Curtin Business School

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Maintaining Project Alignment: A Grounded Theory Study of Project Managers in The Public Works Department of Malaysia (PWDM)

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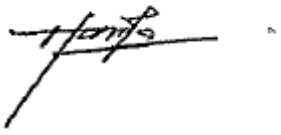
Declaration

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgment had been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

Signature: 

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Abstract

The main aim of this thesis is to examine and provide theoretical understandings of the reasons why project managers have varying success in delivering projects. To this end, a grounded theory approach is adopted for the collection and analysis of data in the Public Works Department of Malaysia (PWDM). The theoretical perspectives that emerge from the analysis provide new insights into the previously under-researched area of non-Western/developing national contexts.

The main finding is that project manager's endeavor in 'Maintaining Project Alignment (MPA)'. This refers to how project managers of PWDM attempt to deal with the ongoing challenges of effectively managing a project. During this process the project manager is required to monitor 'project health'. If indicators of project health show a negative pattern, the project manager must then attempt to maintain 'Project Alignment'.

The theoretical insights produced in the study are presented by employing a coding paradigm or a paradigm model in which the researcher identifies a Central phenomenon (a central category about the phenomenon, i.e. Maintaining Project Alignment (MPA)), explores Causal conditions (categories of conditions that influence the phenomenon, i.e. Critical Success Factors (CSF) — Project Ambivalence, Project Stakeholder, Technical risk, External risk, and National culture), identifies the Context conditions (the broad conditions that influence the strategies, i.e. Organizational structure (OS) — Recruitment, Training initiative, Project autonomy, and Role conflict), the Intervening conditions (the narrow conditions that influence the strategies, i.e. Project Management Competencies (PMC) — Leadership, Problem solving, Reflective practice, Teamwork, and Innovating), specific Strategies (an action that results from the phenomenon, i.e. Managing Change (MC) - Reconciling competing stakeholder goals, Being intermediary, and interfacing), and delineates the consequences (outcomes of the strategies, i.e. Success Criteria Factor (SCF) - Intrinsic goals, Tangible results, and User satisfaction) of this phenomenon.

The literature indicates the existence of many categories for Maintaining Project Alignment (MPA). However there are few, if any, theoretical explanations that connect and contextualize

these categories into a single framework. In this study this issue is addressed by referring to three challenges of rethinking project management proposed by (Winter, Smith, Morris, et al. 2006) whereby project management is moved from being an instrumental process to being a social process; from being conceptualised as a life cycle model to being focused on theories of complexities; and from emphasising practitioners as trained technicians to emphasising practitioners as reflective practitioner.

In conclusion, the grounded theory of 'Maintaining Project Alignment (MPA)' in this study contributes to the understanding of the experience of a project manager in managing a project. The theory of 'Maintaining Project Alignment (MPA)' developed in this study has extended the understanding of project management by illuminating the importance of developing a theory that calls attention to and bridges the existing gap between theory and practice.

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This thesis is dedicated to my late mother Ummi Kalsom; my late father Hj. Mohamad Zainal; my late father-in-law Hj. Suhaimi; my mother-in-law Hjh. Rahamah; my late husband Badrol 'Alam; my sisters in-law Faridah, Mila and Suzana; my brother Ahmad Salim; my brother-in-law Khairul Akhmal and my sisters Kak Midah and Dr. Nurul Hayati.

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CHAPTER 1. INTRODUCTION AND CONTEXT OF STUDY

1.1 Context and background

Projects in the construction sector have for a long time been judged in terms of commonly occurring problems such as being behind schedule, increasing project costs, unsatisfactory performance and so on. This is seen as being somewhat inadequate and as a consequence, project management has been subject to critical examinations with regard to how the construction industry can improve by adopting better theories and methods (Winter, Smith, Cooke-Davies, et al. 2006).

A simple perspective is taken in which a project is categorised as a 'success' if it is completed within a specified time, does not exceed the specified cost and meets the project specifications as stipulated within the objective and client needs. However, over 40 years ago (Rubin and Seeling 1967) identified a wide range of other reasons and causes of project success that they called the Critical Success Factors (CSF).

Initially CSF was identified as an individual factor. However, in the intervening years, the definition of CSF has been widened to include grouping (Cleland and King 1983; Hughes 1986; Morris and Hough 1987). None of these though, included the project manager as a CSF. Those who have done so (eg. Avots 1969; Chan 2001; Baker, Murphy, and Fisher 1983; Martin 1976; Sayles and Chandler 1971; Chua, Kog, and Loh 1999) have noted that a project manager plays an important role in determining the success of a project. Nicholas (1994) suggested that the role of project manager is central to a project. Without the project manager, there would be no project. He summarised that the project manager is the glue that holds the project together.

Belassi and Tukel (1996) sub-divide the CSF into four groups: factors related to project managers and team members; factors related to the project; factors related to the organisation; and factors related to the external environment. Meanwhile Chua,

Kog and Loh (1999) group four main project aspects from 67 individual CSFs: project characteristics, contractual arrangements, project participants, and interactive processes. However, none of these discuss how project managers exert influence on the delivery of project success—especially with regard to how and with what strategies the project manager deals with the identified CSFs.

It is clear that what is needed is a solid theoretical framework for project management, showing a causes–strategies–consequences relationship between project managers—along with other CSFs that explain how and with what strategies project managers deal with CSFs (Söderlund 2004).

This need is paralleled with the challenges of research into project management—identified by Winter, Smith, Morris et al. —that relate firstly to the development of theories of the complexity of projects and project management. These theories would then allow the development of new models and theories that recognise and illuminate the 'complexity' of projects and project management, at all levels. Secondly, there is a need to view projects as social processes that include concepts and images that focus on social interaction among people, illuminating: the flux of events and human actions, and the framing of projects (and the profession) within an array of social agendas, practices, stakeholder relations, politics and power. Project management is a social process due to the formation of a project team. The project team was integrated by the project manager. Stuckenbruck (1988) defined project integration as the process of ensuring that all elements of the project—its tasks, subsystems, components, parts, organisational units, and people—fit together as an integrated whole of the functions according to plan.

The literature emphasises the knowledge, skill and characteristics of project managers but these are not linked to or explained in terms of how these can influence the delivery of project success—and especially how project managers would be able to select appropriate combinations of knowledge, practice and behaviours that would support project success. As has been said by Pich, Loch, and De Meyer (2002, p. 1008), 'No conceptual model currently exists that enables project managers to

understand why different approaches exist, which one to choose, and when'. None within the control of the project manager distinguish which levers project managers can pull to increase the likelihood of achieving a successful outcome for their project, or factors outside the control of the project manager.

Cicmil et al. (2006) suggest that it is important to broaden understanding of what goes on in project settings from the practitioner's perspective, what kind of knowledge they consider useful in their everyday practice in local situations, and what kind of skills and competencies are relevant to complexities of project arrangements.

One such rethink is conducted by Winter, Smith, Morris, et al. (2006) who outline a comprehensive summary of contemporary thinking in project management and suggest five challenges for further development (Li, Lu, and Huang 2009). The five challenges identified are: complexity, social process, value creation, project conceptualisation, and practitioner development (Sauer and Reich 2009). The three challenges listed above will be addressed as follows:

1. *Theory about practice*: From the lifecycle model of projects and project management towards theories of the complexities of projects and project management.
2. *Theory for practice*: From project as instrumental process towards project as social process.
3. *Theory in practice*: From practitioners as trained technicians towards practitioners as reflective practitioners.

These issues of the relationship between theory and practice are discussed in detail by (Schön 1983) who argues that professional practice may be divided into two domains 'the high, hard ground' of research-based theory and technique inhabited by academic researchers, and the 'swampy lowland' of the practice world where there is a confusing mess that is incapable of theoretical explanation. Practitioners who inhabit the swampy lowlands value experience, trial and error, intuition, and muddling through, whereas on the hard ground problems are selected for their

straightforwardness and can be solved using the traditional forms of knowledge through systematic rules of practice and application of textbook theories. Schön suggests practitioners cope with these difficulties through the sophisticated processes of reflection-in-action (e.g. thinking on one's feet) and reflection-on-action—for example, thinking back on events and planning the next move. (Crawford, Hobbs, and Turner 2006; Clarke, James, and Kelly 1996; Schutz 2007).

To date there have been a few attempts, if any, to develop a single project management framework that encompasses all the related dimensions and elements of competency and maturity. We do not know which competencies are most important for certain types of projects, given the organisational project management maturity and mediating contingency variables. The successful completion of a public sector civil engineering project may require a different mix of competencies and organisational maturity than a similar project in the private sector. More research is required to determine which competencies contribute most to project success (Skulmoski 2001).

One framework is required that connects project management knowledge, skills and strategies to project success, identifies the major obstacles to achievement and advancement and illuminates how the project manager deals with obstacles to project success. Koskela and Howell (2002) argue that the future of project management depends on the development of a workable and relevant theoretical framework. A framework that Jugdev, Thomas, and Delisle (2001) point out has yet to be developed. Like Schön's theory–practice gap, this theory must reconcile the 'hard' paradigm of project management—which refers to easily measurable elements such as costs, objectives and time-schedule lines—with the 'soft' paradigm of the harder to delineate elements such as 'instinctive feeling for the job', interpersonal and social skills, and customer satisfaction (Pollack 2007).

1.2 Project management in PWDM: an overview

As Malaysia has been transformed from a largely agricultural economy to an increasingly industrialised one, the role of the construction industry is greatly

enhanced. In addition, the construction industry is a key element in assisting the Malaysian government to implement its Vision 2020 policy. Launched in 1990, this policy's aim is for Malaysia to become a fully developed and industrialised country by 2020. One major element in this is the construction of social infrastructure such as hospitals, schools, and universities. The responsibility for this lies with the Public Works Department of Malaysia (PWDM) as stipulated in Treasury Instruction (TI) 182. As the Government of Malaysia's technical arm, the PWDM acts as the main implementing agency in carrying out development projects throughout the country.

PWDM was formed in 1872. It is responsible for planning, designing, and constructing such infrastructure projects as roads, water supply, government buildings, airports, ports, jetties, and related engineering products—along with the maintenance of roads, water supply, and government buildings—as well as providing technical advice to the government at federal, state, and district levels. The management of PWDM covers the whole nation except Sabah and Sarawak (due to Sabah and Sarawak being under state territory and not under federal territory as per the agreement of Accession into Malaysia dated 16 September 1963).

The Ninth Malaysian Plan (2006–2010) allocated RM 15 billion ($AUD 5.4 billion) to develop 5,841 projects. The allocation for the Tenth Malaysian Plan (2011–2015) has been increased to RM 70 billion ($AUD 25 billion). The importance of such infrastructure projects being successfully completed can be seen in terms of the social and economic development that they support (Prime Minister Department 2010). Projects such as dams, schools, housing, hospitals and others are the physical foundation on which development efforts and improved living are established and they act to boost domestic demand for raw materials and manufactured goods, as well as requiring support from financial institutions. The multiplying effects of these projects on the Malaysian economy cannot be underestimated. This multiplying effect will help Malaysia achieve Vision 2020 (Ismail et al. 2010).

The PWDM provides project management services in two modes, conventional mode and design and build mode. Using the conventional mode, all the planning and designing phases are done by the PWDM. The construction phase is done by

contractors, normally through a tender process. For supervision and monitoring, the PWDM has the option of either keeping it in-house or engaging a consultant to perform this function. For design and build projects, the PWDM sets a needs statement and the rest of the process including planning, design, construction and monitoring is undertaken by a contractor following a tender process. During the construction stage, the PWDM acts as the quality auditor and monitors the project.

In both cases it is clear that project success does not depend solely on the performance of the PWDM. It depends on the performance of the supervising consultant and the contractor employed by PWDM. However, it is not unusual for projects to become 'sick'—that is, they are not completed within three months after the planned completion date. For the PWDM, such projects have been abandoned, or plagued by delay and cost overruns. Some have been finally completed but with defects which have caused frustration to the PWDM, the government and the public. For example, a new hospital had a fungal outbreak caused by a faulty air conditioning, a stadium roof collapsed, a middle ring road had cracks and structural movement in its pillars and major repair work had to be done. In these cases, the PWDM was criticized for not managing projects properly to ensure good value for public money (Bendahara, Augustin, and Jamin 2010). On the other hand, in cases where projects were successful the contractors and consultants received praise.

The PWDM employs over 500 project managers. This figure varies according to how many projects are being handled. All project managers have been recruited as technical professionals first, before becoming project managers. They are mainly engineers (electrical, mechanical and civil), architects or quantity surveyors. All hold at least a university degree in their specialization. In this respect they have technical knowledge but not in project management per se. The extent of project management expertise gained by PWDM staff is that which they have gained through exposure to the Project Management Body of Knowledge (PMBOK) introduced in 2002. This scheme is competency based which requires PWDM project managers to pass the examination of PMBOK in order to be promoted.

The PMBOK Guide (Project Management Institute 2004) describes eight major areas of knowledge within project management that must be understood to enable the project manager to successfully manage projects. These areas of knowledge can be divided into two groups. The first group involves the management of four core elements: scope, quality, time and cost. These represent the customer's objectives and the project constraints as defined by the program manager. The second group includes the four interface elements: management of communication/information, contract/procurement, human resources and risk. This document serves as the foundation for all project management training programs in the United States and is endorsed by the PMI as meeting its standard for certification.

The Australian Institute of Project Management (AIPM) has developed its National Competency Standards for Project Management, derived in part from the knowledge base of the PMBOK, but reframes it in terms of performance (Brill, Bishop, and Walker 2006). However, Crawford (2005) notes that standards such as these are not based on empirical research but rather on the 'assumption that there is a positive relationship between standards and effective workplace performance' (Crawford 2005, p. 7). Furthermore, Morris (2003) questions the validity of the PMBOK in terms of breadth, noting that it 'contains nothing detailed on project strategies, nothing on project definition, little on value management, nothing on technology management ... Nothing about leadership and minimal on team-based development' (cited in Brill et. al 2006, p. 4). Rather than begin with standards such as PMBOK, Morris (2001) recommends that one should 'start with a clean sheet of paper and ... Seek to discover ... What competencies are required of professional project managers' (Morris 2001, p. 27).

In 2007, the PWDM developed a set of project management competency standards based on the National Competency Standard for Project Management (NCSPM) of Australia. In the same year, PWDM established the Malaysia Asset and Project Management Association (MAPMA). Until this date PWDM project managers had been managing projects without a locally endorsed project management certificate. However, the holding of project management credentials is not necessarily sufficient on its own. Crawford (2005) maintains that it is not a guarantee of competence

because it is clear from the pronouncements of the Project Management Institute that credentials alone do not indicate qualification as a project manager—they simply mean that a person has the necessary knowledge. Indeed Muller and Turner (2007, p. 307) claim that 'poor certificated project managers perform as badly as poor non-certificated project managers'. So, while being a successful project manager requires training and appropriate credentials it is not sufficient.

According to the Chartered Institute of Building, United Kingdom (CIOB) (1996) project managers are those who oversee a project from inception to completion. In the PWDM this is not the case. Normally, projects are divided into two parts: pre-contract and post-contract, each being supervised by a different project manager. The effect of this is that a single project may have more than one supervising project manager and one project manager may have more than one project to supervise. This situation can be compounded when a project manager is transferred to another posting. Such events make the project management process at the PWDM more complicated because there are multiple responsibilities around a single project.

1.3 Research aim, purpose and questions

In researching project managers in the PWDM the main aim of this research is to discover and provide understanding for the underlying reasons why project managers in this organisation have had varying outcomes in delivering project success. By using the grounded theory approach, a substantive theory is developed to explain how PWDM project managers act to exert influence on the delivery of projects. This is appropriate given the limited domain of the research (i.e. The Malaysian public sector) and that the research is focusing on an applied field of professional practice (project management). This means that while the results are limited to the Malaysian context, this research goes some way toward developing a formal theory of project management, in that it adds to the body of knowledge about this particular domain of professional practice.

This research therefore addresses the problems and issues associated with the practice of public sector project management in the construction industry, with

particular attention being paid to the detail regarding the project manager's experience in managing a project. Put simply, this research focuses on addressing the theory–practice gap that exists in project management research, by addressing the need for theories about what is really going on in the project management process and the project manager's experience. To date, there is little published work that focuses on the importance of the project manager in achieving project success. This is surprising given their central role in any project. Most commonly, researchers examine the performance of a project manager and develop typologies of competencies that are required for effective project management. Other major topics addressed in the literature include project success criteria and project success factors. Indeed, not only has the role of the project manager has largely been ignored, there also tend to be problems of definition, in that the term 'project manager' is used interchangeably with 'construction project manager', 'project coordinator', 'owner's representative', 'client's representative', 'supervising engineer', and 'superintendent officer'.

To attain the above questions, one main research question is addressed in this study:

Why do project managers in this organisation have varying outcomes in delivering project success?

To date, there is little published work that addresses the detailed experience of the project manager in achieving project success. This was indicated by Söderlund (2004, p. 185) writing 'the importance of the Gaddis (1959) article is that it was the first, and still is among the very few, publications in well-known management journals explicitly discussing the art and practice of managing projects'. As has been mentioned above, the PWDM project manager has a unique responsibility compared to the project manager role in the existing literature. The PWDM project manager is not practicing one responsibility in project management.

It is worthwhile to discover what actually happens during project management, especially in the context of non-Western and developing country, but also in all national contexts. As Edum-Fotwe and McCaffer (2000) argue, project managers

play a central role, not only in the operational activities of architectural and engineering construction companies, but also in the development of infrastructure in every country.

In this respect, the following six sub-questions are also addressed in this study:

1. *What are-the extant salient themes and core variables in the project management process in PWDM*

   To attain the main research question, the information regarding what are the extant salient themes and core variables in the project management process in PWDM is needed. The themes and core variables will explain what is really going on in the project management process in PWDM. These themes and core variables must derive from the project manager's experience in PWDM themselves.

2. *How effective is current project management theory in explaining this variation?*

   After Knowing the themes and core variable that explain the project management process in PWDM, the information regarding the relevance of PWDM's practice to the current project management is needed. This is important in positioning what are we discovered from the practical side is relevant to the current project management theory.

3. *How do project managers at PWDM perceive the factors that influence project success?*

   Construction activity is particularly subject to risk—more so than other business activities—because of its complexity. Construction projects have various factors influencing project success. Given their central role in any project (Globerson and Zwikael 2002) it is therefore critical to pay special attention to the perspective of project managers.

4. *What are the major obstacles (problems and risk) to the delivery of project success at PWDM and how do the project managers address these obstacles?*

   To attain the main research question, the information regarding what the major obstacles (problems and risk) are for the delivery of project success at PWDM and discover how PWDM project managers deal with these obstacles are needed. These problems and risk may uniquely to PWDM as a public sector oriented within non-Western and developed country.

5. *To what extent are project managers able to employ their competencies to achieve project success?*

   To be successful project managers, they should have the right competencies but with all the obstacles (problems and risk), are they able to employ their competencies to achieve project success.

6. *Can a substantive theory be formulated that contributes to the development of project management theory and how can this help understand and improve project management practice at PWDM and more generally?*

   The substantive theory is needed on how the PWDM project manager acted to exert influence on the delivery of project success and what strategies the PWDM project manager used. This theory is important for us to go further in improving the project success handle by PWDM project manager.

In addressing these questions, this research has six objectives:

1. To identify the extent current theories adequately explain the practice of project management.
2. To discover the contribution can grounded theory as a methodology approach to make to improving understanding about project management.
3. To assess the extent of project manager's competencies contribute to project success.
4. To make a contribution to the development of project management theory.

1.4 Research strategy

This project arose from the experiences of a researcher working at the PWDM for more than 19 years. During that time, the issues and problems surrounding project management—and how this can contribute to project success or failure—have been a constant source of debate and discussion within the organisation. Given the importance of PWDM activities to the development of Malaysia, it became necessary to gain a greater understanding about the project management process and its relationship to project success. This research is therefore exploratory, in that it examines a hitherto under-theorised and under-researched area—project management in developing countries generally and Malaysia in particular—and it is explanatory, in that it attempts to illuminate causal links in real-life situations (Yin 2003). This means that there is a need to examine more closely what is really going on in the project management process and the project manager's experience—specifically, theorizing about what project managers really do and why.

With a few exceptions (e.g.El-Sabaa 2001; Abdel-Razek 1997), most of the research provides insight from a Western perspective, thus its appropriateness for analysing non-Western contexts may be called into question. Furthermore, the vast bulk of research is quantitative, using questionnaire surveys to collect data. In most cases, the reported response rates are quite low—between 8.6 per cent and 40 per cent. In addition, apart from Dainty, Cheng, and Moore (2005), the questionnaires preclude the possibility of participants informing the researcher of other skills needed—and the relationship between these skills, based on their experience—through open ended questions. Dainty, Cheng & Moore (2005) employed focus groups research as an aid to designing their survey. Outside this work, there is little evidence of the application of qualitative research—which has the potential to provide deeper insights—identifying the importance of an open system cultural model that represents the linkages existing between project management success factors and other variables—such as project managers' competencies, performance measurement systems, business processes, organisational designs, and organisational culture. Kendra and Taplin (2004) are one of the few examples of qualitative research in this area. They employ a grounded theory approach to an examination of IT project success,

concluding that a project manager's competency cannot stand alone—they exist within the context. The task of developing a set of required characteristics is therefore more than simply developing a list and applying quantitative methods.

The grounded theory (GT) approach has been chosen because it is suitable for meeting the unique needs and demands of this study. It means the researcher can develop theoretical perspectives—about the project management process and the project manager's experience—that are grounded in and emerge from data collected in the field, resulting from a systematic qualitative research design (Strauss and Corbin 1990). According to Corbin (1986), grounded theory offers advantages to researchers to bridge the theory and practice gap, in that it allows the complexity of problems and the richness of day-to-day practice to be captured and conceptualised.

A number of scholars have argued that grounded theory is particularly appropriate to researching the managerial and organizational behaviour, because grounded theory can capture complexity and can link well to practice (Locke 2001). The most compelling reason for selecting the GT approach for this research is the need to understand the phenomenon of project success from project managers within their social environment.

Therefore, grounded theory has the potential to discover new perspectives in the experience of managing a project in the PWDM. Specifically, the grounded theory methodology allows the researcher to generate theoretical contributions, grounded in data, about how project managers in the PWDM achieved influence in the delivery of project success and which strategies PWDM project managers use.

1.5 Main finding

The main finding of this thesis is that project management in the context of the PWDM can be conceptualised as a social process called 'Maintaining Project Alignment (MPA)'. This is the core category of a substantive theory, which emerged from the data analysis. Maintaining Project Alignment (MPA) is essentially why project managers have varying success in delivering projects. It refers to the project

management process employed in the quest for achieving project success. While managing a project, PWDM project managers monitor indicators of project health. If any of these indicators show a negative pattern, PWDM project managers employ techniques and strategies to maintain project alignment. This means keeping the project on track or correcting relative positions by bringing the project components or parts into proper coordination and aligning oneself with a group or a way of thinking. In Maintaining Project Alignment (MPA), the project manager achieves successes by fulfilling their intrinsic goals, achieving tangible results and satisfying project stakeholder expectations.

The Causal conditions that are triggers for Maintaining Project Alignment (MPA) are: Critical Success Factors (CSF) — Project Ambivalence, Project Stakeholder, Technical risk, External risk, and National culture. The Strategies/actions to maintain project alignment are through employing Managing Change (MC) - Reconciling competing stakeholder goals, Being intermediary, and interfacing. However, these Strategies/actions can only be executed if a particular set of Intervening conditions and Context conditions exist. Intervening conditions consisting of Project Management Competencies (PMC) — Leadership, Problem solving, Reflective practice, Teamwork, and Innovating), Meanwhile, Context conditions consisting of Organizational structure (OS) — Recruitment, Training initiative, Project autonomy, and Role conflict

The paradigm model developed from these findings has recognised and illuminated three challenges: the complexity of projects and project management; projects as social processes—which are filled with interaction between events and people; and practitioners in project as reflective practitioners.

1.6 Research limitation

The main limitation of this research is that the methodology employed precludes the possibility of generalisation of the findings. The result achieved from one grounded theory research cannot be applied to generalise other contexts. Rather, the grounded theory research is a vehicle whereby a theoretical model is developed so as to closely

link theory and practice—and by doing this the model is more likely to be useful in practice. In this research, the theory reveals the experiences of the study population. However, the exploratory and explanatory nature of this research means that it opens up a new field of research by laying the foundation for further investigations about project management in developing countries generally. Replication of the research in other nations and other project management settings (e.g. the private sector) could be conducted to test and generalise the findings of this research.

1.7 Ethical issues

The study required PWDM project managers and PWDM project managers' supervisors to respond to an interview. Information on research objectives and assurance of anonymity, privacy and confidentiality of information were provided. Participants were free to withdraw without fear of repercussions (please see Appendix 1 and 2).

The Curtin University Human Research and Ethics Committee obliged researchers to meet strict privacy standards, even where privacy laws do not apply. In undertaking this project, the researcher complied with university research policies and guidelines and relevant privacy legislation. The information gathered was treated in strict confidence. Paper records were kept in a locked cabinet without names attached and electronic records were de-identified and sorted on password protected files. Consistent with university policy, the data collected was stored for five years and then destroyed. Where the research results were published in conference papers, academic journals or elsewhere, no readers were able to identify individual participants.

1.8 Definitions of key terms and concepts

The key terms and concepts incorporated within the current thesis are defined in this section to provide a clear picture about the meaning of important terms as used in this thesis. They are also compiled to provide an understanding of how these key

terms have been selected, interpreted and defined within the scope of this study. In addition, understanding these terms are important in the later literature debate.

Axial Coding (Strauss and Corbin 1990):
A set of procedures whereby data are put back together in new ways after open coding, by making connections between categories. This is done by utilizing a coding paradigm involving conditions, context, actions/ interactional strategies and consequences.

Categories (Strauss and Corbin 1998):
Broad groups of similar concepts that are used to generate a theory.

Causal Conditions (Strauss and Corbin 1990):
Events, incidents or happenings that lead to the occurrence or development of a phenomenon.

Codes (Bazeley 2007):
Identifying anchors that allow key points of data to be gathered.

Concepts (Pandit 1996):
Collections of codes of similar content that allows data to be grouped.

Consequences *Conditions* (Strauss and Corbin 1990):
Outcomes or results of action and interaction.

Contexts Conditions (Strauss and Corbin 1990):
The specific set of properties that pertain to a phenomenon—that is, the locations of events or incidents pertaining to a phenomenon along a dimensional range. Context represents the particular set of conditions within which the strategies/actions are taken.

Core Category (Kendall 1999):
The central phenomenon around which all other categories are integrated.

Grounded Theory—GT (Parry 1998):

Grounded theory is a systematic research methodology in the social sciences emphasising generation of theory from data in the process of conducting research. It is a research method that operates almost in a reverse fashion from traditional research. Rather than beginning by researching and developing a hypothesis, the first step is data collection, through a variety of methods. From the data collected, the key points are marked with a series of codes, which are extracted from the text. The codes are grouped into similar concepts in order to make them more workable. From these concepts, categories are formed, which are the basis for the creation of a theory, or a reverse engineered hypothesis. This contradicts the traditional model of research, where the researcher chooses a theoretical framework, and only then applies this model to the studied phenomenon.

Intervening Conditions (Strauss 2001):

The structural conditions bearing on strategies/actions that pertain to a phenomenon. They facilitate or constrain the strategies taken within a specific context.

NVivo (Richards 1999a):

NVivo is a qualitative data analysis (QDA) computer software package produced by QSR International. It has been designed for qualitative researchers working with very rich text-based and/or multimedia information, where deep levels of analysis on small or large volumes of data are required.

Open Coding (Strauss and Corbin 1990):

The process of breaking down, examining, comparing, conceptualising, and categorising data.

Paradigm Model (Chiovitti and Piran 2003):

In grounded theory research there are models indicating the relationship among categories—such as in the systematic approach to axial coding, which includes causal conditions, the core category or phenomenon, the context, intervening conditions, and consequences.

Phenomenon (Strauss and Corbin 1990):

The central idea, event, happening or incident, towards which a set of actions or interactions are directed to manage or handle, or to which the set of actions are related.

PMBOK (Project Management Institute 2004):

A Gude to the Project Management Body of Knowledge' (PMBOK Guide) is a project management guide, and an internationally recognised standard, which provides the fundamentals of project management as they apply to a wide range of projects. The guide recognises 44 processes that fall into five basic process groups and nine knowledge areas that are typical of almost all projects. The five process groups are: initiating, planning, executing, controlling and monitoring, and closing. The nine knowledge areas are: project integration management, project scope management, project time management, project cost management, project quality management, project human resource management, project communications management, project risk management, and project procurement management.

PWDM (Public Works Department of Malaysia 2010):

The Public Works Department of Malaysia (PWDM) or Jabatan Kerja Raya Malaysia (JKR Malaysia) is a government department in Malaysia that constructs and maintains public infrastructure in Malaysia—such as federal and state roads, government buildings, electricity, water and much more.

Selective Coding (Strauss and Corbin 1990):

The process of selecting the core category and systematically relating it to other categories, validating those relationships, and filling in categories that need further refinement and development.

Strategies/actions (Strauss and Corbin 1990):

Strategies devised to manage, handle, carry out, respond to a phenomenon under a specific set of perceived conditions.

Theoretical Memo (Strauss and Corbin 1990):

Theoretically sensitising and summarising memos. These contain the products of inductive or deductive thinking about relevant and potentially relevant categories, their properties, dimensions, relationships, variations, processes, and conditional matrixs.

Theoretical Propositions (Glaser and Strauss 1967):

In grounded theory research, there are statements indicating the relationship among categories, such as in the systematic approach to axial coding, includes causal conditions, the core category or phenomenon, the context, intervening conditions, and consequences.

