project team members and project managers and;
- Managing project and team members' knowledge which is recognized as one of the main responsibilities of the PMOs.

Anecdotal evidence reports that organisations have shown meaningful interest in launching and improving their PMOs in the last decade. According to Liu and Yetton (2007), a considerable number of companies established their PMOs in 2003 and they predict that this number will significantly increase in the future. Due to the importance of the PMO, it should be gradually developed through the following appropriate methods.

Experts and practitioners advise utilising PM Maturity Models (PMMM) in order to properly develop the PMO in organisations. In other words, PMMM is an answer to the question of "how should PMOs be developed" (Kerzner, 2005). The basic idea of the maturity model is that "you must learn to crawl before you can learn to walk" (Andersen, Henriksen & Aarseth, 2007, p. 101). The PMMM is a framework to construct PM practices by improving from an immature level, i.e. initial or ad hoc, to a mature level, i.e. optimized through advising specific processes or practices (Jugdev & Thomas, 2002; Kerzner, 2005).

There are a number of proposed PMMMs (see Table 1-2), a majority of which have adopted a process-oriented approach. A study by Gasik (2007) compares more than twenty PMMMs and recommends the subsequent factors for choosing appropriate methods for various organisations: method independency; public domain; publication; industry; independency; transparency; years of existence; and ease of use.

Despite the fact that current PMMMs utilize both a process-oriented approach and PM best practices, there are a number of gaps which need to be covered and addressed (Desouza & Evaristo, 2006; Kerzner, 2005). In addition, Aubry and his associates (2008) discuss the usefulness and practicality of the existing PMMMs, but they emphasise that they have not

Maturity Level	Level 1	Level 2	Level 3	Level 4	Level 5
Maturity Model					
OPM3 (2008)	Standardize	Measure	Control	Continuously improve	******
P3M3 (PRINCE2 Foundation, 2008)	Awareness	Repeatable	Defined	Managed	Optimized
Kerzner's Model (2005)	Common Language	Common Process	Singular Methodology	Benchmarking	Continues Improvement
CMMI- based model (Jugdev & Thomas 2002)	Initial	Repeatable	Refined	Managed	Optimized

Table 1-2. PMMMs Models

yet concluded PMMMs are the perfect solution from all aspects because they are still faced with a number of issues and challenges.

Given the incompleteness of PMMM, knowledge management is recognized as one of the major challenges in the PMO and proposed PMMMs. In other words, existing PMMMs have not discussed the maturity of PMO from a KM point of view. This gap has been identified as the main problem for our research, which is mentioned in the next section, and we aim to construct a framework for addressing KM practices in each level of PMMMs.

Research Problem

The Standish Group (1995) reports that, in 1995, only 16% of 175,000 Information Technology (IT) projects in the United States were successfully closed, 31% of them failed and 53% struggled with about 190% overrun cost. Lack of applying PM practices has been mentioned as the main cause of project failure and existing challenges. This report and its proposed recommendations was disseminated among organisations and proper advice was proposed to help them in developing PM practices (The Standish Group, 1995).

In order to investigate the usefulness of the first Standish Group's report, the same study was conducted six years later and interestingly, significant improvements were found. The project success rate was significantly raised to 34 % (100% improvement) while the failure rate reduced to 16 % (about 100% improvement) (The Standish Group, 2003). Utilising proper PM practices and, consequently, PMO has been mentioned as the main reason for mentioned improvements (Anbari, 2005; Kerzner, 2009; Project Management Institute, 2012; The Standish Group, 2003).

As previously mentioned, knowledge management has been reported as a critical factor for managing successful projects (Kotnour, 2000). Inappropriate knowledge management within and between (intra and inter) projects has been recently discussed among a number of academics and practitioners as a "problematic issue in the project and project environments" (Kasvi et al., 2003; Koskinen & Pihlanto, 2008; Kotnour, 2000; Owen, 2004). A comprehensive survey study asserts that the cost of reworks in Australian construction projects is about 35% of the total cost of projects and, 50% of total overrun cost (Love et al., 2003). It could be

clearly concluded that "reworks" happen when knowledge management is poor.