Theoretical Sampling (Strauss and Corbin 1990):

Theoretical sampling is sampling on the basis of concepts that have proven theoretical relevance to the evolving theory.

Theoretical Saturation (Coyne and Cowley 2006):

No new or relevant data seem to emerge regarding a category. The category development is dense, insofar as all of the paradigm elements are accounted for, along with variation and process. The relationships between categories are well established and validated.

Theoretical Sensitivity (Strauss and Corbin 1990):

Theoretical sensitivity refers to a personal quality of the researcher. It indicates an awareness of the subtleties of meaning within the data.

Theory (Suddaby 2006):

A collection of explanations that define the subject of the research.

1.9 Contribution

This study will make three significant contributions to both the theory and practice of project management. Firstly, a new theoretical framework for project management is

proposed using the paradigm model of Grounded Theory. Secondly, the using of grounded theory in improving understanding about project management is proven. The framework showed interactions between project managers and Strategies/actions, taking into account drivers, the Contexts, and Intervening conditions. Thirdly, the paradigm model of Maintaining Project Alignment (MPA) presents insight how to develop more effective project management.

The literature relating to project management and project managers is unclear about the competencies required by project managers and how project manager competencies connect to project success. Lists of project managers' competencies differ in various studies in literature. Although several lists of competencies are generated, they seem to tabulate individual competencies rather than grouping them according to some criteria, to help analyse the interaction between them and the possible consequences. Furthermore, many of these competencies do not, in practice, directly affect project success or failure. Usually, a combination of many competencies—at different stages of the project life cycle—results in project success or failure.

Whereas many of these studies generate lists of project managers' competencies, each list varies in its scope and purpose. Their competencies are usually listed as either very general characteristics or very specific characteristics affecting only a particular project. There might be additional problems with the use of these lists—for examples, due to the unique nature of projects, most of the competencies in a list might not be applicable to a particular project; or a competency which is the main determinant of success for a project might not be listed.

In this research, a new theoretical framework for project management is proposed that is grounded in data. This framework provides understanding about the competencies required and describes the connections to and impact of these competencies on project success or failure. Emphasis is given to the grouping of competencies towards the strategies and actions employed by project managers, and explaining the interaction between them, rather than simply identifying individual competencies.

The suggested theoretical framework not only brings advantages by grouping competencies, but also helps project managers understand the intra-relationship between the competencies in different groupings and the strategies and actions used by project managers in maintaining project management. These relationships explain the interaction among competency groups. Using this framework, project managers can easily observe the cause and effect relationships between competencies that are needed within these strategies to maintain project alignment. This then provides a clearer understanding of which aspects of project management competencies might be critical for successful completion of projects, and therefore should be a consideration for recruiting, training and promoting project managers.

This researcher offers the substantive theory of Maintaining Project Alignment (MPA) for consideration in accordance with the three parameters of: fit, work and relevance. Maintaining Project Alignment (MPA) provides fit in that it provides insight into the behaviour of those within the research context. It also has relevance to the practitioner and academic research communities, particularly in the way it connects theory to practice. This is a substantive theory, which has emerged from the researcher's grounded theory study into the project management of construction projects in the PWDM, as well as non-Western and developing countries.

Further development of this research into a formal theory of project management is also a possibility, in that all formal grounded theory starts with a substantive theory (Dey 1999). It also prompts further investigation into its categories and its grounding in other substantive areas. Furthermore, it helps fill the gap in empirical research about how to determine and create project success in a non-Western national context.

With respect to its methodological contribution, although grounded theory is commonly used in mainstream management research, it has received little attention in the field of construction project management (Phua and Rowlinson 2004).

To the practitioner, Maintaining Project Alignment (MPA) presents an insight into how to develop more effective project management. This research lays the

groundwork for increasing understanding of what goes on in projects, the role of project managers and the unique role of Maintaining Project Alignment (MPA).

Drawing from the story of Maintaining Project Alignment (MPA), the following propositions are offered:

1. The experiences of managing project success contribute to a sense of Maintaining Project Alignment (MPA). PWDM project managers must perform the actions of Maintaining Project Alignment (MPA) which defined as keeping project progress on track or in correct relative position, by interfacing and Being intermediary, to bring the projects' goals into proper coordination and align oneself with a group or a way of thinking.

2. The phenomenon of Maintaining Project Alignment (MPA) is needed due to the occurrence of Critical Success Factors (CSF) which affects the project off track and moving backward, far away from success.

3. Critical Success Factors (CSF) consisting of Project ambivalence, Project stakeholder, Technical risk, External risk, and National culture.

4. PWDM project managers Maintaining Project Alignment (MPA) through strategies/actions of Managing Change (MC).

5. Managing Change (MC) consisting of Reconciling competing stakeholder goals, Being intermediary, and Interfacing.

6. Managing Change (MC) depends the existence on Organizational Structure (OS) and Project Management Competencies (PMC).

7. Organizational Structure (OS) consisting of Recruitment, Training initiative, Project autonomy, and Role conflict.

8. Project Management Competencies (PMC) consisting of Leadership, Problem solving, Reflective practice, Teamwork, and Innovating.

9. Maintaining Project Alignment (MPA) offers benefits to Project Criteria Success Factors (CSF).

10. Project Criteria Success Factors (CSF) consisting of Intrinsic goals, Tangible results, and User satisfaction.

1.10 Thesis structure

Chapter 1: Introduction

This chapter provided an overview of the research. By introducing the context of the problem within the substantive setting of project management in the PWDM, as well as in non-Western and developed countries, the importance of context is acknowledged and taken into account. This is supported by a brief overview of the extant literature relating to project management theory, so as to frame the research within its field of study—specifically focusing on the project managers' influence on the delivery of project success. This chapter also presented the general problems addressed when connecting this to the research purpose, aim, objectives and questions. Taking into account the limitations, this chapter also introduced the central theoretical insight that emerges from the research—Maintaining Project Alignment (MPA) —and briefly outlined the significance of this in theory and practice.

Chapter 2: Literature view

In this chapter, the relevant literature is reviewed. It focuses on research regarding the role of the project manager in relation to project success. Various perspectives on project, project management, project success criteria and project success factors are examined. The chapter outlines the links between these issues and the project management process, and discusses this in line with the research questions and aims explained in Chapter 1.

Chapter 3: Methodology and Methods

In this chapter, the theoretical perspective, as well as research design and process are described in depth. It provides the basis of the research from conceptual to implementation stages. This chapter explains the research methodology in two sections. The first section is a general methodological discussion outlining the research approach (research design), the justification for using grounded theory, and the grounded theory methodology. The second section specifically addresses how the grounded theory method is applied in this research—by outlining the data collection method, the sampling strategies, theoretical sampling, the samples, the interviews, grounded theory analytical steps, and validity and reliability issues.

Chapter 4: Findings

In this chapter, all primary data sources and participant interviews are systematically described, leading to data analysis and interpretation. From this a theoretical framework emerges around a central concept of Maintaining Project Alignment (MPA) that is the basic social process. This resolves the main concern for PWDM project managers in managing project success. Alignment will be described along with its levels (phases), the Context conditions, the Causal conditions, the Strategies, the Intervening conditions and the Consequences of this core, or central process. The paradigm model of project managers' roles in PWDM describes the experience of Maintaining Project Alignment (MPA) through Managing change (MC) —and has been presented at the end of this chapter. The paradigm model of Maintaining Project Alignment (MPA) that emerged from the finding is thoroughly discussed. In addition, the relevant literature in relation to the emerging issues is also reviewed and discussed to link in with the research questions and objectives.

Chapter 5: Discussion and Conclusion

In this final chapter, there is a brief discussion and conclusions based on six (6) research questions, three (3) challenges in rethinking project management and the findings. It presents the most important contribution made by the substantive theory

of Maintaining Project Alignment (MPA) .In providing better understanding of the project management process both as a social construct as well as a complex system. It also presents the implication, limitation and recommendation for the future research.

1.11 Conclusion

This thesis arises from the call of many researchers in this field for the development of more powerful theoretical perspectives for understanding project management. This chapter presented the purpose, aim, and significance of the current study and established the context within which a substantive theory about project management is developed.

The next chapter discusses the literature about project management that is pertinent to this study, and in doing so establishes the context and theory of the research and identifies gaps in current understanding. It outlines the challenges of research into project management that this thesis addresses—and in doing so, outlines the links between these issues and the project management process. It also discusses this is in line with the research questions and aims explained in Chapter 1.

CHAPTER 2. LITERATURE REVIEW

2.1 Introduction

Over the past 50 years, a substantial body of knowledge has been formed into project management tools, skills and techniques (1960–2010). The purpose of this body of knowledge is to identify and describe the best practices that are applicable to most projects, the majority of the time (Burke 1993). This database of information has been established in the following:

The APM's BOK—Association of Project Managers (UK).
The PMI's PMBOK—Project Management Institute (USA).
The IPMA's BOK—International Association of Project Managers (formerly called INTERNET).
The AIPM's Competency Standards for Project Management—Australian Institute of Project Management (Australia).
ISO 10006 'Guidelines for Quality in Project Management'.
South Africa Unit Standard.

Table 2.1 shows the certification offered by professional associations, colleges and commercial trainers that predominate in the field of project management. This certification is based on competency standards that describe the criteria for workplace performance—following the structure of PMI's body of knowledge, the PMBOK guide. The Project Management Institute (USA) —herein after termed PMI—is well known in project management circles for its publication of *A Guide to the Project Management Body of Knowledge* (Project Management Institute 2008). First published in 1996, the guide was subsequently revised, most recently in 2008. The content of this guide can be summarised as project management—as this is the application of knowledge, skills, tools, and techniques within a broad range of activities, in order to meet the requirements of a particular project. Project management comprises of five project management process groups—initiating processes, planning processes, executing processes, monitoring and controlling

processes, and closing processes—as well as nine other areas of knowledge. These nine areas of knowledge that are central to management expertise are: project integration management, project scope management, project time management, project cost management, project quality management, project human resources management, project communications management, project risk management, and project procurement management (Project Management Institute 2004).

Table 2.1 : Certification offered by professional associations, colleges and commercial trainers predominant in the field of project management

Body of knowledge	Level	Assessment
The PMI's PMBOK—Project Management Institute (USA)	One level	Examination with multiple choices
The IPMA's BOK—International Association of Project Managers (formerly called INTERNET)	Four levels—knowledge based entry level qualification (level D) through project manager (level B) to an international project director (level A)	Examination
The AIPM's Competency Standards for Project Management—Australian Institute of Project Management (Australia)	Three levels—team members, project managers, and project/program managers	Compile a log book of evidence to demonstrate competencies

Source: Burke (1993)

The term 'project manager professional' has gained wide currency, largely attributable to the popularity of the PMI's project management professional (PMP) certification. As of March 2010, 400,000 people were certified as PMP (Project Management Institute 2011b) .

Gaining the PMP certification is of course not a guarantee of competence. The PMI suggested that the PMP credential does not indicate that a person is qualified as a project manager. Rather, thus obtaining the PMP credential have demonstrated a solid foundation of knowledge that may allow them to competently practice project management (Project Management Institute 2011a).

This chapter examines exhaustive literature about the concepts of a project, project management, as well as the project manager and project management within the

construction industry. The links between these issues and the challenges of research into the project management process are outlined and discussed in the light of the research questions and aims in Chapter 1. This chapter provides an understanding of three challenges of research into project management conducted by the UK Engineering and Physical Science Research Council (EPSRC) between 2004 and 2006. These three challenges were: complexity, social process, and practitioner development (Sauer and Reich 2009). These three challenges——are the subject of this thesis, as they are closely related to the issues associated with construction project management that are the focus of the analysis—particularly with regard to the focus on roles, responsibilities, and challenges of project managers around which project success revolves. An outline of the literature review chapter is illustrated in Figure 2.1.

The focus of this research is to investigate project managers in the construction industry and public sector, with attention being paid to details regarding the project manager's experience in managing a particular project. Put simply, the question arises as to what is really going on with the project management process and the project manager's experience. To date, there are few published works that address the importance of project managers in achieving project success. This is very surprising, since they are the central role in any project. In most common literature, researchers examine the performance of a project manager and develop typologies of competencies that are required for effective project management. Other major topics addressed in the literature include: project success criteria and project success factors. Indeed, not only has the role of the project manager has largely been ignored, there also tend to be problems of definition—in that the term *project manager* is used interchangeably with *a construction project manager, project coordinator, owner's representative, client's representative, supervising engineer,* and *superintendent officer*.

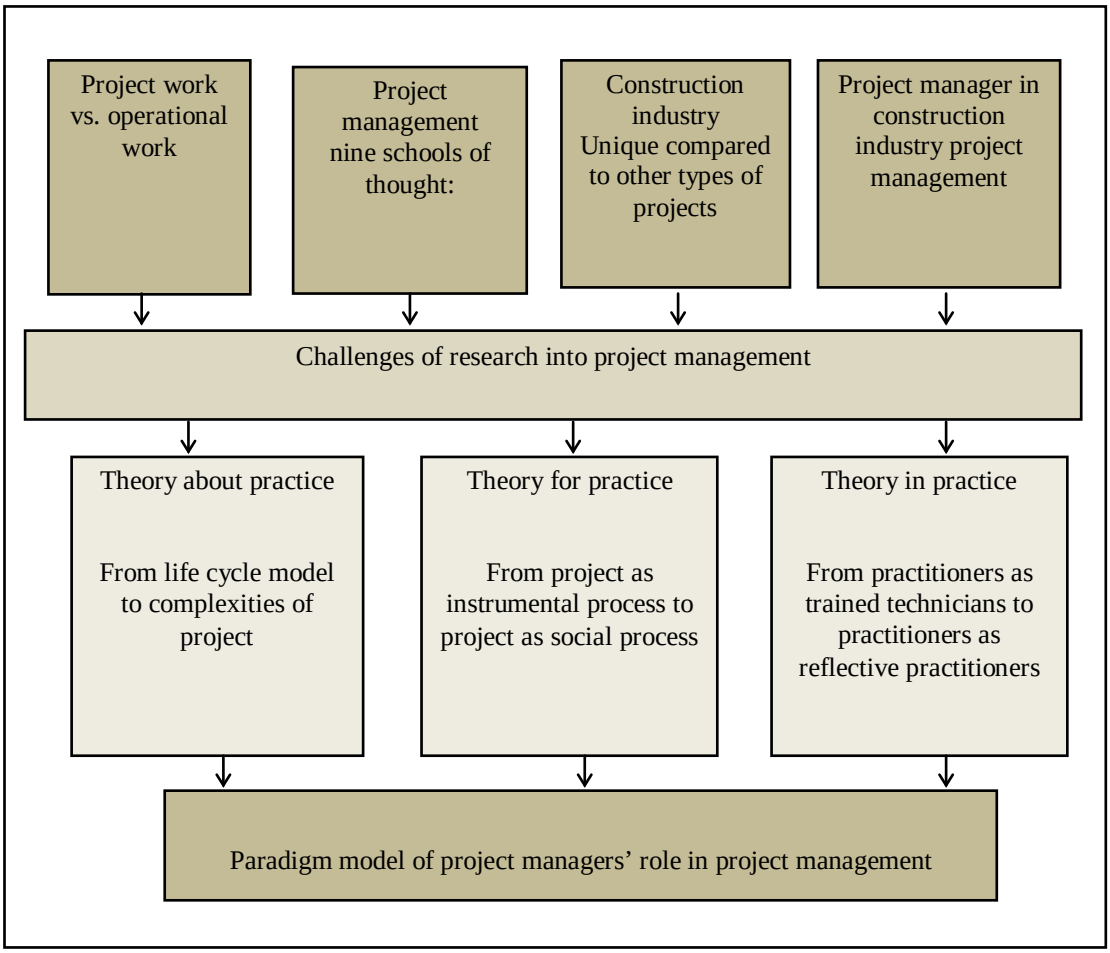


Figure 2-1 : Outline of the literature review chapter

2.2 Definition of project

The major distinction between project management and any other form of management pertains to the definition of the word 'project' and what the stakeholder expect the project to deliver (Burke 1993). A project can be defined loosely as a temporary organisation to which resources are assigned, that does work to bring about beneficial change (Turner 2006).

In 1996, the Project Management Institute (PMI) USA added that operations and projects differ primarily in that operation are ongoing and repetitive while projects are temporary and unique. A project can thus be defined in terms of its distinctive

characteristic—a project is a temporary endeavor undertaken to create a unique product or service. Temporary means that every project has a definite beginning and end. Unique means that the product or service is different in some distinguishing way from all similar products or services (Project Management Institute 1999). With this definition, nearly half of the events in the organisation can be called projects. Table 2.2 provides an example of possible criteria that could be useful in differentiating operational and project related work.

Table 2.2 : Separating operational work and project work

Item	Operational Work	Project Work
Task	Familiar	Unfamiliar
Purpose	To produce identical outcomes or ranges of outcomes repeatedly	To generate change in the form of new, specific and unique outcome
Process	Ongoing, uses fixed resources, experience, evolutionary change	One short event, Uses transient resources Risk and uncertainty, Revolutionary change
Nature	About stability, continuity and repetition	Unique, temporary and transient
Staff	Designated, known	Diverse, temporary
Roles and duties	Established patterns	Uncertain, variable
Culture	Role or power	Task
Working relationship	Established cooperation	Negotiable
Authority	Clear, reflects position	Ambiguous, little direction,
Coordination	Hierarchical	Network/matrix
Information sources	Established, routine	New, uncertain
Learning and attitude change	Desirable	Essential
Momentum	Maintained by system	Threatened by the system
Time horizon	Extended, long term, Continuous with no end date	Bounded, finite, Temporary with defined end and start point
Objectives	Continual survival	Completion, Termination
Outcomes	Replicas or hybrids, Balanced objectives	Unique, one-off, Unbalanced objectives

Source: Boddy and Buchanan (1992, p. 176)

Lonka (2007) described what makes projects special—their confined time-span and their adjustment towards a specific goal. The goal and the time-span constitute the objectives of project management.

2.3 School of thought and the definition of project management

2.3.1 School of thought: Project management

Bredillet (2008b, 2008c, 2008a) identified that project management is a field of heterogeneity—a complicated and splendid subject as evidenced by nine schools of thought:

1. *The optimisation school*: the project as a machine. Optimise the outcome of the project by using some mathematical process. The optimisation tools include network scheduling techniques—consisting of the critical path method (CPM), program evaluation and review technique (PERT), graphical evaluation and review technique (GERT), theory of constraint, Monte Carlo simulation of project networks and cost estimate. This school is heavily influenced by operation research in its approach.

2. *The modelling school*: the project as a mirror. It uses the hard and soft system theory to model the project. Project management has its origin in the hard approach, but is also found to be decent in dealing with soft, ill-structured and ambiguous problems (Alderman et al. 2005; Yeo 1993). The sense in finding perspective— which may help to unravel project management challenges in a new way, and provide a decent explanation of what happens and why. This school is influenced by system theory and soft systems methodology.

3. *The governance school*: the project as a legal entity. Firstly, it explores the relationship between contract management and project management—which covers the transaction cost associated with projects (Winch 1989)—and the principal agency relationship between client and contractor (Turner and Müller 2003). Secondly, it explores the mechanism of project governance—

which covers effective project management office (PMO), project support office (PSO) and project management centre of excellence (PMCE)—(Hobbs and Aubry 2007). This school is influenced by contracts and law, governance, transaction costs and agency theory.

4. *The behaviour school*: the project as a social system. It manages the relationship between people on the project—focusing on organisational behaviour (OB) and human resource management (HRM), including team building (Schmid and Adams 2008; Thamhain 2004) leadership (Müller and Turner 2007) and communication (Gentry et al. 2008; Henderson 2008; Turner and Müller 2003).

5. *The success school*: the project as a business objective. It focuses on result areas—project success criteria; and organisational areas—Critical Success Factors (CSF) (Westerveld 2003).

6. *The decision school*: the project as a computer. This school focuses on information processing through the project life cycle (pre-design, design, procurement/bid award, construction and closeout, and occupancy) (Kuprenas 2005).

7. *The process school*: the project as an algorithm. Turner (1999) demonstrates project management as a structured process that converts vision into reality. He defines processes for the management of scope, organisation, quality, cost, time, risk, project life cycle, and management life cycle.

8. *The contingency school*: the project as a chameleon. It emphasises that every project is unique, and so the management approach and leadership style need to be chosen according to project requirements.

9. *The marketing school*: the project as a billboard. It focuses on communication among all stakeholder to secure their support.

2.3.2 Definition of Project Management

Based on several of the school of thought on project management, there are various definitions of project management. The basic concept of project management is based on the concept of three items containing of input, process and output. Project management is defined by the project management body of knowledge—PMBOK (2004) as the application of input (knowledge, skills, tools and techniques) to the process (project activities) in order to obtain an output (meet stakeholder needs and expectations from the project). The various definitions are different in term of elaboration on these three items.

(i) Elaborate the input (knowledge, skills, tools and techniques) as the systematic application of management and construction expertise (Kerzner 2004) ; as the tool, method or technique used to solve complex organisational problems (Söderlund 2004); as a specialised management technique (Burke (1993)); as the identification of the client's objectives in terms of utility, function, quality, time and cost (Walker 2007); and as two main theoretical roots (Söderlund 2004).

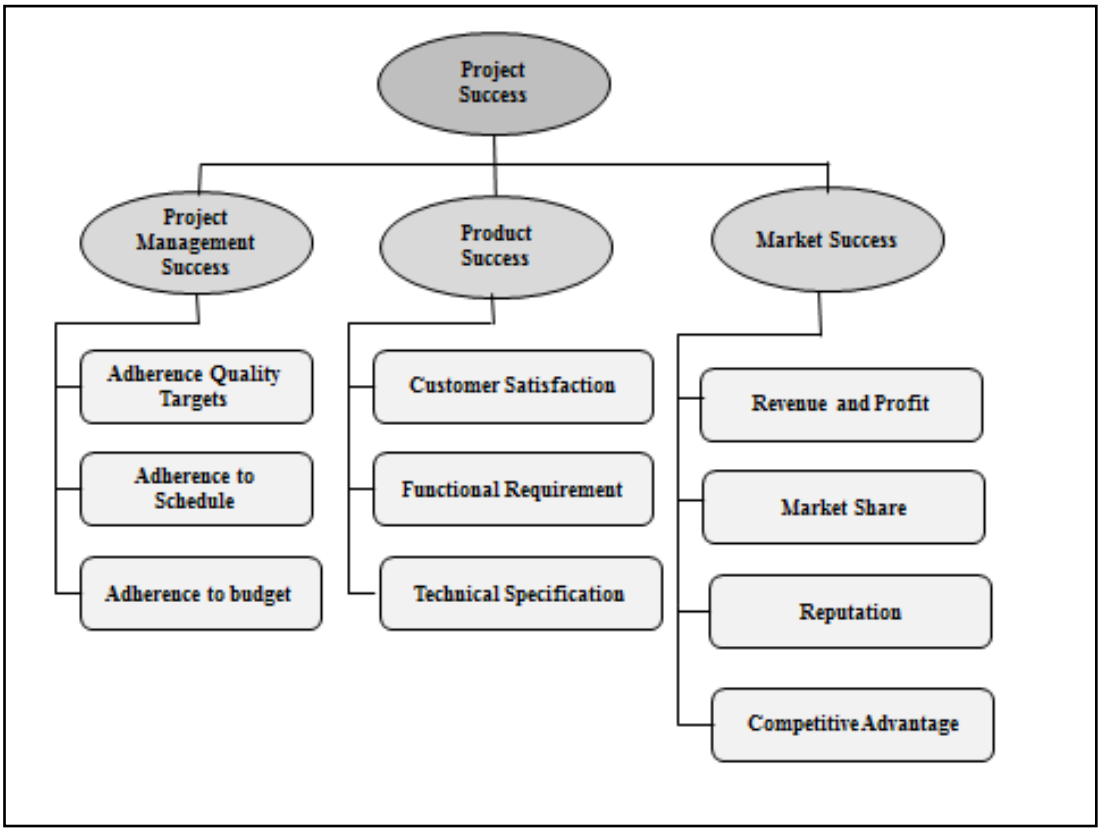
(Söderlund 2004) concludes that there exist two main theoretical roots in the development of project management as it is today. The first theoretical root is developed through engineering science and applied mathematics, with a focus and interest in planning techniques and methods of project management—such as Gantt charts, CPM and PERT to name just a few, and other scheduling techniques. The second theoretical root—where project management evolved from hard skill to soft skill—is social sciences such as sociology, organisation theory and psychology, with a focus and interest in organisational and behavioral aspects of project organisation. The 1980s witnessed the evolution of project management towards human aspects and organisation. Furthermore, project management utilises the system approach to management in having functional personnel (the vertical hierarchy) assigned to a specific project (the horizontal hierarchy).

(ii) Elaborate the process (project activities) as the planning, organising, directing, and controlling of company resources for a relatively short-term objective that has been established (Kerzner 2004); overall planning, coordination and control of a project from inception to completion (CIOB 2002); a measured and negotiated trade-off between a number of constraints throughout every stage of the project life cycle, as information is continually and proactively managed, communicated and revised (Hartley (2003)); as a specialised management technique, used to plan and control projects under a strong single point of responsibility (Burke (1993)); as the art and science of converting vision into reality (Turner (1996)); and as planning, coordination and control of a project from conception to completion (including commissioning) on behalf of a client (Walker 2007).

(iii) Elaborate the output (meet stakeholder needs and expectations from the project) as to complete specific goals and objectives (Kerzner 2004) ; as aiming to meet client's requirements and in order to produce a functionally and finally viable project that will be completed on time, within authorized costs and achieve quality standards (CIOB (2002); as to pursuit of the client's satisfaction with the project outcome (Walker 2007); and as project management success (Cook 2006).

In a study by Cook (2006), the conclusion is that the rate of success across three areas—namely performance, presence indices and financial returns—increases with the use of project management practices. De Wit (1988) seems to be among the first to note that there is a significant difference between project success and project management success, and that a distinction should be made between these two. This is important because successful project management techniques contribute to project achievement. However, project management does not stop a project from failing. Nevertheless the success of a project is influenced by a variety of factors. In practically all cases, successful project management improves project quality, while helping to maintain project budget and scope (Kuprenas, Madjidi, and Smith 1999).

Al-Tmeemy, Abdul-Rahman, and Harun (2011) agree and illustrate this distinction in Figure 2.2. Building project success has three success dimensions. The first dimension is project management success—which relates to gaining management targets in terms of specified quality, scheduled targets and allocated budget. The second dimension is product success—which concerns the end product (building) target in terms of obtaining customer satisfaction, functional requirements and technical specifications. The third dimension is market success—which concerns the company's prospective growth of the project in revenue and profits, market share, reputation, and competitive advantages. Al-Tmeemy, Abdul-Rahman, and Harun (2011) manage to differentiate project success criteria into three categories—which can also present project success in three time frames: project management success in the short term; product success in the middle term and; market success in the long term.



Source: Al-Tmeemy, Abdul-Rahman, and Harun (2011, p. 346)

Figure 2-2 : Success criteria for building project

With the various definitions of project management available, the one used for the purpose of this research is adopted from Walker (2007). Project management is defined as the planning, coordination and control of a project from conception to completion (including commissioning) on behalf of a client. It requires the identification of the client's objectives in terms of utility, function, quality, time and cost. It involves the controlling of contributors to the project and their output, and also evaluating and selecting alternatives in pursuit of the client's satisfaction with the project outcome. This definition has been chosen because the suitability using in PWDM environment which concern regarding client involvement in all the three items of input, process and output. Project management had been used in the various disciplines—for example, IT, change event, and in the construction industry.

2.4 Construction industry

Kuprenas (2005) claims that the construction industry is not well established from a project management point of view, due to the inherent peculiarities within the industry. Some of these peculiarities are listed as follows:

1. Although design elements are standardised, most projects are 'one of a kind'.
2. The project design is based on site characteristics—geography and climate.
3. A large portion of the design process is influenced by physical conditions—material availability and equipment availability.
4. A large portion of the construction process is influenced by physical conditions—labour skill and climate.
5. Labour is hired on a project–by–project basis.
6. Tight profit margins created by competitive procurement processes provide little room for innovation and research.

Four main types of construction are listed—residential, building, heavy civil, and industrial. Each type of construction has its own characteristics with regard to technology and processes as indicated in Table 2.3.

Table 2.3 : Main types of construction industry

Type	Characteristics	Typical Projects
Residential	Mostly private sector finance Labour and material intensive Low technology Demand instability	Single family homes Apartment buildings High-rise condominiums
Building	Public and private sector finance Labour and material intensive Higher complexity	Retail (small to large) Commercial office Government facilities
Heavy civil	Mostly public sector finance Equipment intensive Engineering requirements	Dams Tunnels Bridges Pipelines
Industrial	Mostly private sector finance High level engineering expertise Labour and equipment intensive Utilises unique contractual arrangements for consideration	Refineries Process plants Mills

Source: Adapted from Kuprenas (2005, p. 192)

According to Walker (2007), the construction industry can be categorised into public work and private work. Public works are defined as all work done using the public's money—which belongs to taxpayers. Public agencies have expansive bureaucratic rules and procedures. For example, projects must be awarded to the lowest responsible and responsive bidder. Private persons or corporations, on the other hand, use their own money and do not bend to bureaucratic rules and procedures.

Levy (2000) adds that management of construction projects can be divided into four major components—which are: construction engineering, management of the construction process, human resource management and financial management. This applies more to contractor project managers.

Loosemore, Dainty and Lingard (2003) however, believed that every construction project is implicitly unique. They tend to be assigned with inadequate notice, depend on temporary manpower, and exist within a complex multidisciplinary team-oriented surroundings.

Haynes and Love (2004) indicated, after examination of managers of other fields, that the intensity of stress encountered by construction project managers is significantly higher than that of project managers in other industries (Sommerville and Langford 1994; Sutherland and Davidson 1993). Some of the reasons that contribute to this scenario are: the nature of the construction industry—which is a male-dominated environment, stimulating competitiveness and conflict (Dainty, Bagilhole, and Neale 2000); one-off type production—which requires high levels of coordination and specialist input; and poor on-site working conditions—which can lead to quality and safety problems (Sutherland and Davidson 1993). Dolfi and Andrews (2007) also explain common themes describing project environments, such as: unstructured environment, working with a high degree of uncertainty, changing priorities, facing challenges, lack of support, lack of appreciation, and lack of resources.

2.5 The project manager and project management

Nicholas (1994) suggested that the role of project manager is central to a project. Without the project manager, there can be no project. He summarised the project manager's role as being the glue that holds the project together. Having to complete a project on time, to a desired quality and within budget—as well as satisfying a wide range of stakeholder objectives, which are often conflicting—can subject a project manager to 'on-the-job' pressure that manifests itself as stress. The way in which project managers cope with their stress impacts on them as individuals and their project team.

Meredith and Mantel (2000) compare the requirements of a project manager to those of a functional manager. They claim that a project manager is a generalist rather than a specialist; a synthesiser rather than an analyst; and a facilitator rather than a supervisor. Meanwhile Birnberg (1998) believes that a project manager can take on the roles of businessman, psychologist, accountant, and technician. They combine skills as part designer and part nuts-and-bolts. This has been established by Barber (2004), who mentioned that a project manager wears many hats in orchestrating the

progress of a project and the firm/client partnership. Certainly, project managers should have a variety of skills and competencies.

According to the Chartered Institute of Building—CIOB (2002), the role of the project manager varies according to the type of project and type of client. The role varies and so do the required competencies. It seems that it is assumed in the literature that each individual project will have a single project manager. Project management is an art and also a science. It involves hard skills as well as soft skills. Hard technical skills need to be balanced with soft human skills. In the review to date, only a few, if any researchers have attempted to theorise and model the project manager experience (Koskela and Howell 2002).

Pinto and Kharbanda (1995) list the vital 12 things a project manager needs to keep in mind: understand the context of project management; recognise project team conflict as progress; understand who the stakeholder are and what they want; accept and use the political nature of organisations; lead from the front; understand what success means; build and maintain a cohesive team; enthusiasm and despair are both infectious; one look forward is worth two looks back; remember what you are trying to do; use time carefully or it will use you; and above all, plan, plan, plan.

Jawahar-Nesan and Price (1997) identify 12 important tasks to be performed by the owner's representative. The tasks are: preparing and organising; developing a project definition; procurement; organising a joint management team; design management; safety management; measuring and reviewing performance; communication; motivation; coordination; documentation; and reviewing performance.

The project manager is responsible for the plan of work, but not for the construction work itself (Burris 1994). The project manager is not responsible for the actualisation of the project. However, it is essential for the project manager to monitor progress achieved in the execution stage of the project. Action must be taken as soon as possible once projects are delayed or behind schedule. Krima et al. (2007) believe that the contractor's management staff are responsible for actualising the project in hand.

Verzuh (1999) concludes that the best project managers are outstanding leaders. They have vision, they motivate, they bring people together and most of all they accomplish great things. The leader should guide team members by identifying their roles and responsibilities for the project. In addition, he should inspire team members to successfully complete the project task for the good of the project. He also believes that the project manager is the catalyst/initiator of the entire project. Furthermore, Dolfi and Andrews (2007) mention—as common themes when describing project managers—the importance of planning and preparation, orientation towards a goal, desire for accomplishment and a sense of teamwork.

2.6 Challenges of research into project management

Projects in the construction sector have been judged critically for a long time, in terms of commonly occurring problems—such as: being behind schedule, increasing project costs, unsatisfactory performance, and so on. This is seen as being somewhat inadequate and as a consequence, project management has been subject to critical examinations with regard to how the construction industry can improve by adopting better theories and methods (Winter, Smith, Morris, et al. 2006).

One such rethink is conducted by Winter, Smith, Morris, et al (2006), who outline (see Table 2.4), a comprehensive summary of contemporary thinking in project management and suggest five challenges for further development. The five challenges identified were: complexity, social process, value creation, project conceptualisation, and practitioner development. .

Table 2.4 : List of challenges for research in project management

	From (Current Stage)	Towards (Future Stage)
Theory About Practice	**1. The life cycle model of projects and project management.** The simple life cycle-based models of projects, as the dominant model of projects and project management.	**1. Theories of the complexity of projects and project management.** The development of new models and theories which recognise and illuminate the 'complexity' of projects and project management, at all levels.
Theory For Practice	**2. Project as instrumental process.** The instrumental life cycle image of projects as a linear sequence of tasks to be performed on an objective entity 'out there', using codified knowledge, procedures and techniques, and based on the image of projects as temporary; a political production process. **3. Product creation as the prime focus.** Concepts and methodologies that focus on 'product creation'—the temporary production, development, or improvement of a physical product, system or facility—and are monitored and controlled against specification (quality), cost and time. **4. Narrow conceptualisation of projects.** Concepts and methodologies that are based on: the narrow conceptualisation that projects start from a well-defined objective 'given' at the start, and are named and framed around single disciplines.	**2. Project as social process.** Concepts and images that focus on social interaction among people, illuminating: the flux of events and human action, and the framing of projects (and the profession) within an array of social agendas, practices, stakeholder relations, politics and power. **3. Value creation as the prime focus.** Concepts and frameworks that focus on: 'value creation' as the prime focus of projects, programs and portfolios. 'Value' and 'benefit' having multiple meanings, they are linked to different purposes: organisational and individual. **4. Broader conceptualisation of projects.** Concepts and approaches that facilitate: broader and ongoing conceptualisation of projects as being multidisciplinary, having multiple purposes, not always being pre-defined, but permeable, contestable and open to renegotiation throughout.
Theory In Practice	**5. Practitioners as trained technicians.** Training and development that produces: practitioners who can follow detailed procedures and techniques, prescribed by project management methods and tools, which embody some or all of the ideas and assumptions of points 1 to 4.	**5. Practitioners as reflective practitioners.** Learning and development that facilitates: the development of reflective practitioners who can learn, operate and adapt effectively in complex project environments, through experience, intuition and the pragmatic application of theory and practice.

Source: Winter, Smith, Morris, et al (2006, p. 642)

These findings are strongly supported by various authors, particularly with regard to the lack of theory (Koskela and Howell 2002); providing practice models to guide practice (Pich, Loch, and De Meyer 2002); a lack of specialized knowledge (Jugdev, Thomas, and Delisle 2001) and the development of soft skills (Pollack 2007). Indeed (Li, Lu, and Huang 2009) argue that the weakness of the theoretical base must be addressed if effective research is to be conducted into project management.

All three challenges listed above will be addressed as follows:

1. *Theory about practice*: from the life cycle model of projects and project management to theories of the complexities of projects and project management.
2. *Theory for practice*: from the project as an instrumental process to the project as a social process.
3. *Theory in practice*: from practitioners as trained technicians to practitioners as reflective practitioners.

1. Theory about practice: *from the life cycle model of projects and project management to theories of the complexities of projects and project management.*

The aim of this challenge is that new models and theories that need to be developed to identify and clarify the complexity of projects (Winter, Smith, Morris, et al. 2006). In relation to this, Kuprenas (2005) identified a five-phase life cycle of a construction project as indicated in table 2.5.

Table 2.5 : Five-phase Life cycle of construction project

Phase Life Cycle	Typical Activities	Typical Cost (As percentage of total project cost)	Typical Duration (As percentage of total project duration)
Pre-design	• Go/no decision for the project • Establish total project cost • Establish project financing and risk • Define project program or function • Select designers(s) and award contract(s)	1% to 10%	5% to 25%
Design	• Finalise total project cost • Establish desired quality • Establish project milestone dates • Produce plans and specifications	5% to 40%	10% to 40%
Procurement/ Bid and award	• Finalise project sequence • Identify special conditions for the project • Select contractor(s) and award contract(s)	1% to 10%	5% to 10%
Construction	• Construct project based upon plans and specifications • Clarify project uncertainties • Negotiate changes to the contract • Inspect quality as construction work progresses	50% to 85%	50% to 90%
Closeout and Occupancy	• Prepare as-built documents • Test project systems • Train facility staff • Create a punch list of quality deficiencies to be repaired • Close construction and design contracts	5% to 20%	5 to 20%

Source: Kuprenas (2005, p. 193)

While the life cycle approach has its uses, Sauer and Reich (2009) argue that it does not provide an adequately pluralistic approach to take into account the multiple ways that projects are viewed by the various people who have an interest.

Modern construction projects, even of moderate size, are very complex and require a broad range of expertise—for example, designers, contractors, a range of

subcontractors, consultants, owners, clients, users, architects, engineers, and surveyors. It is clear then that the objectives and goals of all stakeholder in a project are diverse and it is up to the specialist construction project manager to ensure that the varying interests and expertise converge in a way that brings a project to a successful conclusion. When one considers the wide range of interests involved in any project it is not surprising that there are a number of perspectives as to what constitutes the success of a project. Success for one project participant may be failure to another, depending on the perspective with which each one looks at the outcome (Iyer and Jha 2005). A project that is considered to be a success by the client might be considered a failure by top management, if the project outcome does not meet top management specifications—even though it might satisfy the client (Belassi and Tukel 1996). An architect may consider success to be in terms of aesthetic appearance, an engineer in terms of technical competence, an accountant in terms of dollars spent under budget, and a human resource manager in terms of employee satisfaction (Pheng 2006).

It is necessary therefore, to develop more sophisticated perspectives that help us fully take into account the complexity of project management. Indeed Whitty and Maylor (2009) argue that projects are inherently complex because they not only deal with technology issues but rather, they must also deal with wider organisational factors. This is normally beyond the project manager's control (Whitty and Maylor 2009). Such difficulties are compounded in construction project management because it is often less predictable than is assumed. Most of the time, it involves a phenomenon that is nonlinear, complex and also dynamic (Bertelsen 2003).

Complexity has been examined and defined in various ways. Baccarini (1996) explained project complexity in terms of differentiation (which is dependent on the number of various elements) and interdependency (the degree of interrelatedness between these elements) and that it is controlled by integration. Williams (1999) defines project complexity as 'structural complexity' (differentiation and interdependence elements), uncertainty in goal definition, and method or means of achieving these goals. This means that the chances of successful completion decrease as the complexity of the project increases. Pich, Loch, and De Meyer (2002) express

complexity in terms of adequacy of the available information and identified three fundamental project management strategies: instructionalism, learning and sectionalism. However the most comprehensive attempt at defining complexity is presented by Macheridis and Nilsson (2004) as in Table 2.6.

Table 2.6 : The project complexities model

Project Dimensions	**Project Complexities**	
	Structural complexity	**Uncertainty**
Project results	Product structure Multi-objective	Goal definition Contextual uncertainty
Project process	Time constraint Volume of resources Number of involved persons, processes, activities Multiple stakeholder	Work methods Operational uncertainty Project management knowledge Risk analysis

Source: Macherides and Nilson (2004, p. 4)

As Neuhauser (2007) states, project managers have two responsibilities when managing a project: (1) managing technical components (plans, schedules, budgets, statistical analysis, monitoring, and control involved in the various knowledge areas and processes), and (2) managing people in such a way as to motivate the team to successfully accomplish project goals. The project manager is forced to accomplish complex and uncertain tasks in the shortest time, without abandoning cost and quality criteria or leaving customers and users dissatisfied. As a result, a project manager has to deal with an enormously broad range of issues: technology, organisation, strategies, finance, contracts, culture, planning, control, communication, environment, and teamwork,.

Goodwin (1993) indicates that the fundamental concept which project management is based upon is that a single individual—the project manager—is accountable for the success of the project. In this regard, success is achieved when the project satisfies what Rosenau (1984) calls the triple constraint—comprising performance specifications, time (schedule) and money (budget). Although the project manager is accountable for the success of the project, the effectiveness of the project manager is only one of many factors that impinge on the outcome of the project. A project may

fail because of external factors that are beyond the control of the project manager or because the project manager has not been provided with sufficient resources to implement the project. However, the effectiveness of the project manager constitutes a critical parameter among the many variables that directly affect the outcome of the project (Avots 1969; Baker, Murphy, and Fisher 1983; Belassi and Tukel 1996; Munns and Bjeirmi 1996; Pinto and Slevin 1987; Westerveld 2003) .

This view is supported by Leung, Chan and Olomolaiye (2008), who believe that the role of the construction project manager continues throughout the project, from conception to the handover stage. This is very challenging, because every single decision has direct repercussions on time, cost, quality, and the final success of a construction project. It is unavoidable that project managers have time pressure and a great deal of stress in their work. It is important to explore in the actual setting how project managers deal with this stress.

In Goodwin's (Goodwin 1993) opinion, the diversity and complexity of the project management system makes project integration one of the key functions of the project manager. The project is a system that must be integrated to ensure it is implemented in accordance with triple constraints comprising of performance specifications, schedule, and budget. The central role of the project manager is to ensure that all elements of the project function in harmony according to plan.

Valencia (2007) mentioned that it is a tedious task to prepare a detailed list of all the actions that a project manager must execute in order to fulfil these responsibilities, because the responsibilities are so huge. In general terms, the project manager is considered a direct representative of the firm's senior managers and is responsible for the entire success of the project. From the project team's perspective, the project manager is counted on to have some level of technical competence concerning project work (Grant, Baumgardner, and Shane 1997) and at the same time, to exhibit the leadership skills required to guide the team (Turner and Muller 2005). Other responsibilities include: building the project team, planning and evaluating the work, interfacing with the client, and proper resources (Bowenkamp and Kleiner 1993)

The project manager must also be able to forecast project needs, assess project risk, communicate plans and priorities, assess progress and trends, and get quality and value for money invested in a project (Smith 1995). As is shown, the responsibilities of the project manager are incredibly comprehensive. However, a common thread among those who have tried to capture this list is the idea that these project managers are typically not given the same authority as that of traditional managerial positions (Bowenkamp and Kleiner 1993; Keane 1996)—which creates a source of difficulty for the project manager. Project management is said to be more organic, more complex, and more varied than functional management (Pettersen 1991), adding to the difficulty of the job.

Charoenngam and Maqsood (2001) mention that out of all the phases of a construction project—starting from design to hand over—the construction phase is the longest and the most important in terms of the time involved up to completion and the amount of money consumed for actual construction. This stage is critical to accountability and for the transformation of ideas into physical shapes. To precisely anticipate or evaluate all problems concerned during this stage is a truly difficult job, because of the unpredictability of the on-site construction environment. Unpredictable problems are a certainty on construction projects because forecasting and preventive techniques can never be exact (Loosemore 1994).

The construction process requires the particular displacement of tools, material and workers. The formation of work place characteristics, schedule times, and inspection criteria all make the environment complicated and uncertain, due to which it becomes truly difficult (Bennett 1983). If most on-site problems go unnoticed in the early stages, they may create a lot more trouble later, leading to decreased site productivity and finally schedule delays and cost overruns. Monitoring and control are attempts to spot problems while the project is in the construction stage. The key to problem identification lies in examining actual progress according to plan and locating the causes of variance if differences occur.

Problems come from every dimension once construction is started. These may be technical or managerial. Often technical problems are more obvious and there are well-defined procedures to deal with them. Managerial problems are tackled by the

site organisation that is established solely for accomplishing site tasks as planned, to ensure project completion. Mustapha and Naoum (1998) are of the opinion that project managers stand at the heart of the building process and their ability strongly influences the success or failure of the project for the contractor, the professional team, the client and ultimately the general public. This is the most significant and important person, whose skills will take the project to completion and whose abilities decide the fortune of the venture. Site managers are expected to act as trouble shooters by recognising and pinpointing problems (Belassi and Tukel 1996) before they expand to uncontrollable proportions. It is their duty to perceive the problem first, see if they can solve it and if not, to pass it to a higher level as soon as possible (Mastrandrea 1986).

Since modern construction projects require a diverse range of expertise, a project manager is dependent upon the performance of the project team and associated stakeholder. This makes the job of the project manager more complex. Normally, project managers have substantial responsibility with very little authority, especially over functional managers, client representatives and local officials (Kerzner 2004). However, they are dependent upon the cooperation of these parties and above all, their team members. The acceptance of the project manager's authority can be complicated when team members are 'loaned' to the project by other internal departments. Loaned team members may have the attitude that the authority they respect is their functional department manager, and not the project manager (Verma 1996). In these circumstances, it poses a challenge for the project manager to handle this situation. The project manager can be a single point of responsibility and can integrate and coordinate all the contributions, thereby having a higher chance of successfully completing the project (Burke 1993).

2. Theory for practice: *from the project as an instrumental process to the project as a social process; .*

Project complexity, according to Payne (1995) relates to issues such as multiple interfaces between projects, between the projects and the organisation, and between stakeholder. The early period of project management began with the influence of the

optimisation school; projects are viewed as solely instrumental by the playing out of physical laws. It was initiated as a theoretical field from a mathematical viewpoint. Mostly, it is research based on algorithms and certain project planning techniques (Packendorff 1995). Additional planning techniques—such as program evaluation and review techniques (PERT) and critical path method (CPM) —were subsequently used. These great instruments however, do not guarantee that projects will succeed.

Various researchers suggested that projects fail to deliver quality products due to lack of planning, lack of alignment with resources and deliverables, poor change management, and incomplete feedback processes (Cicmil 2000). In addition, Zuo and Zillante (2005) suggest that an appropriate project culture (e.g. positive, strong, cooperative, and collaborative) should be improved and retained within each project environment, in order to further the improvement and performance of a project. Therefore, success factors that can be relied on heavily are an extraordinary approach to managerial thinking and decision making, especially in the process of identification, refinement and management of Critical Success Factors (CSF) (Cicmil 2000). These approaches are needed to resolve problems that lead to project failures.

Projects are not usefully viewed as an instrumental process, but are better seen as involving autonomous human actions based on various human and organisational interests known as social process (Sauer and Reich 2009). Social process is a process involved in the formation of groups of persons.

Razalli (2007) identifies that client/customer interfacing and team leadership are the most important roles of project managers in the Malaysian construction industry—while managing and delivering projects within specified requirements and constraints of scope, cost, quality and safety, to ensure customer satisfaction. Project managers can exist as project stakeholder, such as development, consultants and contractors. They represent the different interests of different parties. There are also some differences in their daily work. Even for those tasks that are the same for project managers from different parties, different approaches may be used to accomplish them. As a result, project managers from different parties will have different views towards competencies needed for a successful project manager. Most of the

literature—especially text books—refer to about project managers from the contractor perspective.

The review of organisation framework for project management indicates that conflict is inherent in the very organisational structure of the project management process. In fact, some authors describe project management as conflict management (Kerzner 1979). A common source of conflict is the increasing tendency of contractors to exploit contractual loopholes and ambiguities in order to maximize payments for 'extras'. To have an integrated project system, therefore, the three critical tasks of the project manager are to implement an effective planning and control system, establish sound communication links between all subsystems of the project, and ensure that conflict situations are resolved before they begin to impact negatively on the triple constraints of performance specifications, schedule, and budget.

Schmid and Adams (2008) found that team motivation can be heavily influenced by the project manager, especially during the early stages of the project. It appears that project managers have the ability to create a sub-culture within an overarching organisation, in which team dynamics can lead to higher levels of motivation than in the encompassing organisation. To achieve a project environment where the majority of the members involved is motivated about the project, project managers have to be sensitive during the early stages of a project. Clear communication at the beginning of projects appears to be the key to the development of high motivation throughout the whole project. Schmid and Adams suggested future research should follow up with case studies or ethnographic analyses, to create a more thorough picture of the project manager's perspective.

Anzolone (2000) mentions that within the collaborative work environment that exists when the project management approach is followed, the project manager occupies a sensitive position—because he or she is not the normal supervisor to whom the team members report within the organisation. The project manager is not a functional manager. For example, the project team members' evaluation, promotions, raises, and job security is usually not dependent on their relationship with the project manager, but rather with their line supervisor. As a result, the project manager's job

is complicated by a real 'authority versus responsibility' gap. The project manager has to have high energy levels and be a manager of many talents to be able to face multifaceted responsibilities. It is the project manager who must define the project goals, sell the project idea to top management, and negotiate resources for the project. It is the project manager who selects, motivates, monitors, and communicates with team members. It is also the project manager who, at project's end, evaluates and communicates to all interested parties the team's progress in meeting goals.

Cicmil et al. (2006) argues that while a great deal is written about traditional project management, we know very little about the 'actuality' of project based work and management. This thesis formulates a research approach that seriously takes into account practitioners' live experience of projects. This study has been dedicated to broadening our understanding of practical and managerial conduct in project environments and of knowledge and skills that project managers use in their daily lives to cope with the complexity of projects..

3. Theories in practice: *from practitioners as trained technicians to practitioners as reflective practitioners.*

Reflection was initially described by Dewey in 1933 and further explored by Donald Schön in his 1983 book entitled *The reflective practitioner: How professionals think in action*. Schutz (2007) is in sync with John Dewey's opinion that reflective practice is a way of being—for example, reflecting on how every time people leave the house they look at the sky and wonder whether an umbrella is needed. Clarke, James, and Kelly (1996) admitted the complications of professional work which have a number of features in common

1. The problems professionals' faces are 'messy'—that is, they are complex and there are no right or wrong answers, simply best and not so good.

According to Schön (1983), practicing managers and other practitioners constantly have to deal with messy, indeterminate situations, for which there are

no ‘right’ answers—and how they deal with these situations is not through the systematic application of textbook theories, but through sophisticated processes of reflection-in-action (e.g. thinking on one’s feet) and reflection-on-action (e.g. thinking back on events and planning the next move)

2. The knowledge on which professionals draw is broad, deep and multifaceted.

Schön (1983) states that there are two distinguished places where practitioners normally stand. The first level is higher, hard ground. This level provides places for practitioners to make effective use of research-based theories and techniques. Another level is the swampy lowland. This level is a confusing mess, not suitable for technical situation applications. It is about experience, trial and error, intuition and muddling through.

3. For professionals, the context in which they deploy their skills is important and significant.

Mezirow (1991, p.104) defines reflection as “the process of critically assessing the content, process, or premise(s) of our efforts to interpret and give meaning to an experience”. It shows that the context in which they deploy their skills is important.

4. Professional practice cannot be understood in terms of skills alone.

Schön (1983) introduces the term ‘swampy lowlands’ of practice. This term specifies a situation where there is no clear way of doing a particular practice, meaning there are complexities, and many competing goals and conflicting perspectives. Schön also believes that the essential way to understand more of a professional practice is through reflection. Schutz (2007) agrees with this perspective and further reports that reflective practice can help practitioners unlock tacit knowledge to better generate knowledge for future practice.

5. *Professional knowledge is very difficult to articulate.*

Schön (1983) reveals more on this sub-topic and shows how reflection can play a significant part in solving professional work problem. He further argues that the technical/rational approaches are not appropriate for this problem. This is because the practice is not straightforward; rather, knowledge is inherent in nature. He believes that practices are more heavily a process of reflection-in-action, rather than a series of simple decision-making steps. At a particular moment of practice, the practitioner possesses knowledge-in-action.

Schön is also responsible for proposing the concept of 'knowing-in-action'. This means that judgment in many situations was based on experienced professionals making decisions without thinking deeply about the underlying reasons for these important problems. That is why most of the time, these professionals find it hard to explain thoroughly some decision undertaken in their project at hand.

Boyd and Fales (1983, p. 100) define reflection as the "process of internally examining and exploring an issue of concern, triggered by an experience, which creates and clarifies meaning in terms of self, and which results in a changed conceptual perspective".

According to Whitton et al. (2004), reflection is a process consisting of direct experience, evaluate that direct experience based on our way of thinking and deliberation of possibilities that should cause to action as a result of the evaluation.

Until the end of the 20th Century, project management was generally viewed as technical in nature, consisting of a substantial body of knowledge, standards, and codes of practice, formal education processes, core professional practitioners and a professional body with a code of ethics. It is full of rules and regulations towards graspable and permanent knowledge, but is also prescriptive (narrow). It is a technical orientation with emphasis on assessment and accreditation. Nevertheless, for the 21st Century this approach needs to change due to the complexity of projects and the globalisation of the world. In addition, project failures occur frequently and

prove that this approach is not suited to current requirements (Crawford, Hobbs, and Turner 2006; Crawford and Pollack 2004; Morris, Jamieson, and Shepherd 2006).

Project problems cannot be solved based only on rules and regulations, as current projects need a new approach. This new approach should inform by principle and be pragmatic, embracing uncertainty and using professional judgment to embrace reflection and deliberation (refer to Table 2.7. Characteristics of the Trained Technician Versus the Practitioner as Reflective). In other words, project managers have to transform themselves from practitioners as trained technicians into practitioners as reflective practice (Crawford, Hobbs, and Turner 2006; Crawford et al. 2006; Winter, Smith, Morris, et al. 2006).

Table 2.7 : Characteristics of trained technician versus practitioner as reflective

Criteria	Trained Technician	The 21st Century Practitioner
Attitudes and initiative	Follows rules and prescriptions	Informed by the principles and frameworks
Knowledge	Sees knowledge as graspable and permanent	Sees knowledge as temporary and dynamic
Approach to practice	Prescriptive approach to practice	Pragmatic approach to practice
Perception and outlook	Embraces the known	Embrace uncertainty
Ability	Technical expertise is all	Professional judgment counts
Approach	Emphasises assessment and accreditation	Emphasises reflection and deliberation
Professional development	Technical training	Professional development

Source: Ojiako et al. (2008, p.70)

The concept of reflection has a lot of discussion in nursing (Brown and Ryan 2003; Reid 1993; Schutz 2007) and teaching practice (Bright 1995) but it is still under researched (Clarke, James, and Kelly 1996; Wilkinson 1999). The concept of reflection is limited in project management practice and only Winter, Smith, Morris, et al. (2006) mention it as one of the five challenges in rethinking project

management. The challenge is to convert from being project management practitioners as trained technicians (who can follow detailed procedures and techniques, prescribed by project management methods and tools) to becoming reflective practitioners (who can learn, operate and adapt effectively in complex project environments).

Reflective practice is important to the development of project managers as professionals as it enables them to learn from their experiences of managing project. Developing reflective practice means developing ways of reviewing their own managing (based on experience, tacit knowledge and intuition) so that it becomes a routine and a process by which they might continuously develop.

A 'reflective practitioner' is someone who, from time to time, they work, and looking back on work processes, and considers how they can improve. They are not happy to continue with the current standards, they want to improve, says they do not believe, do not fix it, it is not broke. They reflect the work they do.

A reflective practice is the application of the skill of reflection with attention to improve practice. This is the mode that connects the mind and action with reflection. It involves a critical analysis of one's actions with the aim of improving one's professional practice (Kottkamp 1990).

Over the years as a dialogue, the research literature and then developed, vocabulary describes the extensive changes but fundamentally, understanding as new "meaning perspectives" (Mezirow 1978), new "frames of reference" (Mezirow, 2000), new "habits of mind" (Mezirow 1997) and new worldviews (King 2002).

In summary, the challenges of research into project management has shift the current stage project management into future stage project management that give new meaning perspectives between theory and practice. The new model of project management should present and indicate these three challenges: the complexity of projects and project management at all levels; projects as a social process that focus on social interaction within an array of social agendas, practices, stakeholder relations, politics and power; and project managers as reflective practitioners who can learn, operate and adapt effectively.

2.7 Project manager competencies

With all these challenges of project management, eventually project manager required competency to overcome it. In their recent studies Brown, Adams and Amjad (2007) demonstrate that a project managers competencies are considered important in determining project outcomes. These results are significant because they confirm that the education and training of a project manager are important in influencing the timely delivery of construction projects. However, Verma (1996) argues that managing projects is far more multifaceted, requiring a wide range of unique skills and techniques—different from those needed to manage ongoing operations, because contemporary project management faces the challenges of operating in a project environment characterised by high levels of uncertainty, cross-cultural teams, and global competition for competent human resources.

The definition of competency is quoted from Lucia and Lepsinger (1999, p.5) as follows:

> 'A cluster of related knowledge, skills, and attitudes that affect a major part of one's job (a role or responsibility), that correlates with performance on the job, that can be measured against well-accepted standards, and that can be improved via training and development.'

Knowledge is what a person knows about a specific topic, for example Primavera Project Planner (the common tools of Project Management software for total project planning and scheduling). Skills are things that people can do well, for example scheduling the project progress using Primavera Project Planner. Reflection is a skill that may lead to improved understanding (it does not necessarily lead to an improvement in performance) and reflective practice is the application of that skill to our practice to improve our performance.

Marshall (1996) suggests that to understand what makes the best people successful, we need to understand not just what they do, but the thoughts and feelings that generate their actions., Boyatzis (1982) asserts that there are some underlying

processes a person possesses—such as: characteristics motives, traits, the skill aspects of one's self-image or social role, and the body of knowledge used—that define competency in a person.

Valencia (2007) has done research on project managers in the United States Air Force Centre, to determine which personal attributes project managers possess that lead them to project management success. The discovery was that the most important trait in this case study is administration ability. Also favoured is the ability to lead, teamwork, decision making skills with moderate levels of an adaptive decision making style, and a moderate level of technical competence—which will enhance the project manager's ability to succeed. The research however, could not conclude that there was any significant importance of communication skills, analytical thinking or coping ability. The finding was justified by considering that the Air Force project manager may have a different role as compared to other project managers. This may be basically because project managers in the Air Force manage projects as facilitators, despite the name—while general project managers are more likely to manage some subcontractors under their supervision. The researcher believes that this justification can explain the importance of administrative ability and teamwork as being the most important trait in Air Force project managers.