Our investigation shows that KM issues in project-based environments have been recently considered and current literature suffers from a lack of studies. Particularly, proper KM practices not only have not been addressed in project environments, but also the existing PMO maturity models have not discussed the maturity of PMO from a KM point of view (see Figure 1-1).
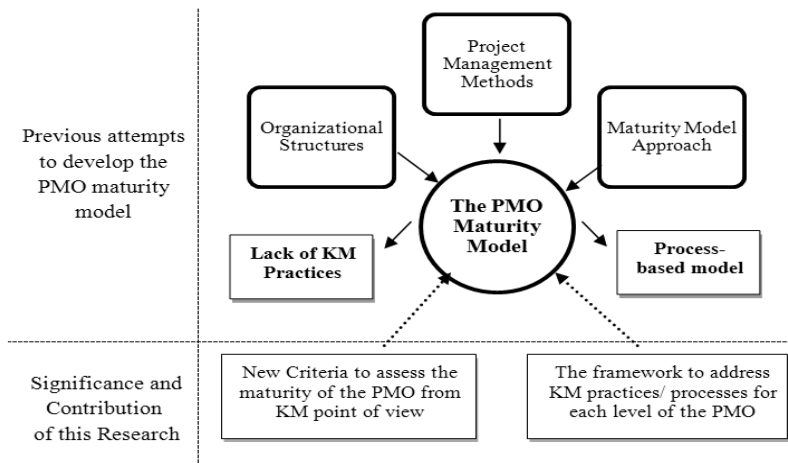
Figure 1-1 Significance of Proposed Research

Therefore, an attempt to integrate KM practices in the PMO maturity models will contribute to both improving efficiency of PM and developing organisational competitive advantages. In addition, it will provide original insights to crystallize the role of KM in the PMO. To do so, research objectives were proposed and we are attempting to reach the following:

- To explore and analyse the role of KM practices in the PMO;
- To identify and analyse the PMO maturity and its challenges from a KM point of view; and
- To develop a framework to address the PMO maturity levels from the KM perspective

Research Questions

In order to achieve the research objectives, three questions and fifteen sub questions were designed which can be found in Table 1-3.

To answer these questions, the proper research method was selected which will be explained subsequently.

	Questions' elaboration
1. How are KM practices and processes employed in the PMOs and what are their challenges?	1.1. What are the challenges (in terms of People, Processes and Technology) of the PMO from KM perspectives?
	1.2. What kinds of PM practices and processes are utilized at each maturity level of the PMO?
	1.3. How are KM practices and processes utilized at each maturity level of PMO?
	1.4. What are expectations of PMO stakeholders (PM Managers, PMO staff and Organisational Managers) from KM point of view?
2. How do KM practices contribute to improve maturity level of the PMO?	2.1. What are similarities and differences of employed KM practices in various maturity levels of PMO?
	2.2. What are expectations of PMO stakeholders in each level of maturity?
	2.3. How have KM practices been considered during development of the PMO maturity level?
	2.3.1. What are the key criteria to improve the maturity of PMO from KM point of view?
	2.3.2. How have KM practices developed in order to increase maturity level of the PMO?
3. How is Knowledge integrated in the PMO maturity model?	3.1. What kinds of KM practices are expected at each maturity level of PMO?
	3.2. How is knowledge captured, created, applied, transferred and maintained in the each maturity level of PMO?
	3.3. How should KM practices be employed at each maturity level of PMO?
	3.3.1. What are the criteria of PMO maturity from KM point of view?
	3.3.2. How the PMO should be assessed in terms of KM practices?
	3.3.3. What kinds of KM practices should be employed to integrate KM at each maturity level of PMO?

Table 1-3. Research questions

Research Progress

Since the project's nature is explorative as well as qualitative, a case study approach has been adopted as the research method for achieving the research objectives. For data collection, interviews, document analysis and questionnaires were chosen. Two enterprises were selected to be investigated via semi-structured interviews and document analysis. Data collection was undertaken and 15 interviews were conducted. At press time, the data is still being analysed. Grounded theory is being used as the main analysis technique alongside the others. Since the data analysis commenced, researchers have found very interesting results and they believe the outcomes will be very useful for:

- Functional Organisations that intend to establish or develop their PMO;
- Project-based Organisations;
- The established PMOs; and
- The PMO and PM consultants.

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