Various researchers (eg. Andersen, Dyrhaug, and Jessen 2002; Avots 1969; Belassi and Tukel 1996; Dvir et al. 1998; Jiang, Klein, and Margulis 1998; Westerveld 2003; Zimmerer and Yasin 1998) have noted that a project manager's competence plays an important role in determining the success of a project. Many factors related to the skills and characteristics of project managers are important for the successful completion of a project. The authors have proposed various characteristics including: leadership, empowering the team, conflict resolution, clear communication, and risk management (Iyer and Jha 2005; Kumaraswamy and Chan 1998; Munns and Bjeirmi 1996; Turner 1999; White and Fortune 2002; Abdul-Rahman et al. 2006).

Toor and Ofari (2008) mentioned leadership as being one of the most important project management variables relevant to project success. Leadership is important for project managers carry two heavy tasks when managing a project: (1) managing the

technical components of the project (method, procedure, schedules, cash flow), and (2) managing the people in such a way to inspire, give direction and align the team to successfully complete the project goals. Communication is an essential to manage demand from various stakeholder especially in complexity and uncertainty situation and to ensure successful integration (Skulmoski and Hartman 2010).

Shore and Cross (2005) claimed that power distance, individualism, human treatment, and future orientation are dimension of national culture that are linked to project management. Furthermore, National culture influence practicing project management in the East and West affect different application to work practice, planning and leadership (Wang and Liu 2007; Hofstede 1983).

An extensive examination of the published works of Strohmeier (1992), Anderson (1992), (Abdel-Razek 1997), Gushgari, Francis & Sakiou (1997), Edum-Fotwe & McCaffer (2000), Hauschildt, Keim & Medcof (2000), El-Sabaa (2001), and Dainty, Cheng & Moore (2005) reveals a number of problems and gaps in current approaches to researching project managers. Whilst on face value the research seems to provide a comprehensive overview of an effective project manager, on closer examination however, there is little agreement about the relative importance of skills or how these skills are interrelated. Research in this area is also predominantly culturally specific in nature. With a few exceptions—for examples, Abdel-Razek (1997) and El-Saba (2001)—they provide insights from a largely Western perspective. Thus, their appropriateness for analysing non-Western contexts could be called into question. Project Management approaches has its origin in the Western culture, and Non-Western countries have been known to have a different culture of the Western countries. Furthermore, the works listed above are based on quantitative research methods using a questionnaire survey. The reported response rates are quite low—between 8.6 per cent and 40 per cent. In addition, apart from Dainty, Cheng & Moore (2005), the questionnaires precluded the possibility of participants informing the researcher of other skills needed and the relationship between these skills, based on their experiences. Dainty, Cheng & Moore (2005) employed focus group research as an aid to designing their survey.

Apart from this work, there is little evidence of the application of qualitative research—which has the potential to provide deeper insights into identifying the importance of an open system cultural model, representing the linkages (values) that exist between project management design (success) factors: project managers' competencies, performance measurement systems, and business processes, . Kendra and Taplin (2004) are one of the few examples of qualitative research in this area. They employ a grounded theory approach to an examination of IT project success. They conclude that a project manager's competencies cannot stand alone—they exist within a context of both social and technical in micro (individual) and macro (group) levels of project management The task of developing a set of required characteristics is therefore more than simply developing a list and applying quantitative methods.

The issue of providing a set of required characteristics of a project manager is addressed by the Project Management Institute (PMI) of the United States—which established the project management body of knowledge (PMBOK). The PMBOK guide (Project Management Institute 2004) describes eight major areas of project management knowledge that must be understood to enable the project manager to successfully manage projects. These areas of knowledge can be divided into two groups. The first group involves the management of four core elements: scope, quality, time and cost. These represent the customer's objectives and project constraints as defined by the program manager. The second group contains the four interface elements: management of communication/information, contract/procurement, human resources and risk. This document serves as the foundation for all project management training programs in the United States and is endorsed by the PMI as meeting its standards for certification.

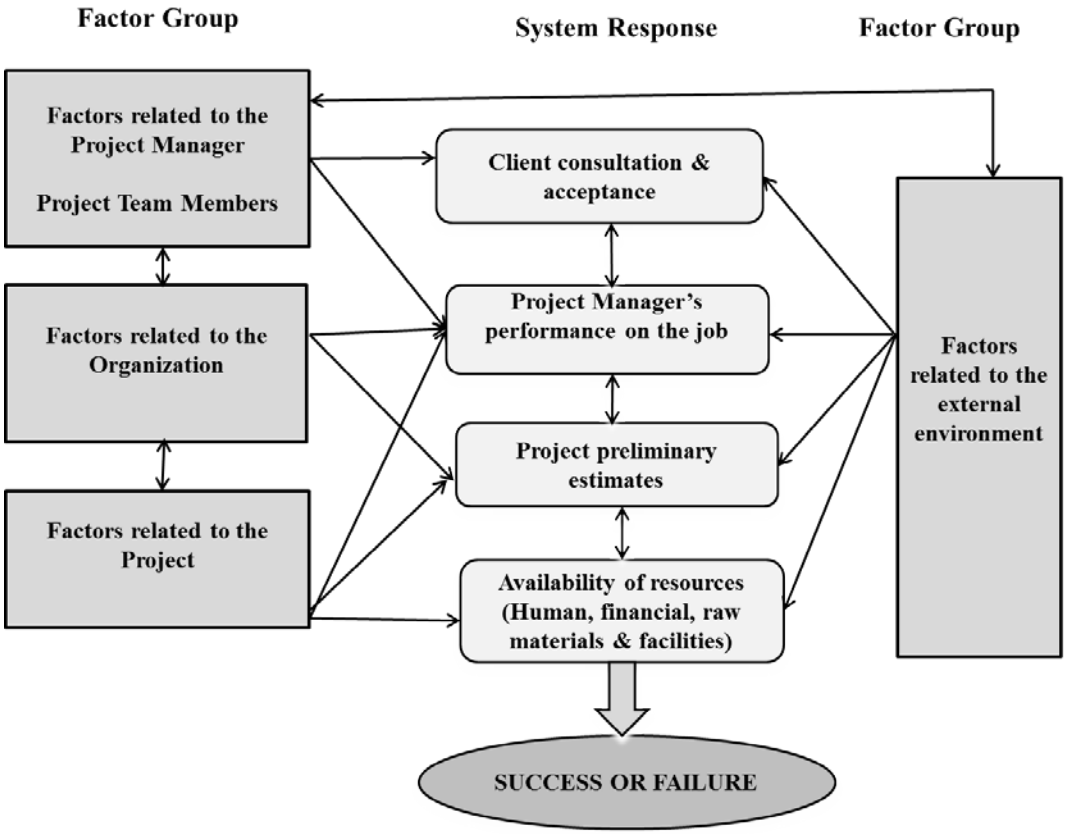
The Australian Institute of Project Management (AIPM) has developed its National Competency Standards for Project Management—derived in part from the knowledge base of the PMBOK—but reframes it in terms of performance (Brill, Bishop, and Walker 2006). However, Crawford (2005) notes that standards such as these are not based in empirical research, but rather in the 'assumption that there is a positive relationship between standards and effective workplace performance (Crawford 2005). Furthermore, Morris (2003) questions the validity of the PMBOK

in terms of breadth. He believes that even through the PMBOK is understandably very widely used, it lacks detail in project definition, value management, technology management, leadership and team-based development. Due to disadvantages in the PMBOK, Morris (2001) recommends that a completely new approach should be considered, to decide on the competencies needed in professional project managers.

In summary, project manager competencies are a great demand in today's complex project environment. Managing a project is far more multifaceted, requiring a wide range of competency. More research is required to determine which competencies contribute most to project success (Skulmoski 2001). Furthermore, to what extent are project managers able to employ their competencies to achieve project success are still questionable.

2.8 Project management model

Project management has existed more than six decades. The best known approach for explaining the social and technical aspects of projects is through the use of 'Critical Success Factors (CSF)' (Fortune and white, 2006). However, the literature still lack of comprehensive project management model represents some key factors—including cause and effect —carefully defined in a concise manner. Currently, these are 2 best models available: (1) framework for determining critical success/failure factors (Belassi and Tukel 1996), (2) project excellence model (Westerveld 2003). The strength and as well the weakness of these models had been discussed as below. Belassi and Tukel (1996) have created a framework for determining critical success/failure factors in projects as seen in Figure 2.3 below.

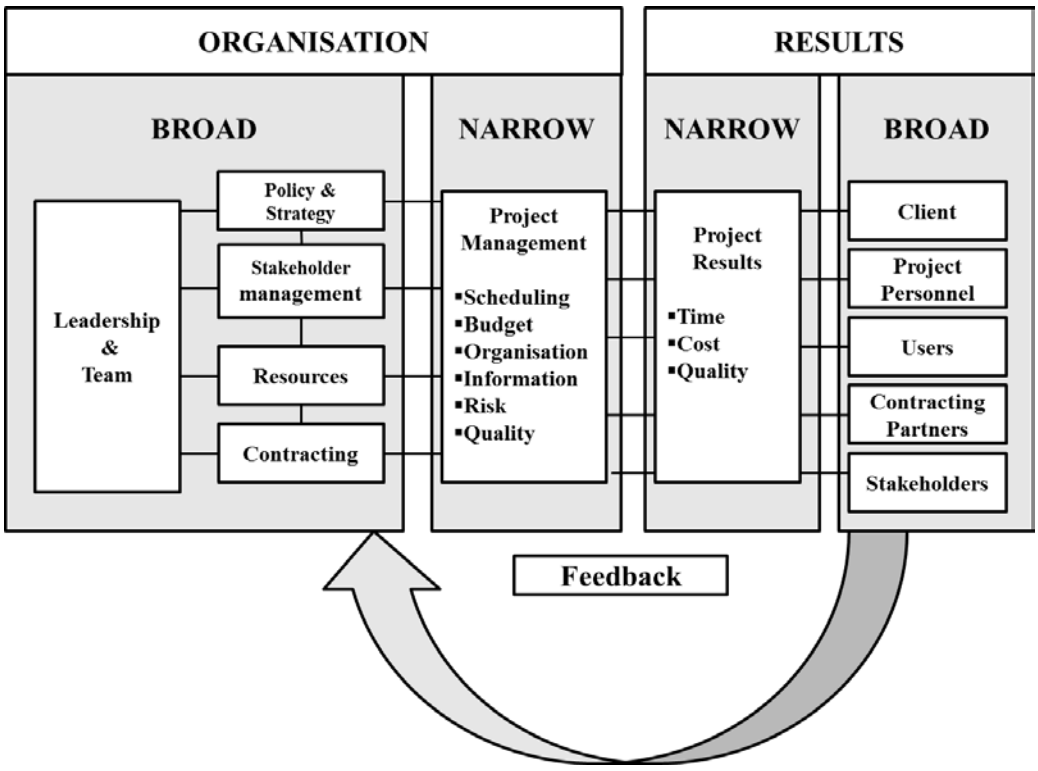


Source: Belassi and Tukel (1996, p. 144)

Figure 2-3 : Framework for determining critical success/failure factors

Belassi and Tukel constructed a framework for Critical Success Factors (CSF) that takes external factors influencing project success into account. In addition, the framework does not provide a single list of success factors, but defines groups of success factors. As can be seen from the figure, the groups are interrelated. A factor in one group can influence a factor in another group, and a combination of several factors from various groups might lead to project failure. Project manager's competence is a critical factor that affects project planning, scheduling, and communication. Thus, effective planning, scheduling, and communication are not facts but the immediate effects of factors related to a project manager—such as managerial skills, competence, and technical background. However, no discussions have taken place on how project managers are able to comprehend the relationship, cause and effect between the groups and the factors.

Meanwhile, Westerveld (2003) has developed the project excellence model as indicated in Figure 2.4.



Source: Westerveld (2003, p. 415)

Figure 2-4 : Project excellence model

Westerveld (2003) constructed a model which is based on the European Foundation of Quality Management (EFQM) model, and is designed to link project success criteria and Critical Success Factors (CSF) into one coherent model. The model consists of six result areas—covering project success criteria—and six organisation areas, covering Critical Success Factors (CSF). However, none distinguish which levers within their control project managers can pull to increase the likelihood of achieving a successful outcome for their project and which factors are outside the control of the project manager.

To date, there has not been a single project management framework that encompasses cause and effect for all the related dimensions and elements of: project success criteria and project success factors (Schieg 2009).

2.9 Conclusion

This chapter reviews literature pertaining to the role of the project manager in relation to project success. Various perspectives on projects, project management, project success criteria, and project success factors are examined. The chapter outlines the links between these issues and the project management process, and discusses these in line with the research questions and aims explained in Chapter 1.

It provides an understanding of three challenges of research into project management funded by the UK Engineering and Physical Science Research Council (EPSRC) between 2004 and 2006. These three challenges are: complexity, social process, and practitioner development (Winter, Smith, Morris, et al. 2006). They are closely related to the issues associated with construction project management that are the focus of the analysis—particularly with regard to the focus on the roles, responsibilities, and challenges of project managers, around which project success revolves.

To date, no study has yet conceptualised and operationalised a model for addressing why project managers have had variances in delivering project success. The lack of clear knowledge of the determinants of project managers' experience in construction makes it difficult to establish an initiative to foster the needs of project managers in managing project success. This study attempts to fill this gap. Therefore, any contribution leading to a better understanding of the concept of the project manager in managing project success, a theory of construction management/project management—or more rationally, a causal–context–consequences–strategies based paradigm model that incorporates the multiple theoretical perspectives in construction management/project management—would be a significant contribution to the knowledge base. The next chapter discusses the methodology and methods employed in examining the research questions.

CHAPTER 3. METHODOLOGY AND METHODS

3.1 Introduction

As discussed in Chapter 1, the problem examined in this research is the discovery of why do project managers in this organisation have varying outcomes in delivering project success. Furthermore, literature in Chapter 2 indicates there is a gap in this problem. This problem is examined through the grounded theory method—used in particular to generate a substantive theory—which explains the complex basic social processes inherent in this project management situation, and which identify the core variable which forms its central focus.

This chapter presents the methodology and methods of the research. This is presented by outlining the research approach, rationale for using Grounded theory, methods of procedure in Grounded theory, and Grounded theory analytical steps. The chapter will demonstrate the applicability Grounded theory in developing substantive theory named Maintaining Project Alignment (MPA).

3.2 Qualitative research approach

In order to build a theory grounded in the experience of project managers, the research design is qualitative in nature (Creswell 2008). Myers (2008) suggests that qualitative research is best to study a specific subject in depth. Consequently, one department named PWDM is chosen as a specific subject in this thesis. Qualitative methods offer the researcher a variety of applications to research problems and provide alternatives for analytical approaches to explore various levels of analysis.

Qualitative methods also provide different disciplinary orientation, assumptions and plans from micro-analytical to complex behaviours, and further allow the development of the necessary level of conceptualisation within the research problem (Morse 1999). In other words, qualitative research approaches hinge more upon ways

of seeing them on ways of looking. Ways of looking encompass only the surface area of what others have done—while ways of seeing centre more deeply on underlying intent, guiding concerns, focus, as well as perspective (Schram 2003) .

3.3 Grounded theory

The grounded theory approach is a qualitative research approach that was originally developed by Glaser and Strauss in 1967. They best describe it as a way to help reveal how some problematic situations are being handled in people's lives. Researchers are now able to study how people make sense of their everyday lives—and in particular, their workings experiences—and use that understanding to resolve challenges. This is done mostly by observing people directly, as well as talking to people every day (Stern and Schreiber 2001). There are three versions of grounded theory available in literature (Creswell 2008) —the emerging approach associated with Glaser (1978); the systematic approach associated with Strauss and Corbin (1990, 1998); and the constructivist approach associated with Charmaz (2000).

The differences between the three lots of grounded theorist were in term of conceptualization. Strauss and Corbin (1990) suggested a new coding technique using a coding paradigm involving conditions, context, action/interactional strategies, and consequences. Meanwhile, Glaser (1992) insisted the concept of emergence, nothing was forced or preconceived. In line with this perspective, Charmaz (2006) had developed her own style as constructivist grounded theory. It did not bond to either Glaserian or the Strauss and Corbin 'technique' of conducting grounded theory. Rather it used the principal grounded theory processes of collecting data, and coding analysis (consistent use of the constant comparative method, writing detailed memos and creating diagrams of the relationship of the concepts). All of these practices enabled the development of a substantive theory grounded in the data.

The overall research design in this thesis follows a grounded theory developed by Strauss and Corbin (1990, 1998), as this approach is most widely known and applied in the literature. This is mainly because Strauss and Corbin (1990, 1998) provide a clear, systematic approach that is associated with theoretical detail, and rigorous

techniques for data analysis—which is reassuring for a novice researcher and easy to follow. The initial phase of this research presents the stages of data generation and analysis activity—while the concluding work is a literature search to position the resultant grounded theory within existing academic insights. The characteristic components of this approach are prescribed procedures in the form of coding categories and Subcategories and also the development of a visual diagram to illustrate the theory (Schram 2003).

The grounded theory method consists of systematic, yet flexible guidelines for collecting and analysing qualitative data, so as to construct theories that are easier to understand and are themselves grounded in data (Charmaz 2006). The grounded theory research method used in this research has been designed to gain an understanding of why project managers in the PWDM have had variances in delivering project success.

The method used in this research has been used widely in sociology and anthropology. It is interesting to mention that although grounded theory is used in mainstream management research (Browning et al 1995; Gersick 1994 cited in Phua and Rowlinson 2004), it has received very little attention in the field of construction project management (Phua and Rowlinson 2004). Motivated by this handicap, this study hopes broaden grounded theory in the field of management, in particular construction project management.

3.4 Rationale for using grounded theory approach

Grounded theory was deployed for six reasons:

1. *Capturing complexity*: Since modern construction projects require a diverse range of expertise, a project manager is dependent upon the performance of the project team and associated stakeholder. This makes the task of the project manager more complex. Normally, project managers have substantial responsibility but very little authority, especially over functional managers,

client representatives and local officials (Kerzner 2004). However, their actions are dependent upon the cooperation of these parties and above all, their team members. The acceptance of the project manager's authority can be complicated when team members are 'loaned' to the project by other internal departments. Loaned team members may have the attitude that the authority they respect is their functional department manager only, and not the project manager (Verma 1996). These circumstances pose a challenge for the project manager in handling this situation. Despite this uncertainty of authority, it is the project manager who integrates and coordinates all works and contributions, and guides them to completion of the appointed project (Burke 1993). The grounded theory style adapts well to capturing the complexities of the context in which the action unfolds, enabling researchers to better understand all that may be involved in a particular substantive issue.

2. *Linking well to practice*: Another important characteristic in grounded theory is that it explains thoroughly what is actually happening in practical life at a particular time. This is an add on, as most methods focus on describing what should be going on (McCallin 2003). It involves interactive, ongoing analysis and deep reflection through each stage of exploration of the initial phenomenon. Issues and questions are gradually discovered from these exhaustive steps, with the emergent theoretical perspective being developed. Further careful reflection and data analysis of the problem under examination enables researchers to eventually develop a theoretical understanding of the phenomenon (Abdul-Rahman and Goddard 2003). Grounded theory gives advantages by offering researchers a way to bridge the gap of theory and practice in the project management profession. It allows project managers to capture the complexity of problems and the richness of everyday life that make up so much of their practice (Corbin 1986).

3. *Its systematic procedure*: The grounded theory method consists of systematic, yet flexible guidelines for collecting and analysing qualitative data to construct theories that are grounded in the data themselves (Charmaz 2006). As stated by Patton (2002, p. 481) grounded theory advocates

‘systematic rigor and thoroughness’ throughout the research process making aim for objectivity. The grounded theory research method used in this research has been designed to capture an understanding of the nature of project managers’ competencies and project success in the PWDM.

4. *Professional interest*: Professional interest is a valid reason for research into a grounded theory study—which recognises that personal background sensitises the researcher to address certain kinds of broad questions and can be used to obtain data that otherwise might not have been realized before (Walker and Myrick 2006). The researcher therefore enters the research field, aware of personal interest, but willing to remain open to emergent data as the study progresses. The researcher’s interest in this thesis is in exploring the perspectives of project managers with regard to managing a project.

5. *Its explanatory power*: (Mills, Bonner, and Francis 2008) were concerned that the growth in case study research has failed to realize the potential of ‘explanatory’ case studies in providing more challenging reflections on the nature of project management knowledge and practice—and also that prior case studies have not generated much ‘new theory’. Grounded theory has the ability to generate high order explanations of people’s behaviour by the development of a theory that aids understanding in the area under investigation.

6. *The project manager group*: The researcher felt the behaviour of the people to be studied, senior project managers and their supervisors were more suited to obtain data from face-to-face in sharing their individual stories and experience compared asking them to fill in the questionnaire form.

3.5 Methods of procedure

‘A grounded theory is one that is inductively derived from the study of the phenomena it represents’ (Strauss and Corbin 1990, p. 23). It is a way of discovering theory. The idea is to produce a new explanation of the phenomena being studied.

Data collection and analysis phases of study proceed simultaneously. The key focus is reflective reading of text and the application of codes. Data analysis begins to develop theories (explanation) that suggest further cases to sample which involves comparison of people, place, events, conditions, and setting. An analytic process employed prompts theory discovery and development. Grounded theory—which typically concentrates on certain settings—has 11 steps (Bryman 2008, p. 545) as indicated in figure 3.1 and implies the following:

Step 1: The researcher began with general research questions and decided that a grounded theory design best addresses the research problems. Grounded theory was deployed based on the six reasons explained in detail in Section 3.4.

Step 2: Relevant people and/or incidents are theoretical samples. The people and incidents are chosen based on who is involved in the process that occurs in the research area. This process naturally follows on from the questions that the researcher seeks to answer.

Step 3: Relevant data is collected. The researcher relies on the interviews to best capture the experiences of peoples in their own words.

Step 4: Data is coded—which may generate concepts at the level of open coding (Step 4a). There is constant movement back and forth between the first four steps. So early coding suggests the need for new data, which results in the need for theoretical samples, and so on.

Step 5: Through a constant comparison of indicators and concepts, categories are generated (Step 5a). The crucial step is to ensure that there is a fit between indicators and concepts.

Step 6: Categories are saturated during the coding process.

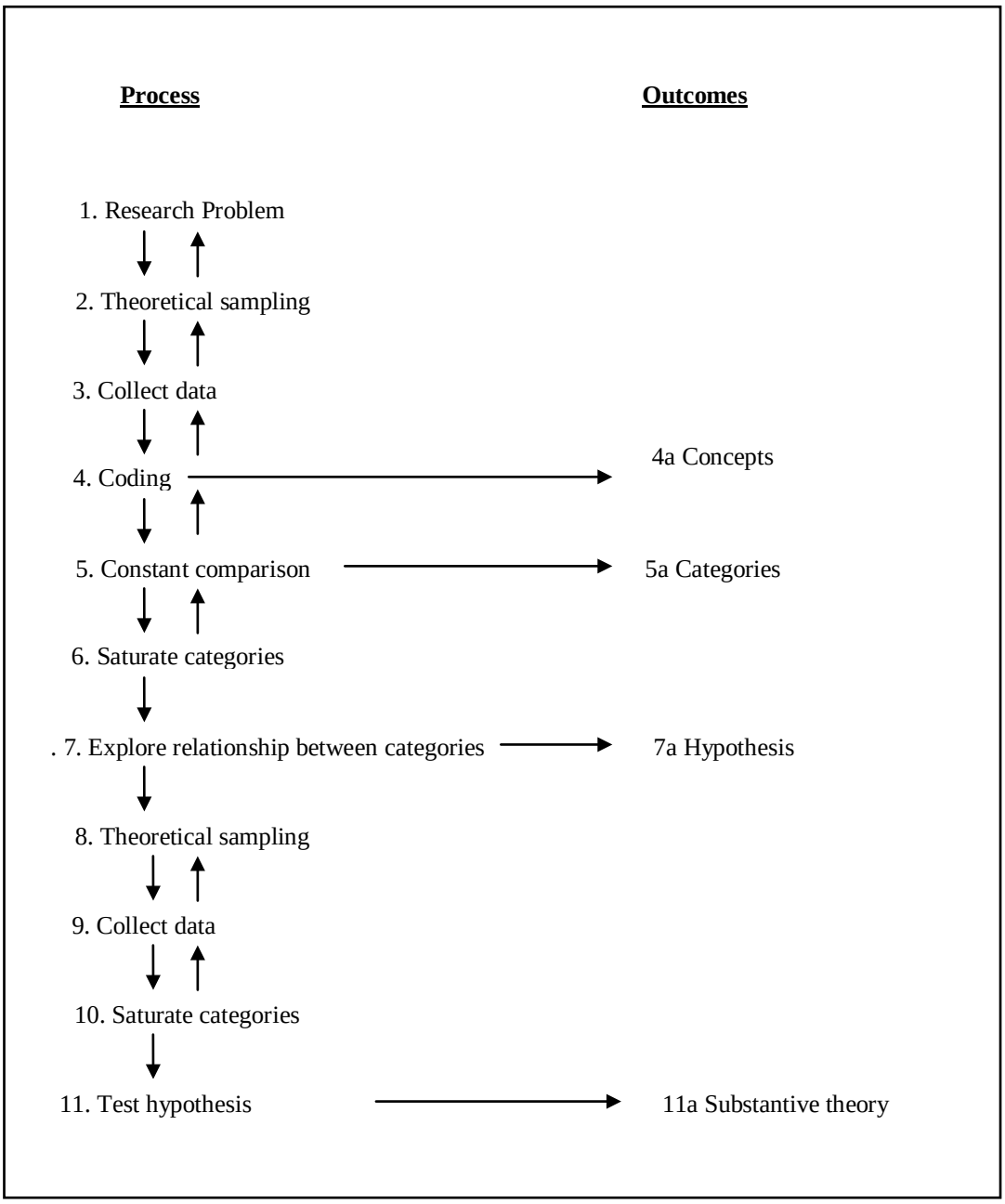
Step 7: Relationships between categories are explored in such a way that a hypothesis about connections between categories emerges (Step 7a).

Steps 8 and 9: Further data is collected via theoretical sampling.

Step 10: The collection of data is likely to be governed by the theoretical saturation principle.

Step 11: Testing for the emerging hypothesis leads to the specification of substantive theory (step 11a).

These 11 steps—as indicated in Figure 3.1—show the vertical relationship (sequence) between steps. These 11 steps are explained further in the next section. The explanation is divided into six items including:, sampling strategy, data collection, theoretical sampling, profile of key informants, interviews, and grounded theory tools. Grounded theory tools consist of: memo writing, constant comparison, theoretical sensitivity and the use of qualitative data analysis software.



Source: Bryman 2008, p. 545

Figure 3-1 : Process and outcomes in grounded theory.

3.5.1 The sampling strategy

The grounded theory method requires data collection and analysis to occur simultaneously. Thus the sampling procedure differs according to the type of coding in which one is engaged. In open or initial coding, one engages in open sampling.

During axial coding, one employs relational and variation sampling. In selective or focus coding however, one normally conducts discriminate sampling (Strauss and Corbin 1990).

The researcher selects persons, sites and documents in order to maximize opportunities comparative analysis (Strauss and Corbin 1990). This process aims at gathering necessary data to saturate categories to finalise the research. Initially, the selected participants were PWDM project managers, chosen based on the following four eligibility criteria that were applied to produce significant differences (by maximising similarities and dissimilarities) in project experience, uniqueness and frequency across project manager in PWDM.

1. They had experience managing projects for more than 10 years. Ten years is the suitable time to indicate the maturity project manager in the project management field.

2. They were responsible for delivering a current project worth more than $AUD 5 million—according to the main contract condition signed between the PWDM and the main contractor and subcontractors on the project under construction. $AUD 5 million cost project will give the complexity and variety stakeholder involved.

3. They were working on-site with a project team, the client/owner and other project stakeholder of the project, who were from one of the two modes—conventional mode, and design and build mode. Both modes give more involvement of PWDM project manager compare to others mode such as BOT (Built on Transfer).

4. The project type was either building (hospitals, schools and other government buildings) or infrastructure (roads, bridges and airports). This will give the same environment of PWDM project manager involvement as the project can be non-physical such as change management project.

3.5.2 Data collection

There are three main categories of data in grounded theory research: field data (notes), interview data (notes, recording, transcripts) and any existing literature and artifacts that may be useful to the study—for example, the minutes of site/project team meetings (Douglas 2003).

The setting for this study is the Public Works Department of Malaysia (PWDM). This project arises from the experiences of the researcher in working at the PWDM for more than 18 years (1993 – 2011).

As a staff member of the PWDM and with the approval of ethic, the researcher has access to the SKALA, a database containing all projects handled by the PWDM in all stages of projects: planning phase, design phase, procurement phase, construction phase, and handover phase. The researcher also has access to the SEPAKAT, a database containing all the project manager profiles within the PWDM. Based on SEPAKAT database, the researcher initially telephoned participants and informed the objective of the research. If the participant expressed interest, the researcher set up an appointment to conduct the interview. Before the interview process began, the researcher prepared two forms: Information sheet and a consent form (see Appendix 1 and Appendix 2).

The researcher has attended the PWDM directors' meeting to gain the latest development information of the PWDM and also attended a seminar organised by the PWDM to build a network with project managers who reside in scattered locations in Malaysia. The preliminary data reviewed included: PWDM documentation, collected current copies of all project progress reports, recent annual reports and strategic business plans, minutes of PWDM directors' meetings and a list of training sessions attended by project managers. Data collection of this background information was taken during the pilot interview on December 2006.

The main data was collected from the in-depth semi-structured interview with PWDM project managers and PWDM project managers' supervisors. The face-to-

face interview was semi-structured to allow the experiences, characteristics, attitudes, behaviours, and beliefs of project managers to be fully explored—yet flexible enough to pursue any interesting observations or deviations. In this study, the interviews were approximately 45 minutes in length. With the permission of the participants, the interviews were recorded by using MP3 voice recordings with USB storage. These are easily replayed in Windows Media Player on a computer. The researcher conducted the first set of interviews on a pilot basis, and some preliminary data analysis was undertaken to refine the interview questions. The Interviews were conducted over a four month period between June 2007 and October 2007.

Participants were first asked to define project management, and later to reflect on and explore the 'lived experience' of a specific project, focusing on discussion of the tools, knowledge, and skills they used in that instance. In this way, the participants provided both their understanding of 'project management' and practical knowledge of the realities of how they conduct themselves in local situations in the pursuit of managing projects. Towards the end of the interview, the researcher engaged in more collaborative discussions of the nature of the gaps or contradictions between what the participants knew to be good project management practice from traditional discourse and what they had to do for their project to be successful.

3.5.3 Theoretical sampling

The approach of grounded theory insists that samples are chosen when they are needed rather than before the research. Initially, this means that as concepts are identified and the theory starts to develop, further samples may need to be incorporated over time. In this way, the foundations of the findings are strengthened. This is known as theoretical sampling. Theoretical sampling is the purposeful selection of a sample according to the developing and emerging theory (Goulding 2002).

As the analysis is carried out, there is a need to obtain information (data) from other groups of people—not depending on the project managers' perspective alone. The

researcher interviewed project managers' supervisors, project team members, competency development and human resource managers. Seventeen project managers (PM), five project manager supervisors (PMS), six project team members (PT), two competency development (CD) and one human resource manager (HRM) participated in this research as referred to in Table 3.1 below.

Table 3.1 : The sample

No.	Participant	Number	Percentage
1	Project manager (PM)	17	54.8
2	Project managers' supervisors (PMS)	5	16.1
3	Project team members (PT)	6	19.4
4	Competency development (CD)	2	6.5
5	Human resource manager (HRM)	1	3.2
	Total	**31**	**100**

3.5.4 Profile of key informants

Appendix 3 shows the participants' profiles, where 31 individuals were interviewed. The sample is made up of 27 males and four females—with an average age of 48.4 years, ranging from 39 years to 56 years. The length of time each individual had been working at PWDM varied from 13 to 30 years with the mean length of 22.2 years. Initially 17 project managers and five project manager supervisors were interviewed. Then there was a need to interview six project team members, an additional two competency development officers and one human resource manager.

Today, the total population of professional staff in the PWDM is around 3,600 people (Public Works Department of Malaysia 2006). Most of them are project managers (20 per cent), project manager supervisors (five per cent) and project team members (75 per cent). Initially, great efforts were devoted to having representative participants from every group and not depending on the project managers' perspective alone. The researcher returns to the field to interview participants until saturation of data is achieved—that is, when no new properties emerge from the data,

all elements of the substantive theory are discovered, and the relationship between categories has been validated (Glaser and Strauss 1967; Strauss and Corbin 1990). Saturation was achieved by the 22nd interview. However a further nine interviews were performed to ensure that the data were full and theoretical saturation was complete. All of these nine interviews were conducted with non-project manager: six project team members (PT); two competency 4(CD): and one human resource manager (HRM) to reach a triangulation of data.

3.5.5 The interviews

Although the study did not begin with a hypothesis to test, an underlying research question generally is posed—such as, 'What are the most effective approaches for understanding the practical world of the project manager?' In addition, 'Why do project managers in this organisation have variances in delivering project success?'

In the first duration of the interview, the researcher asked about some preliminary background of project managers' career histories, experiences, and perceptions of the significant operating values and beliefs of project success. In the middle of the interview, the topics covered include: the practice of project management process, the experience of managing a project, any issues and problems in carrying out tasks, factors influencing the success of a project, the skills, knowledge and attitude needed by project managers, and the characteristics of project success. As the research progressed, the topics and questions were revised according to the emerging concepts and categories that were discussed accordingly. At the end of each event interview, the researcher asked for any other details or pieces of information that the participants felt were relevant. Appendix 4 shows detail of interview questions which are based on research questions.

3.5.6 Grounded theory tools

Memo writing:

An important activity during coding is the writing of memos. Memo writing is the intermediate step between coding and writing paper drafts (Charmaz 2000). At

certain points, when data is being coded, an idea might strike—and if not recorded, the researcher loses the thought. Memos are ideational, but they are sparked by the data, and in this way they are grounded (Stern 1980). Table 3.2 shows the example of theoretical notes written for this study.

Table 3.2 : Example of theoretical notes

Concepts	Theoretical Notes
Contractor	All of the participants (PWDM project managers) talked about how they deal with the main contractor. Some of them deal with competent main contractors, whereas others deal with incompetent main contractors. Most of the participants mentioned that the biggest challenge in project management is dealing with incompetent main contractors and suggested that project success factors are due to competent main contractors. Nevertheless, some of the participants argued that incompetent main contractors are not a project success factor as long as the PWDM project manager is competent—which will still make the project a success. The question right now is which factor is the most dominant, PWD competence or main contractor competence? If both of them are competent, of course the project will succeed—and if both are incompetent, then most probably the project will fail. But what if only one of them is competent?
PWDM project manager	The PWDM project manager's role is to help the main contractor solve project problems—and not only to help, but monitor, verify, facilitate, and educate the main contractor. Why? Because of his responsibility and answerability to the client for project progress and because the project manager is the one who makes promises to clients to deliver the project on time, within the cost and quality required. So the main contractor is only a tool to make the PWD project manager's promises come true. The project manager becomes the main contractor's shadow. This is not a correct metaphor because a shadow cannot do anything to help. What about twins or brothers and sisters? They have very close relationships among each other, due to taking care of the same baby (project). They are the father and mother of the project. In real life, a baby can survive even if it only has a father or mother. But in this 'project situation' both parties are needed. Why? Can a project be built that only has a PWDM project manager? No, because PWDM project managers do not have the resources (mains power, machines, materials) to execute the project. PWDM project managers only represent clients in order to take care of client interests. Can we build projects without PWDM project managers? No, because PWDM project managers are the ones who know what clients need and make sure everything follows government circulars. They need each other, just as it 'takes two to tango'.

Constant Comparison:

The constant comparative method means: (a) comparing different people—such as, their views, situations, actions, accounts, and experiences; (b) comparing data from the same individuals with themselves at different points in time; (c) comparing

incidents; (d) comparing data with a category; and (e) comparing categories (Charmaz 2000; Walker and Myrick 2006; Glaser and Holton 2004).

This facilitates the creation of categories and their relationships with one another, for patterns, themes and processes involved in the project manager's experience of managing projects. The theoretical rigour and relevance of these categories is enhanced by constantly comparing interview data as it is analysed with previously published research into project managers and project management.

Table 3.3 shows the example of constant comparison in comparing different participants and the actions and conditions faced by project managers in this research.

Table 3.3 : Example of constant comparison

Participants	The conditions faced by project managers	Actions performed by project managers
Project manager no. 1	Experience	Solving problems
	Transferable	Making the best of everything
	Trust	Accepting
Project manager no. 4	Middle man	Knowing what to ask
	Used by the end user	Coordinating
	User busy	Facilitating
	PIP—project implementation plan	Interfacing
	The biggest IT project	Controlling
Project manager no. 5	Inexperienced main conductor	Rescuing
	Victims	Involving
	Greedy main contractor	Practicality
	Backup from political power	Using contract statement
	High profile projects	Gaining experience
	Doing work not requested	Terminating main contractor
Project manager no. 6	PWDM headquarters	Designing
	PWDM state	Planning
	PWDM district	Supervision
	Fulfill client needs	Visualising client needs
	Attitude to learn	Capturing
	Cannot trust consultant	Checking consultant work
	Design not suitable	Outsourcing
	Being in critical situation	Relationship
	Honour promise given	Obligation
	Complexity	Reasoning
Project manager no. 11	Scientist	Judging
	Cannot trust main contractor	Innovating
	Firm but flexible	Creative thinking
	Unsolved problems	Bending the rules

Participants	The conditions faced by project managers	Actions performed by project managers
	Technical problems	Leading main contractor
	Involving financial problems	Providing provisional in the contract
Project manager no. 12	Teamwork	Sharing mindset
	Malay culture – 'merendah diri' (humble)	Sharing same dream
	Play Save	Pushing
	Technical Problems	Pulling
	Malaysian contractor style	Guiding
	No Acknowledgement for project manager	Verifying

Theoretical Sensitivity:

Glaser (1978) developed this concept in 1978 to assist researchers to associate their analyses, categories or concepts into theories. One of the principles of theoretical sensitivity is that researchers have pure thoughts on data, without interruption from previous literature. This idea comes from the concern that earlier thoughts or effects from the literature may contaminate, stifle, or otherwise impede the researcher's efforts to generate categories (Glaser 1992).

Theoretical sensitivity pertains to researchers' biases, assumptions, patterns of thinking, and knowledge gained from experience and reading—which enables their creativity in seeing and discovering theory in data (Strauss and Corbin 1990, 1998). Researchers have to use knowledge and experience as an advantage and not to obscure vision.

To gain theoretical sensitivity, Charmaz (2006) suggests looking closely at studied life from all different perspectives and making comparisons, following leads, and consequently building on ideas. The belief is also that using gerunds (to prompt thinking about action) in coding and memo writing fosters theoretical sensitivity. This research also mentions that when doing the coding, coding for themes rather than just actions contributes to remaining at a descriptive level.

Strauss and Corbin (1990) list five techniques that can be used to enhance theoretical sensitivity. They include: the use of questioning; analysis of a single word, phrase, or sentence; the flip-flop procedure; making comparisons, both close-in and far-out; and waving the red flag. Table 3.4 shows the example of techniques that can be used to enhance theoretical sensitivity in this research.

Table 3.4 : Example of techniques used to enhance theoretical sensitivity

Techniques used to enhance theoretical sensitivity	Description
The use of questions.	Previous experience is very important to build trust between the project manager and main contractor. Why is it important to build trust between the project manager and main contractor? What type of relationship is needed between the project manager and main contractor? Experience is gained through work transferability from one project to another. Using this experience can solve problems. What kind of problems need to be solved? Will the new project manager without experience be trusted by the main contractor? What happens if the main contractor doesn't trust the project manager? Why are project managers central to project progress? What is the meaning of being the central figure? What are the properties of experience? What is the experience dimension? Is this the 'making the best of everything' process? Or is it the process that is all about being at the centre of project progress?
Analysis of a single word, phrase, or sentence.	From the NVivo analysis, 13 participants mention transfers. There are two meanings of 'transfer'. The first is regarding transfer on location at work and the second is about the transfer of responsibility in each phase of the project. Transfers can be used as punishment. Competency development no. 2 talks about transferring the blame to others. Project manager supervisor no. 3 talks about the project being transferred from or to the PWDM.
The flip-flop procedure.	Using the flip-flop technique, comparing the relationship between PWDM project managers with main contractors is quite similar to the relationship between supervisor and PhD student. The relationship between lecturer and student is bonded by the aim of giving education to the student. How about the relationship between the PWDM project manager and main contractor? What name should be given to this kind of relationship? Can it be called a partnership? If they are partners, they are on the same level. Bear in mind that the PWDM project manager is the one who recommends payment to the main contractor. So, within the power hierarchy, the PWDM project manager has higher power than the main contractor. The PWDM project manager can make the main contractor's life difficult by not giving a recommendation for payment. But the main contractor can also make the PWDM project manager's life difficult by slowing down execution of the project, as the PWDM project manager needs to give reports to the client. It is a unique relationship.
The making of comparisons, both close-in and far-out.	There are a few concepts that emerge from the data: experiencing, transferability, solving problems, trusting, acceptance, making the best of everything, and central to project progress. The summary is, project managers get transfers and gain experience in solving problems, by accepting critical situations and making the best of everything, so as to make the project a success.

Use of Qualitative Data Analysis Software:

Qualitative data can be vast and overwhelming, unless it is carefully organised and detailed (Hahn 2008). The researcher uses NVivo to manage this overwhelming problem. NVivo is the latest version of the software from QSR International—software that was previously known as NUD*IST or Non-numerical Unstructured Data, providing ways of managing ideas by Indexing, Searching and Theorising—(Myers 2008).

Coding is recorded using the qualitative software QSR NVivo. NVivo analysis allows the interview records to be browsed, linked and coded into meaningful categories, as well as to be given attributes and values and managed in sets (Richards 1999b). Units of meaning, grouped into categories, are given labels from which concepts are developed to allow theories to emerge.

Myers (2008) recommends using good qualitative data software (QDA) for those who use grounded theory, because this software makes the data analysis procedure (code, search and retrieve) significantly quicker and easier. Furthermore, Weitzman and Miles (1995) mention that QDA software helps the qualitative researcher in terms of productivity.

3.6 Grounded theory analytical steps

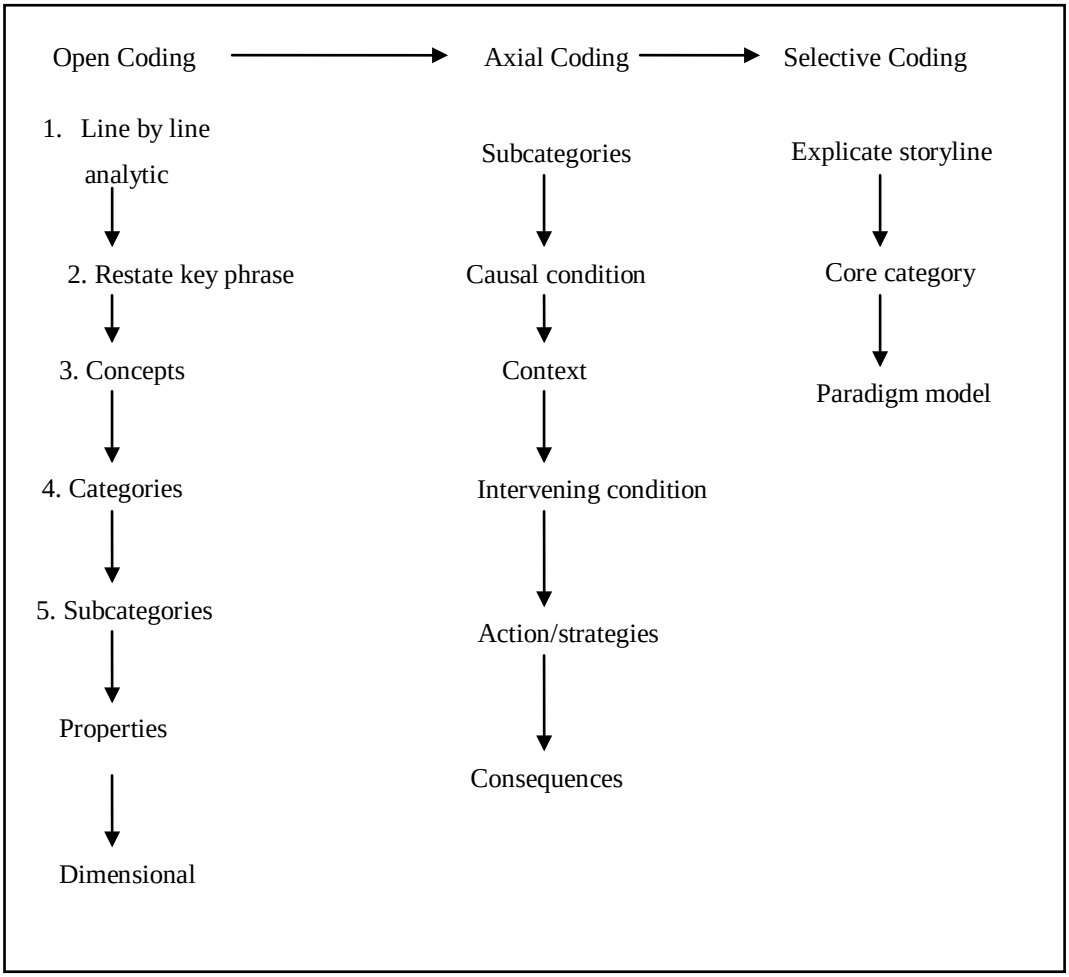
Figure 3.2 shows grounded theory analytical steps. Strauss and Corbin (1990) distinguish between three types of coding practice:

Open coding: This coding involves the process of breaking down, examining, comparing, conceptualising and categorising data (Strauss and Corbin 1990). This process of coding basically aims to yield concepts, which are needed later to be grouped and turned into categories (Bryman 2008).

Axial coding: This coding basically provides procedures to put the data back together in new ways after doing open coding, by making connections between the categories involved (Strauss and Corbin 1990). This is conducted by linking codes to contexts, consequences, patterns of interaction, and cause (Bryman 2008).

Selective coding: This coding focuses on illustrating the procedure of selecting the core category and then systematically relating it to other categories. Validating those relationships, and filling in categories that need further refinement and development is also involved (Strauss and Corbin 1990). A core category is the central issue or focus around which all other categories are integrated. It is what Strauss and Corbin call the storyline that frames your account.

Dey (1999) emphasises that coding is particularly used to 'ground' the theory in data. This means that the researcher (1) identifies categories and concepts that emerge from text through open coding and (2) links the concepts into substantive and formal theories through axial coding and selective coding (Glaser and Strauss 1967; Strauss and Corbin 1990). Analysis thus begins early. Data is coded as it is collected. A thorough coding concept is defined and categories are identified. In grounded theory coding, codes are created simultaneously as the data is being studied. Coding helps gain a new perspective on data and to give focus to further data collection. It may lead off into unforeseen directions (Charmaz 2000).



Source: Strauss and Corbin (1990); Eaves (1997).

Figure 3-2 : Diagrammatic representation of coding and analysis of grounded theory (GT) data.

3.6.1 Open coding

Coding means to categorise segments of data and label them with a short name that simultaneously summarises and accounts for each piece of data. These codes show how we select, separate and sort data begin an analytical accounting of them (Charmaz 2006).

There are five steps in open coding as described in the next paragraph.

Step 1: *Underline key terms in the transcript*:

Interviews were manually transcribed and coded by the researcher. The researcher reviewed each interview transcript, extracted verbatim sections, and recorded them on separate sheets of paper to represent the core of an individual's statement. The transcript was formatted into two columns. Line by line (Charmaz 2006; Corbin 1986; Chesler 1987) is done by underlining key terms in the text in the left column. This first step is important to ensure that the context of key phrases is contained in the original text without fail (Chesler 1987). Coding is the essential link that connects data collection and the development of an emergent theory to explain this data. Coding helps define what is happening in the data and further begins to grapple with what it means (Charmaz 2006).

Step 2: *Restate key phrases*:

The underlined text is written back into the right column as the restated key phrase, as indicated in Table 3.5 below.

Table 3.5 : Example of restated key phrases

Underline Key Terms in the Text	Restated Key Phrases
I act as project director representative—which is my role. The contract is design and build. My project team is quite skeletal, consisting of one project engineer and one architecture technician to help me. The rest is the consultant and contractor teams. My role is to execute the contract and then to monitor and make sure the project is completed on time.	Design and build Consultant Contractor Execute the contract Monitor
Project management's objective is to make sure the project is done within the specified time and cost. These are the two things you must control: time management and money management. In doing so, you must also be aware that this is part and parcel of doing projects.	Project done within specified time and cost
It is not easy because when I received this project, we already had contract documentation with a needs statement and drawings to follow. I had to make a decision about which part we entertain and when we have to put our foot down. From my personal experience, toward the end the client wants to reorganise the layout of the area… toward the end! I only had two months to hand over the project. I put my foot down and said we couldn't do it because it was unreasonable. If they wanted to do it, they could do it after I finished the project.	Contract documentation Needs statement and drawings The decision about which part we entertain The client wants to reorganise the layout
PWDM have all kinds of tools to track it. We have CPM and we just used it and made sure the contractor followed it and used these tools.	Tools to track
Your attitude must be right. You are willing to do all the work. Your	Attitude must be right

Underline Key Terms in the Text	Restated Key Phrases
personal relationships must be good and you can approach various staff right up to the director. To get the work done, I go from the bottom to the top. You must have knowledge and expertise. To me, why this project is successful is because I have previous experience that helps me make a lot of decisions on this project. And the contractors trust that I know these things, so they do as I plan.	Willing to do all the work Personal relationships must be good Go from the bottom to the top Knowledge and expertise Previous experience Make a lot of decisions Contractors trust
The biggest challenge is to understand the contractor setup. 'Who's who' among the contractors. Because sometimes as project manager you must identify who are your stakeholder. It is easier in the PWDM setup. But in the contractor set up, they have quite a tricky setup, because they like to subcontract the job. So I have to identify who has the power to set the job within their setup. That is the first that I must identify. It is not that simple. I have to accept that this is the way they do things in Malaysia. As project manager on this project, I can't solve that problem—it can only be solved by the prime minister or public works minister. I must accept it. At the same time, I must educate these people that they must not take the money and run. That is the challenge. I manage to solve it.	Understand the contractor setup, Who's who? Identify who is your stakeholder Who has the power to set the job Must educate these people that they must not take the money and run.
You must make the best of everything.	Must make the best of everything
The issues are that you must identify what are the stumbling blocks of the project—such as: materials, approval from the authorities and having to make fast decisions from day to day. When the contractor wants the answer, we must prepare the answer. We must not delay. Another thing that is important in making the project successful is that we must make sure the contractor gets paid. That's the most important thing. But I must make sure they do the job correctly, otherwise how can I pay them? For me, it is better to make a decision than to not make a decision. It is as simple as that. If we make a mistake, we make a mistake. But it is better to make a decision than to not.	Identify what are the stumbling blocks Approval from the authorities Fast decisions The contractor gets paid Make sure they do the job correctly Better to make a decision than to not make a decision
The execution of the project. Because as the project manager, you are the centre of the project. I view it that way. Whatever people want to know or want to get done, they have to go to the project manager. So the project manager will affect the success or the failure of a project. But if the project manager does not feel responsible for the project, and is not the main person running around orchestrating the project, it won't be successful. I feel in this project, they will get me for anything and will get it done.	Project manager The centre of the project The project manager will affect the success They will get me for anything and will get it done.

Step 3: *Reduce the phrase and create concepts*:
Analyses the reduced phrase and finds the similarities and differences between them and groups them into concepts as indicated in Table 3.6 below.

Corbin and Strauss (2008) stress that concepts or themes are the basic foundation of the analytical method. These concepts represent the analyst's impressionistic understanding of what is being described in the experiences, spoken words, actions, interactions, problems, and issues expressed by participants.

Table 3.6 : Example of reducing phrases and creating concepts

Restated Key Phrases	Concept
Main contractor is not an expert in building construction but in road work only. Main contractor experience. Main contractor who has knowledge and knows what to do. Special items like ID (interior decoration) and finishing—which the contractor is not used to. The main contractor is from Perlis and has no experience in dealing with the Putra Jaya local authority—which creates so many problems. The owner of the contractor company will not listen to PWDM advice. Main contractor has connections to the top man in the state.	Lack of contractors' experience
Educate the main contractor to not take the money and then run away. Main contractor desperately wants VO (variation order). Main contractor's finances Contractor manipulates contract to get more VO (variation order). Main contractor wants to give a bribe.	Contractor's financial difficulties
To understand the contractor set up, who's who? NSC (nominated subcontractor) working very slow compared to the main contractor. Cannot follow the main contractor's rhythm.	Lack of competent subcontractors

Step 4: *Similar concepts were grouped together to develop categories*:

Analysis is a process of generating, developing, and verifying concepts. This is an important process that builds over time, together with the acquisition of data. One derives concepts from the first pieces of data. Some of these concepts are compared for similarities and differences, as opposed to the next set of data.

Concepts are expanded if there are new ideas in the data, by adding new concepts to the list of concepts. This is used especially when considering new data, and it seems that another term would be more appropriate. It is important to keep in mind that if a researcher knew all the relevant variables and relationships in data ahead of time, there would be no need to do a qualitative study (Corbin and Strauss 2008)..

Glaser (1978) suggests several rules that may impact on open coding to assure its appropriate use and success. The first rule is to ask a set of questions of the data which must be kept in mind all the time. The most general questions are:

1. What is this data a study of?
2. What does the data suggest or pronounce?
3. From whose point of view?
4. What category does this incident indicate?
5. What category or property of a category, or what part of the emerging theory, does this incident indicate?
6. What theoretical category does this specific data indicate?
7. What is actually happening in the data?
8. What process is the issue here? How can I define it?
9. How does this process develop?
10. How does the research participant (s) act while involved in this process?
11. What does the research participant (s) profess to think and feel, while involved in this process?
12. When, why, and how does the process change?
13. What are the consequences of the process?

The researcher continually modifies these initial categories, eliminating old ones and adding new ones to account for the newly acquired evidence. The researcher modified Miles and Huberman's (1994) contact summary sheet to aid reflection and the process of combining and merging the data. All linkages were made manually by the researcher and were based on the emerging phenomenon of the nature why do project managers in this organisation have varying outcomes in delivering project success, based on their own experiences and perceptions.

This particular sheet asked specific questions to help the researcher to frame thinking processes about each interview (Schmidt 2000). Table 3.7 shows an example of a contact summary sheet.

Table 3.7 : Example of contact summary sheet

1. What were the main issues or theme that struck you with this contact?	Q2. Summarise the information you got (or failed to get) about each of the target questions you had for this contact.	Q3. Anything else that struck you as salient, illuminating or important in this contact?	Q4. What's new (or remaining) target questions do you have in considering the next contact?	Reflective remarks.
PM12 mentioned about getting a hard time due to the constraints of site space not properly taken care of during planning—which had been done by others.	Cooperation from the person who did the planning is very minimal.	The transfer responsibility between planning stages and construction stage is very important and it should be done properly, otherwise the construction will encounter hard times.	Must ask others in terms of the level of cooperation they have been getting from the person who did the planning.	PM12 was a very experienced project manager and had managed many projects.

In total, 213 concepts emerged in the open coding process. These concepts have been reduced to 21 categories through the process of comparative analysis, seeking a common theme and associated meaning. A full list of these categories is shown in detail in Table 3.8 below. It is shown category of: project ambivalence contains 9 nos. of concepts; project stakeholder contains 15 nos. of concepts; technical risk contains 9 nos. of concepts; external risk contains 10 nos. of concepts; National

culture contains 10 nos. of concepts; recruitment contains 6 nos. of concepts; training initiative contains 5 nos. of concepts; project autonomy contains 7 nos. of concepts; role conflict contains 9 nos. of concepts; leadership contains 18 nos. of concepts; problem solving contains 15 nos. of concepts; reflective practitioner contains 13 nos. of concepts; teamwork contains 7 nos. of concepts; innovating contains 17 nos. of concepts; intrinsic goals contains 5 nos. of concepts; tangible results contains 8 nos. of concepts; user satisfaction contains 7 nos. of concepts; reconciling competing stakeholder goals contains 7 nos. of concepts; being intermediary contains 7 nos. of concepts; interfacing contains 9 nos. of concepts; and project alignment contains 20 nos. of concepts.

Table 3.8 : Full list of concepts and categories emergent from research

Concepts	Categories
1. Balance three items: time, cost and quality 2. Complicated and complex 3. Variety of stakeholder goals 4. As a public sector—give service free of charge 5. Can not afford to fail 6. Construction industry as a wheel 7. Every minute costs money 8. High-profile project 9. Managing 4M effectively and efficiently	(1) Project ambivalence
10. Client's ambiguous requirement 11. Lack of end-user representative 12. Delay of payment by client 13. User busy Lack of contractor' experience 14. Contractor financial difficulties 15. Lack of competence subcontractor 16. Wrong choice of contractor and consultant 17. Greedy main contractor 18. Multiple subcontractors 19. Silent war between project manager and main contractor 20. Bribing 21. Lack of commitment among project team members 22. Consultants' designing more to contractor interest 23. Paymaster 24. Incompetent consultant	(2) Project stakeholder
25. Shortage of materials 26. Shortage of human resources 27. Interference due to constructive change orders	(3) Technical risk

Concepts	Categories
28. Risk 29. Space constraints 30. Unrealistic project schedule 31. Vendor prepared for one size fit all 32. Over design–scale of fee interest 33. Inappropriate designing—errors and omissions in drawings	
34. Backup from politics 35. Top management support 36. Involvement of political power 37. Legal issues arising due to local government rules and regulations 38. Need to comply with variety of authority requirements 39. Poor site conditions and layout 40. Inaccurate site investigation 41. Weather 42. Hot sun 43. Severe weather problem—rainy	(4) External risk
44. Focus on urgency condition 45. Not focus on important condition 46. Play safe 47. Saving face 48. Not keep personal things out 49. Malay culture (humble—'merendah diri') 50. Being a Muslim 51. Compromising a lot 52. Malaysian contractor style 53. Power distance	(5) National Culture
54. Right career path 55. Not all want to be project managers 56. Dictator oriented 57. PWDM staff transferable 58. Transferability 59. PWDM structure	(6) Recruitment
60. PMBOK knowledge 61. No formal training 62. Competency standard in progress 63. No training institute 64. Competence level assessment	(7) Training initiative
65. Project pull back any time 66. Transfer responsibility 67. No choice in accepting the project 68. Design versus construction 69. Transfer the blame 70. Project Management Plan (PMP)	(8) Project autonomy

Concepts	Categories
71. Competing the same resources	
72. Role ambiguity 73. Oversees things 74. The project manager is like Hang Tuah—job not being recognised 75. PWDM as main contractor to client 76. PWDM DG secular 77. PWDM expectation 78. Role conflict 79. Victims 80. Inferiority complex	(9) Role conflict
81. Leadership skills 82. Can work with anybody 83. Communication skills 84. Confidence 85. Diplomacy 86. Divine 87. Goal oriented 88. Independence 89. Just do it 90. Optimistic/pessimistic 91. Personnel relationship 92. Positive attitude 93. Resilience 94. Skill in use of power, influence and negotiation 95. Technical knowledge 96. Understanding system 97. Knowing what to ask and to do 98. Motivate	(10) Leadership
99. Technical Knowledge 100. PMBOK 9 knowledge 101. Well verse with contract 102. Decision maker 103. Firm with flexibility 104. Guide the contractor 105. Lead problem solving 106. Make it happen 107. Nothing is impossible 108. Obligation 109. Responsibility 110. Supervision 111. Teacher 112. Slow decision-making 113. Solving hard (technical) and soft (human) problems	(11) Problem Solving
114. Valuable Previous Experience	(12) Reflective practitioner

Concepts	Categories
115. As a new experience 116. Gap between theory and practice 117. Attitude to learn 118. Exposure 119. Cannot read from the book 120. Challenging 121. Foresee before it happens 122. Judging 123. Knowledge—how to use it 124. Leaner—all the tricks 125. Willing to learn 126. Knowing what to ask and to do	
127. Teamwork 128. Team spirit 129. Trust 130. Coordination 131. Willing to work and hands on 132. Blamer 133. Follower	(13) Teamwork
134. Creative, innovative and simplified 135. Benchmarking 136. Best of everything 137. Building something from nothing and make it a landmark 138. Capturing 139. Don't break the rule, just bend it 140. Excitedly solving puzzles 141. Mock-up 142. Make the best of everything 143. Networking with the external and internal stakeholder 144. Practicality 145. Problem Solver 146. Reasoning 147. Scientist 148. Survival—assess the situation 149. Take whatever to get the job done 150. Trial and error action	(14) Innovating
151. Feel good 152. Learn a lot of things during implementation 153. Ownership 154. Proud to say it was my project 155. Recognition	(15) Intrinsic goal
156. Come out with a good product 157. Complete as per drawing and specification 158. Complete with agreeable cost	(16) Tangible result

Concepts	Categories
159. Complete at right time 160. Complete with quality required 161. No defects at the end of the project 162. No serious user accidents 163. We want to see it again	
164. Can be used by the end user 165. Customer oriented 166. Doing right by the customer 167. Manage to fulfil client requirements 168. Project completes as desired by client 169. Visualising client needs 170. Zero public complaints	(17) User satisfaction
171. Bring the goal together from various stakeholder 172. Managing project stakeholder 173. Sharing mindset 174. Sharing same dream 175. Auditing 176. Multiple backgrounds 177. Checker	(18) Reconciling competing stakeholder goals
178. Central or middle man 179. Confrontation 180. Coordinator 181. Facilitating 182. Helping 183. Lack of communication of requirements 184. Mediating	(19) Being intermediary
185. One stop agency 186. Allocate entire event in the contract 187. Contract 188. Compromise and partnering 189. Interfacing 190. Not forcing—higher handed 191. Lack of cooperation from local authorities 192. Lack of good relationship with project manager 193. Lack of involvement during construction stage	(20) Interfacing
194. Synchronising 195. Pushing 196. Rescuing 197. Resolving 198. Total concept 199. Validation 200. Verifying 201. Collaboration 202. Continuous process	(21) Project alignment

Concepts	Categories
203. Controlling 204. Involvement 205. Monitoring 206. Planning 207. Pulling 208. Being critical situation 209. Complex setup 210. Depends on other executor 211. Trying their luck 212. Knowing what to ask and to do 213. Executing the contract	

Step 5: *Coding categories with properties and dimensional properties:*
Analysis is the act of giving meaning to data. This version of the analysis involves taking the data apart, conceptualising it, and later developing these categories in terms of their properties and dimensions, in order to determine what the parts can tell us about the whole.

In a preliminary study, the analysis is usually more detailed or microscopic. This is understandable. In normal situations, before arriving at any interpretation, the researcher needs to explore all possibilities. Later on, the analysis will tend to be more general in order to fully develop and validate the interpretations (Corbin and Strauss 2008). Table 3.9 shows the coding categories with properties and dimensions. The properties and dimensions were used for confirmation in the data and looking for possible exceptions in amending the theory later on.

Table 3.9 : Open coding categories with properties and dimensions

Categories	Properties	Dimensions	
(1) Project ambivalence	Type	Tangible	Intangible
(2) Project stakeholder	Relationship	Direct Internal	Indirect External
(3) Technical risk	Impact Cause	Low Internal	High External
(4) External risk	Impact Cause	Low Internal	High External

Categories	Properties	Dimensions	
(5) National culture	Area	Power distance Uncertainty avoidance Individualism Masculinity	Collectivism Femininity
(6) Recruitment	Level	Mature	Not matured
(7) Training initiative	Type	Formal	informal
(8) Project autonomy	Impact	Low	High
(9) Role conflict	Level	Clear	Ambiguity
(10) Leadership	Type	Transactional	Transformational
(11) Problem solving	Level	Easy	Hard
(12) Reflective practitioner	Experience	Previous experience	Ongoing experience
(13) Teamwork	Level	Loose	Tight
(14) Innovating	Application	Bend the rule	Break the rule
(15) Intrinsic goals	Level	Achieved	Not achieved
(16) Tangible results	Level	Good	Bad
(17) User satisfaction	Level	Low	High
(18) Reconciling competing stakeholder goals	Level	Converge	Diverge
(19) Being intermediary	Result	Success	Fail
(20) Interfacing	Situation	Fully	Semi
(21) Project Alignment	Positive	Co-alignment	Realignment
	Negative	Misalignment	Nonalignment

The researcher returns to the field to interview project managers and project manager supervisors until saturation of the data is achieved—that is, when no new properties emerge from the data, all elements of the substantive theory are discovered and the relationship between categories has been validated (Glaser and Strauss 1967; Strauss and Corbin 1990). In this thesis, saturation was achieved at the 22nd interview. However a further nine interviews were performed to ensure that the data were full and theoretical saturation was complete.

3.6.2 Axial coding

Axial coding is a set of procedures where data is put back together in new ways after the open coding process. This is done by exploring the relationship of categories and making connections between them (Strauss and Corbin 1990). In order to do this, categories are then applied to a model consists of causal conditions, central phenomenon, context conditions, intervening conditions, interaction strategies, and consequences.

In axial coding, the researcher has to identify a phenomena (a central category about the phenomenon), explore causal conditions (categories of conditions that influence the phenomenon), and specific strategies (an action that results from the phenomenon), identify the (broad conditions that may influence strategies), and intervening conditions (the narrow conditions that influence the strategies) and delineate the consequences (outcomes of the strategies) for this phenomenon.

To help identify patterns of code distribution, separate matrices were developed as aids. These matrices emerged from the data, rather being imposed as an analytical framework on them. They are similar in design to the 'thematic conceptual matrix' developed by Miles and Huberman (1994).

The research analyses all 21 major categories that emerge in the open coding process and group them into the two groups of: conditions group and strategy group. Conditions group is the concept that can answer the 'why' questions, while strategy group answer the 'how' questions. Table 3.10 shows the emerging concept divided into the two groups of conditions group and strategy group.

Table 3.10 : Emerging concept in conditions and strategies

Conditions	Strategies
(1) Project ambivalence (2) Project stakeholder (3) Technical risk (4) External risk (5) National Culture (6) Recruitment (7) Training initiative (8) Project autonomy (9) Role conflict (10) Leadership (11) Problem solving (12) Reflective practitioner (13) Teamwork (14) Innovating (15) Intrinsic goal (16) Tangible result (17) User satisfaction	(18) Reconciling competing stakeholder goals Being intermediary (19) Interfacing (20) Project alignment

Patton (1990) suggests that analysis can be seen as an art as well as science. He believes the aspect of art is heavily imposed on the creative use of procedures to solve analytical problems—and the latter, as the ability to construct a coherent and explanatory story from the data. This is what the 'feels right' concept means to the researcher. The trick is to bring the art aspect into analysis where the researcher must remain flexible in the use of these procedures (Corbin and Strauss 2008) —whereas, the science comes from 'grounding' concepts in data. The analytical part of science can systematically develop concepts in terms of their properties and dimensions, and what is more important, it can validate interpretation by comparing them against incoming data (Glaser and Strauss 1967). The validation process refers more to checking out interpretations with participants and against data as the research moves along (Corbin and Strauss 2008)

The concepts in the conditions group have to be arranged into another four groups of causal conditions, context conditions, intervening conditions and consequence conditions. Relationships between categories are explored in such a way that a substantive theory about the connection between categories emerges. The emerging theory offers a practical framework of human social processes that is grounded in data (Eaves 2001)—and also what happens in actuality (Annells 2004)—to get a thorough understanding about the nature of why do project managers in this organisation have varying outcomes in delivering project success. Table 3.11 shows the emerging concepts divided into the four groups of: causal conditions, context conditions, intervening conditions and consequences conditions.

Table 3.11 : Emerging concept in causal conditions, context conditions, intervening conditions and consequences conditions groups

Causal Conditions	Context Conditions	Intervening Conditions	Consequences Conditions
(1) Project ambivalence	(6) Recruitment	(10) Leadership	(15) Intrinsic goal
(2) Project stakeholder	(7) Training Initiative	(11) Problem solving	(16) Tangible result
(3) Technical risk	(8) Project autonomy	(12) Reflective practitioner	(17) User satisfaction
(4) External risk	(9) Role conflict	(13) Team work	
(5) National Culture		(14) Innovating	

3.6.3 Selective coding

Selective coding (Strauss and Corbin 1990) and theoretical coding (Glaser 1978, 1992) are the last coding processes in the grounded theory methodology and involve the selection of a core category—that category of data that accounts for most of the variation of the central phenomenon of concern and around which all other

categories are integrated. The core categories explicate the story line in Paradigm model and give an explanation on why do project managers in this organisation have varying outcomes in delivering project success. The paradigm model is the essential tool for relating the concepts in grounded theory (Strauss and Corbin, 1990).

Identifying the central phenomenon is most challenging. The researcher has dealt with hundreds of concepts in the process of finding the central phenomenon. There have been many times of disappointment and anxiety. The researcher has considered and assumed many kinds of concepts to be the central phenomenon, starting with the categories of project manager competencies, project manager resilience, project manager one responsibility, project manager as the team leader, becoming competent project manager, project manager role, role bargaining, the experience of the project manager, risk taker, how actions can influence leadership-communication and risk, take the lead, getting ahead, solving problems in managing projects, project manager optimism, overcoming challenges in the project management work environment.

The researcher's mind was full of questions about the category that could better explain the role of the project manager in project success. On the other hand, what is the category that explains the role of project managers' competencies? In the early stages, the researcher was going to use the 'project manager as a problem solver', because the 'problem' is the central phenomenon that has been mentioned frequently by participants—but it was not well suited.

Finally, the researcher discovered the category of 'Maintaining Project Alignment (MPA)' as the central phenomenon. The discovery occurred when the researcher studied all the memos and participants' transcripts continuously and thoroughly, as suggested by Corbin and Strauss —who say that writing long thoughtful memos throughout the research process is the only way to help the researcher to identify this core category. This selection is based on several criteria identified by Strauss (1987) as listed below.

1. *It must appear frequently in the data*: This means that within all or most cases, there are indicators pointing to the concept. All of the participants discussed how they are dealing with main project stakeholder such as: clients, consultants, main

contractors and subcontractors. They discussed issues regarding the challenge of reconciling competing stakeholder goals.

In an ideal situation, every main project stakeholder has their own role. Clients need to inform the PWDM project manager what they want (project brief); then the PWDM project manager prepares the needs statement to be handed to the consultant; then the consultant designs project construction based on the specified requirements of the needs statement. The design drawing is given to the main contractor for construction. The last player who positions himself close to the goal and who needs to make sure he scores a goal is the main contractor.

All of the participants reported how they deal with the main contractor. Some of them are dealing with competent main contractors and some of them are dealing with incompetent main contractors. Most of the participants mentioned that the biggest challenge in project management is dealing with incompetent main contractors.

The participants mentioned how they play a variety of roles in facilitating, interfacing, mediating, monitoring, pushing, rescuing and solving project problems in order to keep the project on track. This phenomenon—called Maintaining Project Alignment (MPA) —has been mentioned frequently by all the participants. Maintaining Project Alignment (MPA) is derived from 20 nos. Concepts as indicated in Table 3.8. This is the category which has the most nos. of concepts.

2. *It must be central:* that is, all other major categories can relate to it and can be placed under it. Maintaining Project Alignment (MPA) is central, as the other 20 categories can be placed under either: causal conditions, context conditions, actions/ strategies, intervening conditions or consequences conditions, as related through the paradigm model. This is shown in Table 3.12.

Table 3.12 : Category in component of paradigm

Component of Paradigm	Description	Category
Central phenomenon	Central category about the phenomenon	Maintaining Project Alignment (MPA)
Causal conditions	Conditions that influence the phenomenon	Recruitment Training Initiative Project autonomy Role conflict National culture
Strategies/actions	Actions that results from the phenomenon	Reconciling competing stakeholder goals Being intermediary Interfacing
Context conditions	Broad conditions that influence strategies	Recruitment Training Initiative Project autonomy Role conflict
Intervening conditions	Narrow conditions that influence strategies	Leadership Problem solving Reflective practitioner Team work Innovating
Consequences conditions	Outcomes of strategies	Intrinsic goal Tangible result User satisfaction

The paradigm model is shown in Figure 4.1 in which the researcher identifies a central phenomenon (a central category about the phenomenon, i.e. Maintaining Project Alignment (MPA)), the causal conditions (categories of conditions that influence the phenomenon, i.e. Critical Success Factors (CSF) consisting of: Project Ambivalence, Project Stakeholder, Technical risk, External risk, and National culture), specific strategies (actions that results from the phenomenon, i.e. Managing Change (MC) consisting of Reconciling competing stakeholder goals, Being intermediary, and interfacing), context conditions (broad conditions that influence strategies, i.e. Organizational structure (OS) consisting of Recruitment, Training initiative, Project autonomy, and Role conflict), intervening conditions (narrow conditions that influence strategies, i.e. Project Management Competencies (PMC) consisting of Leadership, Problem solving, Reflective practice, Teamwork, and Innovating) and delineate the consequences conditions (outcomes of strategies, i.e.

intrinsic goals, tangible results and user satisfaction) for this phenomenon. The detail of these relationships is explained in the next section of this chapter.

3. *The explanation that evolves by relating the categories so as to be logical and consistent*. There is no forcing of data. Maintaining Project Alignment (MPA) is about searching for balance from various angles—first, the balancing of project success criteria such as the triangle of cost, time and quality. Second, the balancing of project success factors such as project stakeholder needs. Third, balancing between project success criteria and project success factors. Fourth, finding balance in transferring responsibility between federal and state levels in the PWDM organisation. Fifth, the right balance between planning and implementation—planning without activity is as worthless as activity without planning. Nevertheless, Dvir and Lechler (2004) mention that plans are nothing, compared to the importance of changing plans.

The strategic process was identified by the researcher as Maintaining Project Alignment (MPA) —placing and arranging project conditions into correct relative position to achieve project success. Maintaining Project Alignment (MPA) is the term used by the researcher to describe the process of placing and arranging project conditions (time, cost and quality) on the right track, by overcoming the entire problem arising from various project stakeholder—while at the same time fulfilling their project management competencies.

4. *The name of the phrase used to describe the central category should be sufficiently abstract*: so that it can be used to do research in other substantive areas, leading to the development of a more general theory. Maintaining Project Alignment (MPA) is derived from 34 nos. concepts as indicated in Table 3.8. These individual 34 concepts are at a descriptive level and their combined meaning is brought to an abstract level called Maintaining Project Alignment (MPA).

5. *As the concept is refined, the theory grows in depth and explanatory power*: as do the other categories related to it through statements of relationship. The core category—Maintaining Project Alignment (MPA) —links together Critical Success

Factors (CSF), the need for project manager competencies and project success criteria. It answers researched questions regarding the nature of project manager competencies and project success in the PWDM. It is all about using competencies to conduct the strategies/actions in order to maintain project alignment—which results in project success.

This is a substantive theory—which has emerged from the researcher's grounded theory study into project management of construction projects in the PWDM, in a non-Western and developing country.

The process of theorising is basically interpretive. It entails not only condensing raw data into concepts, but also arranging concepts into a logical and systematic explanatory scheme. The formulation and implications of this process lead to 'research activity'—which entails making decisions about and acting in relation to a multitudinous variety of questions that enable the researcher to fully explore a topic (Corbin and Strauss 2008).

3.7 Establishing reliability and validity in grounded theory research

Reliability and validity are conceptualised as trustworthiness, rigour and quality in the qualitative paradigm (Golafshani 2003). Nevertheless, without these criteria research is worthless, becomes fictional, and loses its utility (Morse et al. 2002). Research must be rigorous in establishing clearly specified operational procedures (Pandit 1996) which include the activities of: ensuring methodological coherence; sampling sufficiency; developing a dynamic relationship between sampling, data collection and analysis; thinking theoretically; and theory development (Morse et al. 2002).

In the qualitative approach, validity refers to the correctness of the findings (Hoepfl 1997). Validity addresses two issues: credibility or internal validity and transferability or external validity (Guba 1981; Beck 1993). Qualitative researchers usually aim for comparability and translatability of the findings rather than for

generalisation (Huberman and Miles 2002). Reliability or dependability in a study is demonstrated by the extent to which studies can be replicated without bias (Guba 1981). Table 3.13 shows the strategies taken to ensure trustworthiness in terms of credibility, transferability and dependability.

These 12 strategies consist of: prolonged engagement, persistent observation, peer debriefing, triangulation, member checks, structural corroboration (coherence), referential adequacy, collecting and developing thick descriptions, theoretical/purposive sampling, overlap methods, stepwise replication, and audit trails (Creswell and Miller 2000; Guba 1981).

Table 3.13 : Strategies taken to ensure trustworthiness in terms of credibility, transferability and dependability

Quantitative Term	Qualitative Term	Aspect	Strategies Taken to Ensure Trustworthiness
Internal validity	Credibility	**Truth value** How can one establish confidence in the 'truth' of the findings of a particular inquiry—for the subjects (participants) and the context with which the inquiry was carried out?	▪ Prolonged engagement ▪ Persistent observation ▪ Peer debriefing ▪ Triangulation ▪ Member checks ▪ Structural corroboration (coherence) ▪ Referential adequacy
External validity	Transferability	**Applicability** How can one determine the degree to which the findings of a particular inquiry may have applicability in other contexts or with other subjects (participants)?	▪ Collect and develop thick descriptions ▪ Theoretical/purposive sampling
Reliability	Dependability	**Consistency** How can one determine whether the findings of an inquiry would be consistently repeated if the inquiry were replicated with the same (or similar) subjects (participants) in the same (similar) context?	▪ Overlap methods ▪ Stepwise replication ▪ Audit trail

Source: Guba (1981, p. 83)

To ensure the study is trustworthy, the researcher uses the following strategies:

1. *Prolonged engagement*: Long time in the field increases the trust level between researcher and participants (Creswell and Miller 2000). This is due to the fact that the field is also the researcher's working environment since 1993 until 2011. It was more than 18 years.

2. *Audit trail*: Documentation of the research process on transcript and by memo report provides an audit trail for assessing the reliability of the research and analytical process (Gephart 2004). Researcher kept seven volumes of log book on recording the progress of Paradigm model.

3. *Member checks*: Several participants have asked to read through the findings to ensure that they depict a 'faithful' experience (Miles and Huberman 1994). Since all five participants make no amendment to these findings, other participants were assuming the same.

4. *Peer debriefing*: During the time the study is in progress, the researcher will present the findings to researcher's supervisor and to Curtin Business School (CBS) regarding forums, other relevant seminars and the School of Management PhD students' group. The discussion and feedback from these forums provides support for the trustworthiness, rigorousness and quality of the findings. Lincoln and Guba (1985) define the role of peer reviewer as a 'Devil's advocate'—an individual who keeps the researcher honest by asking the hard questions about method, meanings and interpretations.

5. *Triangulation*: Using the search facility in NVivo (a qualitative data analysis (QDA) computer software package) under the 'queries' command generates more valid results than carrying it out it manually, due to human error (Welsh 2002).

6. *Theoretical sampling*: The approach of grounded theory insists that the samples are chosen when they are needed, rather than before the research begins. Initially, this means that as concepts are identified and the theory starts to develop, further samples may need to be incorporated over time. This way, the foundations of the findings are strengthened. As the analysis is carried out, there is a need to obtain information (data) from other groups of people—not just depending on the project manager's perspective alone. The researcher interviewed project managers' supervisors, project team members, competency development and human resource managers.

7. *Collect and develop a thick description*: The validity of the data was maintained by transcribing the interview verbatim.

3.8 Conclusion

This chapter explains the methodology and method of the research. In the initial part, the qualitative research approach, grounded theory, and the rational using grounded theory approach is presented. A central part of the chapter concentrates on the method of the grounded theory procedure by outlining sampling strategy data collection, theoretical sampling, profile of key informants, the interviews, and the grounded theory tools.

The chapter continues with a detailed explanation on how the methodology of Grounded Theory was used to investigate why do project managers in this organisation have varying outcomes in delivering project success through the grounded theory analytical steps (open coding, axial coding, and selective coding). The chapter ends with discussion of validity and reliability issues involved in this research.

The next chapter highlights in detail every category based on the paradigm model founded in this research.

CHAPTER 4. FINDINGS

4.1 Introduction

The objective of Chapter 4 is to present the findings of Paradigm model that are represented in line with the methodological description detailed in Chapter 3. Paradigm model founded in this research explained why project managers in PWDM have varying outcomes in delivering project success.

4.2 Phenomenon – Maintaining Project Alignment (MPA)

The main finding of this thesis is that project management in the context of the PWDM can be conceptualised as a social process called 'Maintaining Project Alignment (MPA)'. This is the core category and the phenomenon of a substantive theory, which emerged from the data analysis.

Each component of the paradigm model as shown in Figure 4.1 is analysed in this chapter - which includes:

i. Phenomenon (a central category about the phenomenon, i.e. Maintaining Project Alignment (MPA)), which is explained by
ii. Causal conditions (categories of conditions that influence the phenomenon, i.e. Critical Success Factors (CSF)),
iii. Strategies (actions that results from the phenomenon, i.e. Managing Change (MC)),
iv. Context conditions (the broad conditions that influence the strategies, i.e. Organisation Structure (OS)),
v. Intervening conditions (narrow conditions that influence the strategies, i.e. Project Management Competencies (PMC)) and delineate,
vi. Consequences conditions (outcomes of the strategies, i.e. Success Criteria Factors (SCF)) for this phenomenon.

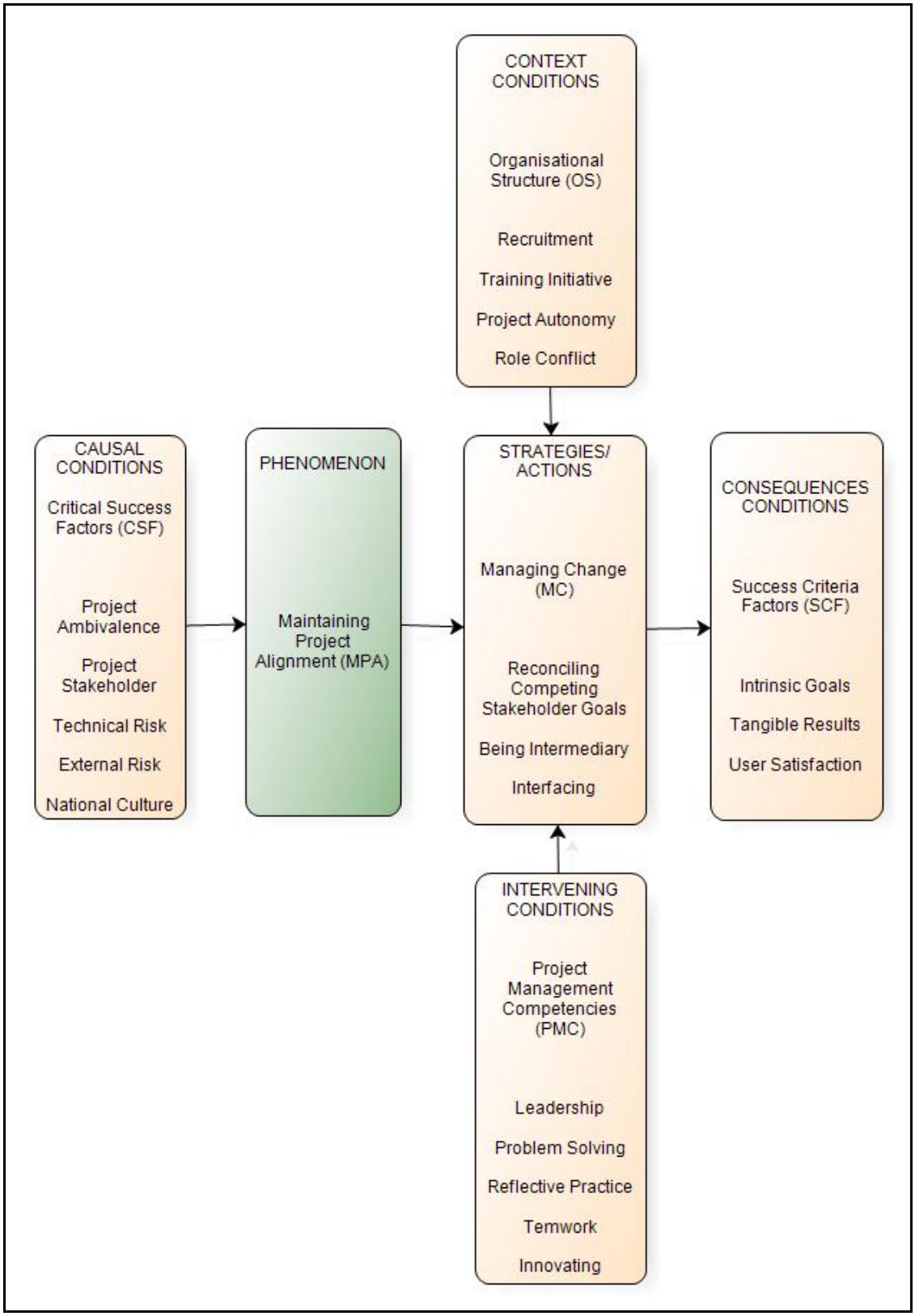


Figure 4-1 : Paradigm Model of Maintaining Project Alignment (MPA) in PWDM

Maintaining Project Alignment (MPA) is essentially why project managers in PWDM have varying outcomes in delivering project success. It refers to the project management process employed in the quest for achieving project success. Maintaining alignment is the degree of reconciling competing stakeholder goals on project success criteria and how project manager being intermediary and interface between project stakeholder to support project success criteria.

The concept of alignment has been established in the Business and IT environment, where 'IT alignment' is defined as the desired state in which a business organisation is able to use IT effectively, to achieve business objectives—typically improving performance or market place competitiveness (Avison et al. 2004). The concept of alignment has also been used in organisation studies, such as Slagmulder's (1997) study regarding the use of management control systems to achieve alignment between strategic investment decisions and strategy. The reason for management control is to ensure that the behaviour and decisions of people are consistent with the organisation's goals and strategies.

According to the Oxford English Dictionary (2005) the meaning of 'alignment' is: to place or arrange in a straight line or into correct relative positions—while in the American Heritage Dictionary (2006) it is: the process of adjusting parts so that they are in proper relative position. This definition widens the scope of 'alignment' from the aspect of 'positioning' or 'agreement' to 'perform'. In other words, alignment is linked to the performance of the event—which in this research, refers to project performance. Project performance is the main aim of project managers in managing projects (Anantatmula 2008).

In this study, it was found that project managers in the PWDM attempted to deal with the problem of overcoming the project status of failure towards success, through a process of 'alignment'. Alignment has many pseudonyms including: fit (Porter 1996), integration (Weill and Broadbent 1998), bridge (Ciborra 1997), harmony (Luftman, Papp, and Brier 1996), fusion (Smaczny 2001) and linkage (Henderson and Venkatramen 1992). However, in all cases, it concerns the integration of strategies relating to project success. Working together is only a problem when time,

money, personal space and opinions are at stake. The strong relationship between parties is vital—especially when problems arise, when scope changes and when conflict comes into play. Attached herewith are the data converged to give the meaning of Maintaining Project Alignment (MPA) in PWDM project management as can be seen in the following comments:

Maintaining Project Alignment (MPA) in actual schedule versus as per the agreed schedule;

> *PM9: We can see if certain works are not done yet to the original plan. We know if certain activities are not done yet, especially on the critical path in CPM (critical path method). So you have to study and check it and arrange it back to schedule. [P09, project manager, male, age 49 years, experience 23 years].*

Maintaining Project Alignment (MPA) in actual cost versus as per the agreed contract cost;

> *PM11: We take care of the client's interests in terms of their finances—meaning whatever funds that they spend, they will get back. In terms of quality, we must make sure that they comply with the standard—whatever the standard is that we check for the project. We have to monitor compliance with the standard. [P11, project manager, male, age 49 years, experience 24 years.]*

Maintaining Project Alignment (MPA) in project stakeholder needs versus as per the agreed project quality;

> *CD2: We are not taking the responsibility over the contractor; we are the one who is responsible to make sure the contractor do the work as being agreed according to the schedule that submitted by the contractor. How you are going to make sure that for example in term of man power requirement, for example have we properly allocate proper resources for each the activity. If the contractor can't even do that, this contractor is very incapable and the chance for them to complete the job is very low. Then he has to enable the contractor. Call them, your project scheduling is not resource ordered, the resource is inadequate, if you are able to check it from the beginning, that mean you are in control, isn't it? At the same time, we allocate the contractor and the contractor know what we want, it is just not observing things happen, we have taken action toward planning. All the future agenda has to be planned now.* [P40, competency development, male, age 52 years, experience 28 years].

Maintaining Project Alignment (MPA) in project stakeholder needs versus as per the agreed clauses in the tender award stage;

> *PM12: I just inform them that this is followed whatever in the contract and because if there is allocated, we can more or less and be able to include in the contract. Because they are our client, if suddenly they don't want to accept the project, it is also hard for us. So we to comply what they want, in fact it is also need in the beginning stage, we should let them involve. So that during construction, we are just following it. That is important. Because I do mention to KL to get them involve, sometime it is not the client but the end-user also* [P12, project manager, female, age 51 years, experience 23 years].

Maintaining Project Alignment (MPA) in project problems versus the project solution;

> *PMS3: Once we realise that sand will be the problem; we actually inform the state—because the issue of the sand permit is under the state jurisdiction. We send a letter to the state through the UPAM saying that our project has a problem with sand supply and then we have a serious meeting with the state and the land office. After a series of meetings, we manage to get the state-issued additional permit for the sand quarry. We have to call the transporter and go to the grounds to solve the problem. We cannot let the contractor solve it alone, because there are a lot of contractors and we become the mediator between the transporter and the contractor. We have to lead. [P20, project manager supervisor, male, age 51 years, experience 27 years]*

Maintaining Project Alignment (MPA) between risk;

> *PMS3: Yes based on the quality, But on cost overrun or time extension can be known before completed. That is why we have gone out to ensure that all project plan that we are anticipate was done, we have to see the risk and tackle the problem before hand, not as it is to happen*
>
> [P20, project manager supervisor, male, age 51 years, experience 27 years].

These situations happened where PWDM project managers have been tricked by competent main contractors and competent consultants. Main contractors provide low quality materials in order to gain more profit and if the PWDM project managers are incompetent, the project will sink from low quality workmanship. This sentiment is echoed by one of the participants who made the point that:

> *PM4: Take one example, like painting works—at first it looks nice and they use good quality paint that we can see from the tin label. Actually the paint is not same as the tin label. They manipulate it. So normally, I will make sure that every tin has a hole after they've used it, in order that*

they cannot use the same tin. [P04, project manager, male, age 50 years, experience 24 years].

This is further supported by another participant, who stated:

> *PM8: In terms of checking the design, you do not need to know every detail. But in terms of whether conceptual knowledge is already good enough, that is the thing you are going to ask the consultant. Sometimes the consultant is a professional—but now in the new era, we are never sure, they are just trying their luck. This is because they have been paid through a scale of fees—the higher the cost, the higher the fees. [P08, project manager, female, age 45 years, experience 15 years].*

This is a very unethical main contractor, but it has happened—and that is the reason the Construction Industry Development Board (CIDB) had launched guidelines for Malaysia Main Contractor Ethics in 2009. Consultants also overdesign the project in order to gain higher fees, and incompetent PWDM project managers let it happen and sink the project.

In not Maintaining Project Alignment (MPA), the project manager must be alert to danger signs given by project stakeholder, such as: physical distance, giving low priority to the project, recalling previous failures, and political obstacles being raised. This heavy project manager responsibility stated above is further echoed by another participant who said:

> *PM12: As we are not involved from the beginning, so the problems are very hard for us to resolve because at that time during the planning we are not involved, there are so many problems that they have, or either overlook but I have no idea. But during construction, there are a lot of problems.* [P12, project manager, female, age 51 years, experience 23 years].

Another participant explained the project manager responsibility in this way:

> *CD1: The design duration was too fast and no time for coordination. Procurement was also too fast and all bills of quantity were provisional. If you don't have good planning, the project sure will fail. If you don't plan, you plan to fail. It is true!!* [P29, competency development, male, age 50 years, experience 26 years]

Failure to align strategies led to a state labelled by the researcher as not Maintaining Project Alignment (MPA). This referred to failure to meet the basic requirement or expectation of the PWDM project manager role, an inability to cope adequately. An

illustration of participants' comments that portray this category of not Maintaining Project Alignment (MPA) follows:

> *PM4: We are already preparing everything nicely but suddenly just only a few ceiling collapse, it being an issue. This is a small and simple thing that we have to take care. It depends on how we manage the client. For example for educational project on school building, we deal with Development officer but we received many complaints from teachers and headmasters. If we can provide what the client want that is the most successful. We have to sit back on how we manage stakeholder. Same things happen to hospital project, the end user will complain that the equipment that we provide is not the latest one.* [P04, project manager, male, age 50 years, experience 24 years].

Maintaining Project Alignment (MPA) is the essential in PWDM project management, one of the participants concluded:

> *PM3: You must make the best of everything. [P03, project manager, male, age 40 years, experience 15 years].*

In summary, Maintaining Project Alignment (MPA) is a central category about the phenomenon in assured: actual schedule followed as per the agreed schedule; actual cost followed as per the agreed contract cost; as per the agreed project quality not slum by project stakeholder needs; project stakeholder needs within the as per the agreed clauses in the tender award stage; project problems having solution; and balancing within project risk. Maintaining Project Alignment (MPA) occurs due to the causal conditions named of Critical Success Factor (CSF) as discussed below.

4.3 Causal conditions – Critical Success Factors (CSF)

Causal conditions are conditions that influence the phenomenon that leads to the occurrence or development of a phenomenon (Strauss and Corbin 1990).

The researcher identified the causal conditions that lead to the occurrence of Maintaining Project Alignment (MPA) — Critical Success Factors (CSF) as indicated in Figure 4.2.

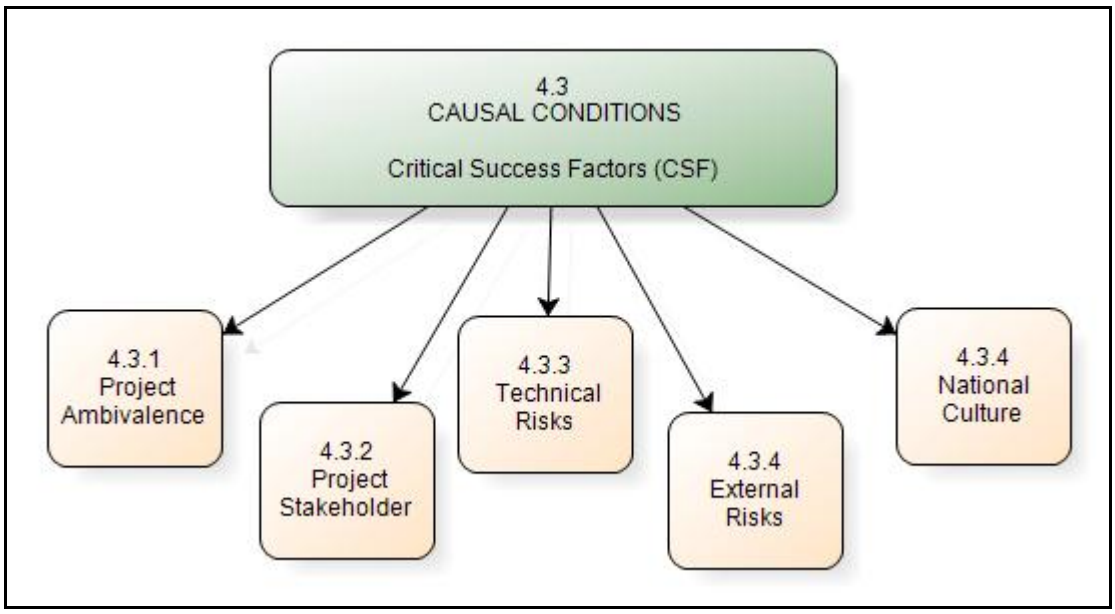


Figure 4-2 : Causal conditions

The phenomenon of Maintaining Project Alignment (MPA) is needed due to the occurrence of Critical Success Factors (CSF). Critical Success Factors **(**CSF**)** take the project off track and moving backwards, far away from success. Project risk can be found on three levels: inside the project, outside the project but inside the organisation, and finally in the environment outside the project and the organisation in which it is being carried out.

One participant realise the important of risk management in controlling the Critical Success Factors (CSF) which has been practiced in Australia and New Zealand but unfortunately Malaysia still lacking:

> *CD1: Actually risk management is also important. Australia and New Zealand have already done it, but we haven't yet. Risk management is important because you can foresee future problems and later try to overcome this risk. In Malaysia we lack this. It's only when problems really come that we settle them. It is not a preventive action at all. [P29, competency development, male, age 50 years, experience 26 years].*

There are various risk occurring due to the lacking in risk management practice in PWDM. Participants identify various risk that occur during project implementation: lack of contractor experience and control over the project, lack of competency of subcontractors, contractor financial difficulties, lack of good relationship with the PWDM project manager, slow decision making, lack of end-user representative, interference due to constructive change orders, delay of payment by client, ambiguous requirements, wrong choice of contractor and consultant, inappropriate designing—errors and omissions in drawing, designing more to contractor interests, over design – scale of fees interest, lack of involvement during construction stage, poor site conditions and layout, inaccurate site investigation, severe weather problem – rainy, unrealistic project schedule, complicated and complex, involvement of political power, lack of cooperation from local authorities, need to comply with variety of authority requirements, legal issues arising due to local government rules and regulations, top management support, shortage of human resources, (PWDM) DG secular, (PWDM) staff transferable, lack of commitment among project team members, lack of communicating requirements, shortage of materials, vendor just prepared for one size fits all.

Using the risk source as a basis, a primary classification would be: project ambivalence, project stakeholder, technical risk, external risk, and national culture.

4.3.1 Project Ambivalence

Project ambivalence means doubtful to priorities whether time, cost or quality was more important. Any changes on one of this triangle will affect the others. Project

manager spent a lot of time to interpret the needs of key stakeholder. This was due to the fact that they were often given enough details of what they were expected to provide, often less clear whether time, cost or quality was more important.

Most of the participants claimed the important of balancing the three items of project criteria that consist of: project completed at agreeable time, within specified budget, and having quality as stipulated in the drawings and contract documents. One example of this claim can be inferred from the words of this participant who said:

> *PMS3: When I was appointed as SOR, my main task was to see that the project was implemented according to the schedule and as per specifications and quality. But as the overall project management, we need to ensure that there is no cost overrun, no delay on completion time, and also as per drawings and specifications. That is the quality to achieve. So if the project is to be successful, it has to be completed on time—and it's not to say there is no cost overrun. We can have a cost overrun, but within manageable amounts—because when we design, there are a lot of assumptions that have been made. So automatically there are some amendments to the existing design. So we have to have cost overrun but not outside the director's limit of RM 1.5 million. [P20, project manager's supervisor, male, age 51 years, experience 27 years].*

Unfortunately balancing these three items of project criteria was not an easy job. The construction world is full of grey an area—which means it is difficult to make decisions. This is because projects can be complex, non-routine and one-time attempt limited by resources. This participant revealed:

> *PMS4: In a technical line, there is always black or white but seldom grey. So, this is where those who are in the construction line need to see that there always grey areas. This can only be achieved if one has the soft skills: knowledge, power of persuasion, and negotiation—otherwise it will be very difficult, because once you deal with human beings, unless you are dealing with robots, it is different. If you have the human factor and have soft skills, this enables you to move things around because you are dealing with human beings. [P21, project manager's supervisor, male, age 50 years, experience 25 years].*

In addition, the project must attain to performance specifications designed to meet client needs—which change frequently. This is due to client representative was not similar as user representative in every progress project meeting. For instance, a participant indicated:

> *CD1: One more is the client requirement, I mean the user. When we did it, most of the time we were based on development staff (desk officer) and the end user was just involved when it was on the ground. By rights, the end user should be involved at the very beginning of the project. I don't know whether they are included or not during the planning stage. But during the construction stage, there are a lot of changes—change the room to be another room and so on. I was told that this project had to be fast-tracked, by our previous director general. So the design had to be conducted urgently, without proper coordination with the other disciplines and the client. There were many discrepancies and the whole BQ (Bill of Quantity) was provisional. A lot of discrepancies—it was not a realistic time. [P29, competency development, male, age 50 years, experience 26 years].*

Project ambivalence affected the actual project schedule, project cost and project quality. It was a crucial factor in pushing project manager reacted through a social process named Maintaining Project Alignment (MPA).

4.3.2 Project stakeholder

Project stakeholder consist of: clients, consultants, main contractors, subcontractors and suppliers. Project managers must work with a diverse group of characters to complete projects. They are typically the direct link to the client and must manage the tension between client expectations and what is feasible and reasonable.

Client

The PWDM project manager has a big responsibility towards the client—to visualise the client's needs and fulfil them. Getting the drawing back—agreed to by the client—is a challenge, as the client doesn't have a technical background and doesn't have any idea what they really want. Further elaborating on this, a participant emphasised:

> *PMS4: Then you must also be given the right conditions of work—meaning that too much hindrance is cumbersome whereby the project manager can make decisions. But in this project, the information and the decision making—which was delayed by the museum authority because they couldn't decide on the future conservation issues—but as far as project management was concerned, we worked well between the project managers, the client, and the state authority which financed the project.*

[P21, project manager supervisor, male, age 50 years, experience 25 years].

In addition, client requirements keep changing frequently due to the various end-user requirements as explained by one participant:

> *PM9: I am dealing with the client, and the end user is normally like the dean of a university, in the teaching profession. Teaching keeps changing, new things are coming out. Different professors and different lecturers specialise in different areas. The layout of the building is also different and within three years they will also have a change in policy and some lecturers were coming in and going out. You have to cater to the client's needs. [P09, project manager, male, age 49 years, experience 23 years].*

Client requirements keep changing frequently affected the actual project schedule and project cost.

Contractor

Most of the project managers and project managers' supervisors mention that contractors are their biggest challenge in handling projects. The challenges are: lack of the contractor's experience and control over the project, lack of competent subcontractors, contractor's financial difficulties, and lack of a good relationship with the PWDM project manager.

The biggest challenge for them is having a poor quality main contractor. The majority of main contractors does not have their mind on project management, especially its tools and knowledge regarding project management. They just do it—which is the Malaysian management style. In Malaysia, any Tom and Harry can be a contractor, unlike in other countries. One participant clearly expressed his view on this matter:

> *PM15: We have the biggest challenge because the project needs to take off but the drawing not ready yet. It was flooded area. The contractor wants to prove that they can carry the project as it is their first project with PWDM. The majority of main contractor doesn't have project management skill, they are just doing it. Any Tom and Harry can be a contractor but in another country, most don't want to be contractor because they know it was high risk.* [P15, project manager, male, age 53 years, experience 15 years

Furthermore, main contractors have been nominated, not because of their experience, but because they have connections with political power. This is reflected in the statement of a participant who stated that:

> *PM10: Yes. But because of the connection to (name not mentioned) he managed to get the job. And then the competent project manager, based on PWDM recognition, must be a PE (professional engineer), with a minimum of ten years' experience and a minimum five years of design. It is already set and it is okay, but if the owner doesn't want to hear, what can we do? [P10, project manager, male, age 48 years, experience 24 years].*

Relationships with the contractor are the main source of challenges faced by PWDM project managers. There are conflicts between contractors and PWDM project managers due to the contractor refusing the PWDM project managers' advice. It is likely that professional disrespect could be a major source of disagreement. Contractors feel superior because they receive backup from the top man in the state. In the worst case scenario, they try to bribe—and if that does not work, then they threaten the project manager. This participant revealed:

> *PM7: The main contractor gets this job using political power from number one in the state. I normally issue a letter if there is anything regarding construction that is not right. All letters go to him and his staff does not mention the real reason and make him angry. He assumes that I am demanding and he threatens me, tries to bribe me two times, asks me to follow his way, and I have to keep quiet. [P07, project manager, female, age 45 years, experience 14 years].*

They are not sincere about doing the project, but are only thinking about how making more profit. Furthermore, the contract is awarded through one of the government's tendering system requirements by selecting the lowest bidder. They will do anything to get more profit—such as manipulating the contract in order to get more variation orders, cheating by cutting corners, and using materials that are not up to the required standard. These variation orders affect project cost. At this point, a participant indicated:

> *PM7: That is why their people really want to find loopholes—so they will get VOs (variation orders) until it reaches RM 70 million. I was told earlier by the director about this contractor's attitude and I am really very careful. He asked for no VOs (variation orders) on this project. Contractors look to find loopholes because I was informed that if any*

> *staff from that contractor's company can get a VO (variation order), the profit can be shared between the company and the staff. [P07, project manager, female, age 45 years, experience 14 years].*

The contractor companies are headed by entrepreneurs without experience in construction and they are new participants in the construction industry. They lack appropriate skills. Some are only experts on road projects but they bid on building projects. Some have no expertise in special items in building construction, like interior design. Some have no knowledge in terms of dealing with local authorities. A participant described his concern this way:

> *CD1: The main contractor was from Perlis and had no experience dealing with the Putra Jaya local authority which created so many problems. Furthermore this Magistrate House required special items like ID (interior decoration) and finishing, which the contractor was not used to. [P09, project manager, male, age 49 years, experience 23 years].*

PWDM project managers have to really understand the main contractor setup. The challenge they have to face is to understand the setup of the main contractor—they have to accept that this is the way it is and make the best of everything. They have to accept it as they have no power to change it—but they will accept it as it is in order to achieve the project goal. Recollecting his experiences, one participant observed:

> *PM3: The biggest challenge is to understand the contractor set up. The 'who's who' among the contractors. Because sometimes as project manager you must identify who is your stakeholder—it is easier in the PWDM setup. But in the contractor setup—because they have quite a tricky setup and because they like to subcontract the job—I have to identify who has the power to set the job within their setup. That is the first thing that I must identify. It is not that simple. I must accept that this is the way they do things. I have to accept that this is the way they do things in Malaysia. As the project manager for this project, I can't solve that problem—it only can be solved by the prime minister or public works minister. I must accept it. [P03, project manager, male, age 40 years, experience 15 years].*

PWDM project managers help the contractor to avoid many critical project failure factors. They teach the contractor how to plan the project and how to make that planning happen on the ground. The PWDM project manager had to teach the contractor from the start. As one respondent clearly stated:

> *PM9: Yes. I have to teach from the start: how to plan the project, how to get staff, how to handle the project, how to get things going. We have to*

> *teach the contractor to do this work. [P09, project manager, male, age 49 years, experience 23 years].*

Typically on huge projects, there are many subcontractors working under the main contractor. If the subcontractor is capable, the project can be completed on time as planned—but the worst scenario is if the subcontractor has also subcontracted the work to another subcontractor, which creates multi-level subcontractor/high degree of subcontracting. It was sometimes up to five or six layers and created poor efficiency of supervision and may affect the progress of the project. As explained by one participant:

> *PM9: Most of the work is subcontracted to others. They are just the contractor in name only, but the work is done by others. Sometimes they subcontract it into five or six layers. The last layer of the subcontractor is the one who really does the work. Even the main contractor doesn't know who really does the job for them. That is a big problem for us—to handle the last subcontractor who really does the work. [P09, project manager, male, age 49 years, experience 23 years].*

The PWDM needs genuine contractors who have the knowledge, skills, experience and are strong financially. Knowledge and experience must come together. Main contractors must believe in project management. How can schedulers plan the duration of activities if they are not familiar with the method of construction and optimal sequencing of works? How can estimator budget the equipment and operator/labour costs if they do not know the output of equipment and wage costs for operators? It affects the judgment in estimating time and contributes to ineffective planning and scheduling of the project by the contractor. Furthermore, one participant commented that it delays the preparation of contractor submissions and leads to poor site management and supervision:

> *PMS5: I am trying very hard actually to explain that currently the PWDM would like to operate and work in a new way and with a new culture. So the way contractors have behaved in the past, undertake easy and what is not is something of the past. So now the demands for the PWDM as a government agency are that we are expected to deliver on time and we don't have the pleasure like in the past of EOT (extension of time) as much as we would like. No more. Now, achieving the client's requirements is number one. Now, to the government and ourselves, we are very serious in delivering the product to the customer. [P22, project manager supervisor, male, age 51 years, experience 27 years].*

Consultant

The outsourcing of work to consultants need to be checked properly because the PWDM cannot trust the consultant—as they are just trying their luck on the scale of fees, the higher the cost, the higher the fees. There is a lack of evaluation of consultant performance. There is a risk that over-certifying payment of consultants leads to difficulty in recoupment (even more if the contractor is terminated) and will impact on PWDM performance and reputation. As one participant expressed her thoughts on respect:

> *PM8: In terms of checking the design, you do not need to know every detail, but if conceptual knowledge is already good enough, then that is the thing you are going to ask the consultant. Sometimes the consultant is a professional but now in the new era, we never know if they are just trying their luck. This is because they have been paid through the scale of fees—the higher the cost, the higher the fees. [P08, project manager, female, age 45 years, experience 15 years].*

There is a risk that unethical consultant appointed by unethical contractor. The consultant designed based on contractor interest and not fully meeting the client's needs. There is a conspiracy between contractor and consultant. One participant is strongly pointing out:

> *PM10: We need to commend the consultant, even though they are the consultant to the contractor. We must remember that the paymaster for the consultant is the contractor. They have profited. They have two bosses—one is the client and the other one is the PWDM. And another one is the contractor. Sometimes they design based on contractor interests, and if we are not well-versed, many things can happen. That is why technical knowledge and attitude need to go together. [P10, project manager, male, age 48 years, experience 24 years].*

There is a risk that design may not be optimised due to incompetent consultants—leading to rework in design, resulting in higher project costs and delays to the project schedule. One participant reported her concern about the issue in the following way:

> *PM8: One, this is because of consultant design, maybe I should have checked thoroughly on the design stage. Maybe I only looked through what type of design that they were using, what pilings they were using, that they didn't use enough bore hole, which I didn't realize. So I took for granted that they were not hundred per cent genuine. In terms of substructure design, I actually managed to see it by questioning why they were using that type of beam—because it was not stated there. I always*

go through it and question them, and supervise on certain things. [P08, project manager, female, age 45 years, experience 15 years].

The action and reaction of project stakeholder affected actual project schedule, actual project cost, and actual project quality.

4.3.3 Technical risk

There is a risk that shortage of materials and labour could lead to instability of material prices, thereby affecting the project schedule and ultimately causing project delays and cost overruns. To illustrate this, one participant shared his views in this way:

PMS3: They do not realise that they have a lot of problems with this project. And the second problem is about getting the materials—because over the last two years, Terengganu state expanded a lot. There are a lot of projects in Dana Khas, LPT and also the airport and the stadium. So we are actually fighting for materials. This project needs a lot of sand, aggregate and cement for its structure. So the critical part is the sand, because the LPT is in a very soft clay area. We need a lot of sand due to the geotechnical treatment. [P20, project manager's supervisor, male, age 51 years, experience 27 years].

This is further supported by another participant, who stated:

PT6: When this project was launched as the mega project of 1995, they had a lot of problems, especially with the shortage of materials and labour. Even though there were many levels of labourers onsite, Malaysia still has a shortage of labour. Even when we have enough labour the illegal labourers from Indonesia also work on this project—but our government is trying to legalise these labourers, so that they can work in a legal manner. [R28, project team, male, age 39 years, experience 13 years].

There is a risk that changes in scope could result in changes in design that would result in cost overruns and project delays. The participant further explicated:

PMS4: The project was definitely delayed for various reasons. One issue of the delay was the discovery of antiquities onsite—which needed proper excavation by the Museum authority. There were also difficulties in placing the building material. For example, the huge beam that was laid across the building—which was about 14 inches by 14 inches in cross section, and about 14 feet in length—there were difficulties in the way of cutting the size of the timber. Special permission had to be sought

from the forestry department and also the transport department, to deliver the odd sized timber. Again there were difficulties in replacing the Chinese V-tiles which were very peculiar to the building and all buildings in Malacca—and had to be manufactured at Batu Arang, which is in Kuala Lumpur. It was a specialised order and costly and took time. The other thing that caused delay was finding relic tiles during the uncovering of the cracked wall. Also when we scraped the plaster off, there was a new finding of an opening in the wall that was built up during the earlier period of the Portuguese and the English, when they took over the building from the Dutch. [P21, project manager's supervisor, male, age 50 years, experience 25 years].

Another participant added:

PT5: Yes, what the vendor installs are in the full system and they just turn the system on or off. When we have decided to implement just a few modules, then the problems start. To mix it with manual work makes it difficult. This is because the vendor has not built the software differently and they had just prepared the software for one purpose. [P27, project team, male, age 47years, experience 23 years].

4.3.4 External risk

External risk involve interference from politicians, local authority or infrastructure provider and nature.

Political

There is a risk that interference from politics or individuals leads to the selection of successful tenders, not based on recommendation or merit—causing possible difficulties in project implementation. Some contractors have *Wibawa* certification on the paper and not in practicality. The meaning of *Wibawa* is: being good and expert. The participant further stated:

PM7: The main contractor gets this job using political power from number one in the state. I noticed after that event that he was declaring himself a Wibawa contractor, but he is not. That is why he took two months just to do setting. He had no experience at all. [P07, project manager, female, age 45 years, experience 14 years].

There is a risk of lack of top management support for project managers' decisions due to the top management preference of contractor needs. A participant talked about this influence:

> *PM1: Top management support. Top management must have their standards. I cannot have standards higher than what top management expects. For example, suppose we have to accept or reject material used for the project based on the standard, specification, or drawing that we have. Suppose we reject it because it fails to comply with the specifications and the contractor appeals to top management and they approve it. Then there is no point to having standards and specifications at all. If the top management approves that, then my work will only be to that substandard. This is because I don't have full authority. When we talk about success according to standards or specifications, we must have the support from top management. Whatever decision that I make, I always have a reason. I cannot accept your pile because of this and this, based on standards and specifications—and you have the right to appeal to top management. But if you want to do so, let me know so that I can present my case to top management also. Don't do it behind my back. [P01, project manager, male, age 53 years, experience 21 years].*

Another participant added:

> *PMS1: There are many problems that cause this attitude. The main reasons are caused by the previous leader. For example, when one project manager tries to enforce the contract, to make sure the contractor follows the specifications stipulated in contract—the contractor complained to the top management and that project manager got transferred. So what sort of message was that? We are trying to tell project managers not to get funny, because this contractor is my friend. It is something that everybody knows but does not talk about—because in our country, most contractors are politically connected and quite close with our big bosses. In order for our staff to have the right attitude, our top management has to send the correct messages. If these project managers are trying to enforce the contract, top management must support and promote him. Make him an example. Support him and don't transfer him. To change the attitude of staff, the attitude of top management must change first. Reward the right people. [P18, project manager, male, age 53 years, experience 21 years].*

There is a risk that problems in internal communication within the PWDM lead to poor coordination, causing delays in project implementation. A participant shared his views:

> *CD1: My biggest challenge is to get—I don't know if other project managers have this challenge or not—cooperation from the contractor or from our team members. This is because our team members also have to supervise other projects, so we are competing for the same resources. It*

is quite often that when I call a meeting, they don't turn up. It is very irritating and frustrating. I tried as early as possible, when I was preparing the one year project calendar, to indicate when meetings would be conducted. Sometimes the representative cannot make a decision. Instead of site meetings that are conducted once a month, every week I conduct a coordination meeting—and I hope that any problems occurring this week won't spill over to the next week. The problem can be settled within the week. But it is hard to make it a reality, because they don't attend the meeting. [P29, competency development, male, age 50 years, experience 26 years].

Authority

There is a risk that if land acquisition is not resolved in advance, then it will eventually delay the overall scheduling of the project by the local authority or infrastructure provider. In the words of one male participant:

PMS3: No, this is due to the past nature of the project, because to start the LA process, we need the LA (land acquisition) plan. But for this project, for your information, we decided the final alignment—but the state actually looks for a counter-proposal for the alignment and they have to align more than 80 per cent of it. [P20, project manager supervisor, male, age 51 years, experience 27 years].

There is a risk that lack of integrated utility planning by utility agencies will cause problems in implementation of the project and maintenance management of facilities. A further example of that impact is given by one of the participants, who stated:

PM4: This project is design and build, nothing much for us. Now, it seems they need a new PPU 33kV/11kV which may cost us more than one million. TNB insists, because they want to cater to all the customers in this area. This is still pending. We have to coordinate and call the client, TNB and the consultant to discuss this matter. Furthermore, the site is a problem because it is quite a hilly area. The area is quite congested. So, now where should we put the new PPU? The client doesn't want it, because it will affect their parking space. This is still not decided yet, but TNB requested it earlier, because they also need to call a tender for their equipment. This will delay our progress. Who is going to be blamed for this? We still provide it, otherwise we may not have electrical supply later on. [P04, project manager, male, age 50 years, experience 24 years].

Another participant, noticed the authority requirement on this matter, and opined that:

> *PMS3: Once we realised that the sand would be the problem, we actually informed the state—because the issue of sand permits is under the state jurisdiction. We sent a letter to the state through the UPAM, saying that our project has a problem with sand supply—and we actually had a serious meeting with the state and also with the land office. After a series of meetings we managed to get the state-issued additional permit for the sand quarry. [P20, project manager supervisor, male, age 51 years, experience 27 years].*

There is a risk that insufficient information on project data—leading to inaccurate cost estimates—causes project cost overruns and delays of project completion. This is acknowledged by the participants and is evident in the following statements:

> *PM7: During the design stage, the designer did not realise and overlooked what was stipulated in the constitution—which says meetings cannot be conducted outside the hall. They have the Hall Act—which says meetings need to be conducted in the hall. There are four meetings in a year. How we are going to do our work if the hall needs to be prepared for the meeting? The first meeting was in April. We had to stop our work and prepare the hall for the meeting—which was not included in the contract. Their meeting took one week but the preparation took another week. The contractor took this opportunity to claim many things. [P07, project manager, female, age 45 years, experience 14 years].*

There is a risk that authority requirements and changes in scope will result in changes in design—which result in cost overruns and project delays. Discussing this matter, a participant explained:

> *PM3: First we have a problem with the pilings. They keep cracking. One engineer suggested putting plywood on, and it solved the problem. Then we had a problem with handing over part of the land from DBKL. I personally had to chase it and we had to rearrange the layout—because the DBKL wanted some of the land for roads. We had to adjust it and it affected the layout. This is renovation work, so it also needed strengthening work to be done. [P03, project manager, male, age 40 years, experience 15 years].*

Nature

There is a risk that soil and weather conditions will cause the contractor to not be able to start work—resulting in delays to project completion and cost overruns. One of the many participants who talked on this issue stated:

> *PMS3: This project needed a lot of sand, aggregate and cement for its structure. So the critical part was on sand, because the LPT is in a very*

soft clay area. We needed a lot of sand due to geotechnical treatment. [P20, project manager supervisor, male, age 51 years, experience 27 years].

This assertion resonates with that of another participant who said:

PMS3: Fifteen days only. By rights, during the months of May, June and July it should be peak dry season, because it should start raining in September. But now there is no distinguishable wet or dry season. Nearly every month, the contractors never get more than 20 good dry days. [P20, project manager supervisor, male, age 51 years, experience 27 years].

The requirement stated by the politicians, local authority or infrastructure provider and nature affect the actual project schedule and actual project cost.

4.3.5 National Culture

Most of the participants mention culture as very critical in managing the project. This concept emerged when participants gave their opinion regarding Western project managers. PM2 mentions that Western project managers are better than PWDM project managers due to the right attitude—which is related to culture as illustrated below:

PM2: We are equivalent. It is more about attitude. They go to university, we go to university, they go for training and we also go for training. The only difference is all about attitude. It is also related to culture. We are bogged down with conditions that not really important, but urgent. But on the Western side, they focus more on important criteria than the urgent criteria. This is because important criteria affect productivity. I have experience in Swedes—in terms of knowledge and skills, we are on a par, but in terms of attitudes we are lacking. They are more focused. [P02, project manager, male, age 50years, experience 19 years].

They mention four dimensions of national culture: collectivism; feminity; uncertainty; and power distance.

Collectivism

The first dimension of culture is collectivism, as illustrated below.

(i) *Harmony and face*: PWDM project managers don't want to cause problems for anybody. One participant noted:

> *PMS1: We have become like this because we don't want to cause problems, we don't want to become an enemy to anybody, we don't like to take people to court, and we don't like the contractor to be in difficulty. That is our culture. It is really difficult. In our country, we are allowed to sell first before we build, so how can we get a quality house? [P18, project manager, male, age 53 years, experience 21 years].*

PWDM project managers have to deal with project stakeholder who are very concerned about losing face due to not accepting their bribe. Commenting on this matter, one participant recalled:

> *PM1: If they understand that saving face is important, then we have to work around it. In Chinese and even to Malays, saving face is very important. I am talking from experience. Let's say they give you ang pow and you don't take it—they will lose face. So when we start a project, we have to declare, 'My expectation is this and this, as per the standards/specifications/drawings. I don't want anything less and I don't want anything more. I don't expect anything more for myself and my men'. Make it clear from day one. What we expect is as per the contract. You do your part and I will help you to make sure the project is successful. You don't have to give me extra. You can sense when they want to give you something. You keep alert with that sense, and make sure you don't get left alone with them. Avoid the situation. So they don't lose face and you also don't lose face. Make it clear. This is my personal experience. Because if they lose face—it really surprises me—they can't work, can't see you, can't communicate with you, and they become an ineffective contractor. They will talk to your boss and be transferred out. Sometimes we have to know the job risk. We have to wear many hats. We must able to know the contract. [P01, project manager, male, age 53 years, experience 21 years].*

He added that Asian cannot separate things between personal and office matter.

> *PM1: I believe Western values manage to keep personal things out. This is not our culture. They can quarrel about the job, but later they can talk again. But, it is not in our culture as Asians. They will keep it in the heart. That's why I say it is better to quarrel first as personal judgments will affect the progress of the project. [P01, project manager, male, age 53 years, experience 21 years].*

To avoid project stakeholder losing face, he suggested that project managers have to spell their expectations out clearly:

PM1: A least at the end of a project I can smile with them, rather than at the end of project, 'I hate you'. Let's quarrel first. Sometimes some contractor would like to belly-belly first (kawan-kawan dulu). That's the idea. Let's be clear, for pre-construction meetings, I love the idea. Your role and my role should be clear. Normally, I would first tell them what we want and what we expect from them. Sometimes what they think is not the same as what we think. This is because we have a different work culture. That's why we should quarrel first. I rise to my stuff, I don't like surprises—such as, suddenly we have delivered all the materials on site, without checking the sample first and then it's difficult to reject it from the site. Those are surprises. We should check it at the factory. Sometimes they assume everything is okay. If we reject it, of course we will see a sour face. [P01, project manager, male, age 53 years, experience 21 years].

(ii) *Religious orientation*: PWDM project managers believe they have to be 'amanah' (trustworthy and accountable) to the creator, Allah and any actions on earth will be judged at 'akhirat' (the afterlife). The afterlife is Muslim religious orientation regarding every action will have reacted. For those who did good things will go to heaven and vice versa. More than ninety nine percent (99%) of PWDM project managers is Muslim. This was further stressed by one participant when he commented on working philosophy:

PT1: My working philosophy is 'amanah'. 'Amanah' is the trust, it is the job that has been entrusted to you and you must carry out this trust to the best of your ability—because at the end of the day, you will be accountable for the task given to you. So if there are shortcomings, then you are not performing your trust as required by the job. Every job given to me I take as a trust. Being a Muslim, I am accountable to Allah Subhana Taala, being judged not only on this earth but at 'akhirat'. I always look from this point of view, because for me a value system is very important. The value is the basis for reference when you make judgments about whether it is right or wrong. These values help me in making decisions and in pushing me forward so that I will fulfil my trust to Allah Subhana Taala. [P23, project team, male, age 50 years, experience 27 years].

Feminity

The second dimension of culture was femininity. PWDM project managers are more feminine compared to Western project managers. PWDM project managers are not assertive compared to Western project managers. For example, one participant pointed out:

PMS1: They are much better than us, because they have the right culture and the right attitude. The right culture is, if the specifications say so, then follow the specifications. If the drawings say so, then follow the drawings. This is a good thing about Western culture. They are very obedient, especially when it comes to quality. No compromise. Number one is quality and number two is knowledge. They are very knowledgeable. The problem with Malaysians or Asians is that we don't have this culture about quality. [P18, project manager's supervisor, male, age 49 years, and experience 27 years].

Uncertainty

The third dimension of culture was strong uncertainty avoidance. PWDM project managers are more anxious about uncertainty compared to Western project managers. PWDM project managers are not risk takers compared to Western project managers. For instance, a participant indicated:

PM15:We have our way of managing our site. The Western style is different compared to ours. It is all about being humble and afraid to make decisions, so they play safe. It is a very bad attitude. This is about culture. [P15, project manager, male, age 53 years, experience 15 years].

Power Distance

The fourth dimension of culture was the largest power distance. PWDM project managers have more power distance compared to Western project managers. PWDM project managers only had given certain authority but the rest of the decision was made by top management (committee). One participant remarked:

CD1: We are given certain authority but certain things we had not. Like V.O (variation order), we can't make a decision, every thing needs to go to the committee. Every time there is a V.O. we have to go to the committee and it takes time. [P29, competency development, male, age 50 years, experience 26 years].

The causal conditions that triggered 'Maintaining Project Alignment (MPA)' was Critical Success Factor (CSF) consisting of: Project Ambivalence, Project Stakeholder, Technical risk, External risk, and National culture—these conditions take the project off track. If any of these Critical Success Factors (CSF) occur,

PWDM project managers employ strategies and actions to maintain project alignment. This means keeping the project on track or correcting relative positions by bringing the project components or parts into proper coordination and aligning oneself with a group or a way of thinking. This can be done through the strategies/actions named managing change.

4.4 Strategies/actions – Managing change (MC)

The strategies/actions to maintain project alignment is through managing change. Strategies/actions are the act needed to respond to a phenomenon (Strauss and Corbin 1990). The following sections describe in detail this theoretical model—which explains how PWDM project managers act to exert influence on the delivery of project success, and what strategies PWDM project managers use.

Strategies involve the PWDM project manager in actions, tracking the project and controlling it in order to maintain project alignment. All projects have problems. In successful projects, these problems are identified quickly and then analysed and solved without delay. These problems grab the PWDM project managers' attention when they become aware that there is a significant gap between what is actually happening and what they want to happen.

Their basic form and nature is such that they are incomplete and unresolved. They demand an answer or solution. In the real world, what usually happens is that problems appear late, ill-defined and with data that is limited or dubious in quality. The PWDM project manager needs to stand back and take a good hard look at the information they have about the project problem. The following comment by the participant explained how he coped with the project problems:

> *PMS1: The second one is managerial skills—you've got to manage people, machinery, and money. You need to know this. For example, the manager must know what tasks have to be done and what materials he has to buy in the next three months. He needs knowledge to manage the resources. He needs to know the status of the resources, not for the next three days, but for three months' time. Day to day running is the administrator's job, but the manager's job is more than day to day running. The manager is able to see what will happen in the future. The other thing the manager does is risk management. What is going to happen if suddenly the government says that all Indonesian workers have to go back to their country? What happens if the price of oil continues to increase? What contingency plan do we have? Do we have to change the design? Do we use another material—for example, change from premix road to a concrete road, or from the RC structure to barrier walls? This minimises the work. [P18, project manager, male, age 53 years, experience 21 years].*

Construction activity is particularly subject to Critical Success Factors (CSF) —more so than other business activities—because of its complexity (Shen 1997). The measure of a successful project implementation effort is not the avoidance of problems, but knowing the correct steps to take once problems develop (Pinto and Kharbanda 1995).

The researcher identified the strategies/actions that PWDM project managers in maintaining project alignment are managing change through Reconciling competing stakeholder goals, Being intermediary, and interfacing (as indicated in Figure 4.3).

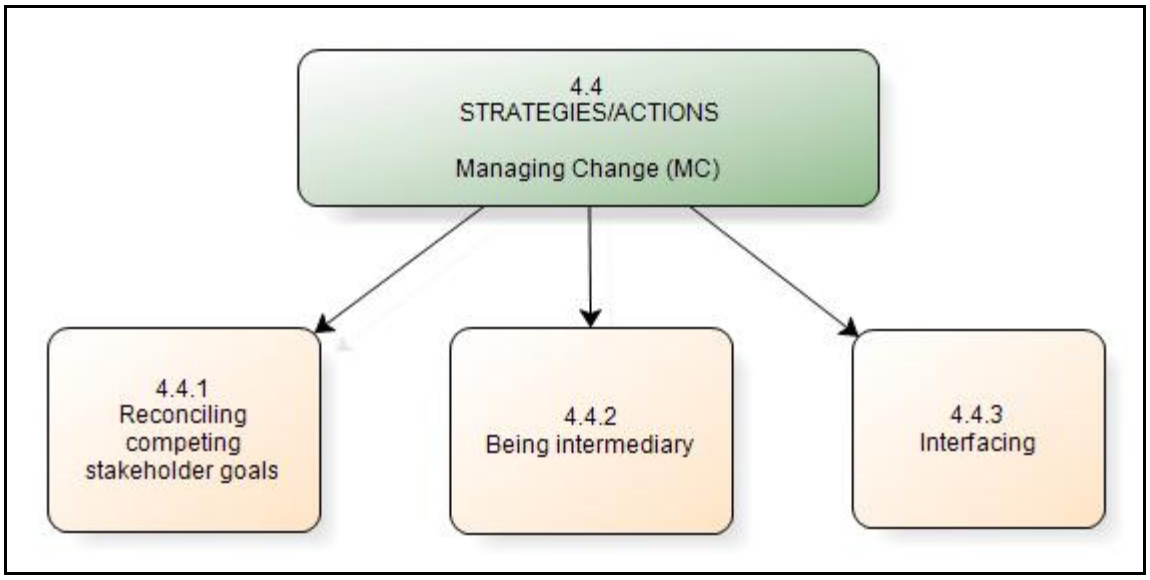


Figure 4-3 : Strategies/actions

4.4.1 Reconciling competing stakeholder goals

Reconciling competing stakeholder goals is the term used to describe the process of placing and arranging project conditions (time, cost and quality) on the right track by overcoming all the problems arising from various project stakeholder. As a participant shared his views:

> *CD2: We are not taking responsibility of the contractor. We are the one who is responsible to make sure the contractor does the work as agreed—according to the schedule submitted by the contractor. You have to make sure that—for example, in terms of work force requirements, that we have proper allocates resources for each of the activities. If the*

contractor cannot even do that, then the contractor is very incapable and the chance of them completes the job is very low. So he has to enable the contractor. Call them—your project scheduling is not resource ordered, the resources are inadequate—if you are able to check it from the beginning, that means you are in control, doesn't it? At the same time, we allocate the contractor and the contractor knows what we want. It is not just observing things happening, but we have taken action toward planning. All the future agendas have to be planned now. [P40, competency development, male, age 52 years, experience 28 years].

The PWDM project manager had to push the main contractor based on Primavera Project Planner (the common tools of Project Management software for total project planning and scheduling), and guide them on what needs to be done. Projects can be successful, if we fulfil our role, even though the main contractor is not competent. PMS3 believes that the PWDM is the main contractor and the main contractor is the subcontractor—so in order to move the project forward, the PWDM must lead to solve problems:

PMS3: My role is to solve problems. If we don't have somebody within the government take the lead, both parties—including the transporter and the contractor—cannot easily solve the problems between themselves. This is because we need somebody to lead, somebody that both can trust. [P20, project manager supervisor, male, age 51 years, experience 27 years].

The PWDM project manager must undergo experience in design and field/site. They must know the process, guide the project team to achieve success, focus on success being achieved through experience, and plan activities that are involved in the process. If they do not have a target, they will get off track and then they will blame others, the system and lastly blame God for making bad weather. One participant shared his thoughts on this matter:

PM11: Yes, every day we do tracking—which are the activities being started and which ones should be completed, these ones we monitor. Besides that, we see if they have problems; if we have to do recovery; if we have to sit down and discuss about recovery plans—how to recover to make sure you are on the right track. If they are not able to start on time, we see how many days they are going to be delayed. Let's say if they are not starting within two or three days, maybe the delay for the overall activities may be one week. We need to make sure to re-plan and make sure they recover, so they can complete the project as per the earlier plan. [P11, project manager, male, age 49 years, experience 24 years].

The PWDM project manager and project stakeholder complement each other. They work at aligning and swimming together toward project success. Commenting on this matter, two participants recalled:

> *PM5: Yes, of course. This is because the project manager is supposed to coordinate all the team: the designer, the contractor and also the NSC (nominated subcontractor) under the main contractor, to make sure they are working together with the main contractor. If not, we will face problems. [P05, project manager, male, age 51 years, experience 27 years].*

> *PMS1: Leadership is important knowledge because in order to do technical knowledge there is so many stakeholder. Like in a hospital project—you need TNB, water supply, somebody's land, and the help of the land office to acquire the land. There are so many stakeholder, and everybody needs to play their role in the project to be successful. They need somebody to be the leader to communicate, energise, motivate. There are so many stakeholder with so many different agendas and different ideas; some are monetarily motivated, some are politically motivated. All have their strong points, and somebody has to gather all this energy and make the project successful. [P18, project manager, male, age 53 years, experience 21 years].*

Project managers have to make sure the main contractor does what they plan for. The main contractor likes to do things by trial and error and not by the specifications stated in the contract. Project managers need to firm but flexible (if too rigid, we can't move) in dealing with the main contractor. Project managers also need to face the challenges. In one instance, a participant said:

> *CD2: Contractors just leading the construction, but what about the scope—translating the client's needs and expectations and negotiating with the contractor? The first thing you have to do is discovery planning. I was involved in the University of Sabah project, and we started from scratch until now when we're in the second phase. We learned a lot of things. If we left everything to the contractor, I think there would be nothing that we would honour, a lot of things not captured. We took the lead, and we discussed and explored the requirements of the university—at the vice chancellor's level, the dean's level, the lecturers' level and the users' level. We conducted a series of workshops with them and we tried to document what they wanted, even room data and all those things. We took it seriously. The project brief was very simple. [P40, competency development, male, age 52 years, experience 28 years].*

PWDM project managers must comply with client needs as long as possible. Every item has to be taken care of in the contract. One participant used these words to explain:

> *PM3: In tracking, I use the critical path method. It is more and less. In control, we refer back to the contract on what we can do to control the contractor. In theory, we just write a letter to the contractor and warn them, but in actuality, we must understand their problem. Definitely in tracking we use the critical path method and in control we use the payment to the contractor. If they don't work according to specifications, they don't get paid. For example, I insist that the contractor clean the site, then I go to the contract, hire a third party and deduct it—and then they know I mean serious business. After that they follow instructions. But at the same time we also have to be nice to the contractor. That is, we need skills for when we should be firm and when we shouldn't. [R03, project manager, male, age 40 years, experience 15 years].*

Trustworthiness is a very important criterion of the project management field—which is full of players who are looking for money and profit. For instance, a participant indicated:

> *PM6: Let me phrase it this way, I do believe that provided everybody has responsibility—and of course it is easy to say but it is hard to implement, because you are handling humans, you know? With this responsibility, people think more of making higher profit on the contractor side—and if we talk about subcontractors, they are also talking about profit. Sometimes they may agree with the project manager, but sometimes they may not. Not as they think they do, because of the money and profit. [P06, project manager, male, age 47 years, experience 23 years].*

4.4.2 Being intermediary

Project managers can influence project success, as they are central to the progress of the project. The PWDM project manager's role is to check, monitor, approve and resolve project progress. A participant clarified this scenario with his comments:

> *PM3: As the project manager, you are the centre of the project. I view it that way. Whatever people want to know or want to get done, they have to go to that project manager. So the project manager affects the success or the failure of projects. But if the project manager doesn't feel responsible for the project—and so he isn't the main person running around, orchestrating the project—it won't be successful. I feel in this project for the Institute of Diplomacy and Foreign Relation Malaysia, and also the Judicial and Legal Training Institute, anything they get me*

> *to do, will get done. [P03, project manager, male, age 40 years, experience 15 years].*

They are being intermediary man to solve problems and move the project forward to success. They track project progress using CPM and control it using the documented contract. The role of being an intermediary involves in monitoring, facilitating and coordinating the focus of the project. An illustration of participants' comments, which portray this strategies/actions, follows:

> *PT2: Yes, the middle man facilitates and coordinates everything. Because some of the activities are beyond their control, they assume that they need some number information for some equipment, which is supplied by the main contractor to interface with the system. This ICT contractor needs that technical data for the equipment, to interface it with the system. Without that, they cannot proceed. Therefore, there is a chain link. [P27, project team, male, age 47 years, experience 23 years].*

In order to achieve that, project managers need communication competencies to play their role effectively in: informing, explaining, motivating, persuading, and instructing the project stakeholder. As one participant clearly stated:

> *PT2: They must understand what they are monitoring and what the element they should control is—such as: control the scope, the cost and the schedule, and also to control the resources within the project. With knowledge in basic engineering, they should have a technical background, otherwise they won't understand what the problem is that they need to overcome, also the basic skills of scheduling and quality control on site. Communication also plays an important part in project management. This is when you have to make the project team understand what is required in project management, and you need to communicate with the stakeholder what the objective and the requirements are. Also project reports, audit reports, site meetings, and technical meetings are all communication mediums. [P24, project team, male, age 48 years, experience 10 years].*

4.4.3 Interfacing

Project Managers are like a bridge that links key pieces together, and in order to reach pieces effectively they need to have a balance of tracking and controlling. One of participants' comments on interfacing through tracking:

> *PM3: In tracking, I use the critical path method. It is more and less. In control, we refer back to the contract about what we can do to control the contractor. In theory, we just write a letter to the contractor and warn them—but in actuality we must understand their problem. Definitely in tracking we use the critical path method and in control we use payment to the contractor. If they don't work according to specifications, they don't get paid. I insist the contractor cleans the site and so I go to the contract, hire a third party, deduct it and then they know I mean serious business. After that they follow instructions. But at the same time we also have to be nice to the contractor. That is, we need skills for when we should be firm and when we shouldn't. [P03, project manager, male, age 40 years, experience 15 years].*

Hence, one of participants' comments on interfacing through partnership:

> *PM11: This is a partnership. We help each other, if there is a problem, we can't just leave it to them. Sometime we have to come in when the problem occurs. What we can help, or we just chip in the idea on how to solve it. We always have to communicate*. [P11, project manager, male, age 49 years, experience 24 years].

Managing projects in the PWDM require leading the project team by solving problems on site and interface with external parties because government dealing with government (G–to–G) is easier. One participant used these words to explain:

> *PMS3: That's why we need to lead the team. Because when we deal with the other government agencies—as was my experience in the Kuala Terengganu project management team—during that period, we appointed our consultant as our SOR, to help them to go to the public agency—for example, the forestry department or the land officer. I don't know whether it is culture or what, but when you are not a government servant, you are not able to deal with government agencies. [P20, project manager supervisor, male, age 51 years, experience 27 years].*

All of the participants (PWDM project managers) told about how they deal with the main contractor. Some of them are dealing with competent main contractors and some of them are dealing with incompetent main contractors. Most of the participants have mentioned that the biggest challenge in project management is dealing with incompetent main contractors—and most of the participants suggest the

project success factor is the competent main contractor. As part of his experience, this participant argued that:

> *PM6: No, I don't think it's because you have a lousy contractor. The success of the project is actually the combination of both parties. But generally speaking, I think there's no doubt that if we have a good project manager but he gets a lousy main contractor, he cannot perform—because the main contractor is the one who manages the construction. I feel the project will fail too. The main contractor should play a part in the success of the project. [P06, project manager, male, age 47 years, experience 23 years].*

Nevertheless, some of the participants argued that incompetent main contractors are not project success factors as long as the PWDM project manager is competent and makes the project successful. One of the participants even claimed:

> *PMS4: It still boils down to the project manager. If you are a good project manager, you should be able to manage your contractor well. Even though he is a bad contractor, if you do not manage them then they will be bad. The Malaysians always say that the back of 'Parang' can be sharpened 'Belakang parang lagikan tajam jika DI asah'. If you are there to guide them, they will function as they should—but if you fail to manage them, and you do not plan to manage them well, then you plan to fail. [P21, project manager supervisor, male, age 50 years, experience 25 years].*

The Strategy/action for Maintaining Project Alignment (MPA) was through Managing Change (MC) consisting of Reconciling competing stakeholder goals, being intermediary, and interfacing. The impact of these actions and strategies were varied with the existence of Context conditions and Intervening conditions.

4.5 Context conditions – Organisational Structure (OS)

Context conditions are broad conditions that influence the strategies/actions within which actions/interactions are taken to manage a specific phenomenon (Strauss and Corbin 1990).

The researcher identified one context condition that affects Maintaining Project Alignment (MPA), Organizational Structure –PWDM. The PWDM—or in the Malay language *Jabatan Kerja Raya (JKR)* —was formed in 1872 and plays an important role as technical advisor to the government—responsible for the implementation of development projects and maintenance of infrastructure assets. Under the Ninth Malaysia Plan, the PWDM has over 7,000 projects to implement by 2010. The PWDM has 14,000 personnel, comprising of technical and non-technical staff. Of the 12,000 technical staff, more than 3,600 are professionals—consisting of civil, mechanical and electrical engineers; architects; quantity surveyors; and others (Public Works Department of Malaysia 2006). The PWDM has an extensive and accessible network of offices at the headquarters, and in states and districts. This section discusses PWDM structure in the four areas of: recruitment, training initiative, project autonomy, and role conflicts of PWDM project managers as indicated in Figure 4.4.

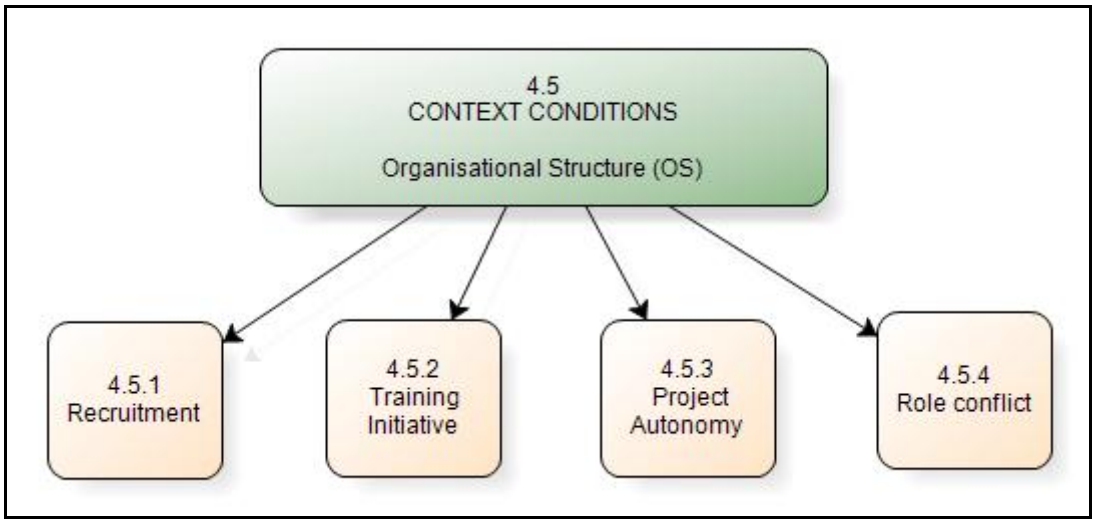


Figure 4-4 : Context conditions

4.5.1 Recruitment

All PWDM project managers are recruited from existing staff who previously worked as an engineer, an architect or quantity surveyor in the PWDM, and who already have a technical degree in engineering, architecture or quantity surveying. All movements of project managers are controlled by the Human Resource Division—which has the objective of filling the project manager post urgently, without having time to consider the suitability of that person for becoming a project manager.

One of the participants mentions department policy being too dictatorial-oriented in project manager recruitment:

> *PMS3: The lack within our department is that we don't facilitate, we dictate. Okay, you go to project management as district engineer. We don't ask, 'What do you prefer to be? What are you good at? Are you good at project management or do you prefer to be a district engineer? [P20, project manager supervisor, male, age 51 years, experience 27 years].*

Some of the recruited project managers have personalities and characters that are not suited to being a project manager. Some of them prefer to work alone—which is contradictory within the project manager working environment, as mentioned by two of the participants below:

> *PMS3: Not everybody wants to be a project manager. That depends on their nature. Designers like to be in an office, in a cool air-conditioned room. They don't want to go outside. [P20, project manager supervisor, male, age 51 years, experience 27 years].*

> *CD1: I believe some want to be a project manager. There are some among us who would like to be project managers. It depends on their character. Some like to do design and they do not mix with other people. But some like to supervise projects. It all depends on the individual. [P29, competency development, male, age 50 years, experience 26 years].*

Nevertheless, not all PWDM engineers want to be project managers. This is because project managers have a lot of responsibility and need to think a lot to solve problems. This participant revealed:

> *PMS4: Yes, some want to be designers. Not everybody is keen to be project managers. That is why sometimes, when the department forces the officer to be a project manager but they are not keen to do it, then the project fails—because some people are more inclined to do design than to manage the project. A simple reason may be because they don't have the skills or they fear the unknown and any other things like that. [P21, project manager supervisor, male, age 50 years, experience 25 years].*

Being a project manager is a big responsibility and they cannot afford to fail, as all blame will fall on him alone. One participant confidently shared his thoughts thus:

> *PM9: Not all. Some prefer to do design work. We need to like the work. There is also a very big responsibility because the success of the project depends on you. I don't think everybody wants to take on this responsibility—unless there are those who like to meet challenges. That is a problem because the PWDM deals with projects. If they don't want to be project manager we should expose them to project management—because from what I see they are not being exposed. The gain factor is not there. This is because if the project is not successful, you will be blamed. [P09, project manager, male, age 49 years, experience 23 years].*

There is also no acknowledgment if the project is a success—but if it fails; the project manager gets the blame. This sentiment was echoed by a participant, who made the point that:

> *PM9: The gain factor is not there. This is because if the project is not successful, you will be blamed. If the project is a success, the contractor will be praised as the one who completed the project. It is not the project manager. That is what people perceive. [P09, project manager, male, age 49 years, experience 23 years].*

One of the participants mentions *Hang Tuah*, the legendary warrior who was very loyal and did lots of hard work, but his work was never appreciated. Project manager recruitment is very important in project management as (Mikkelsen and Folmann 1983) mention, 'Incapable project personnel will not only cause loss of time and money, but also cause loss of image and market position'. Recruitment has to be done properly in order that the project manager can perform the task of Maintaining Project Alignment (MPA).

4.5.2 Training Initiative

In early 2007, the PWDM collaborated with a team of consultants from Australia to develop competency standards for the PWDM. The standard is contextualised from AQS (Australian qualification framework) which is adopted from AIPM (Australian Institute of Project Management).

The PWDM had to develop a training curriculum for project management and modules for various levels. The training is based on the PMBOK nine areas of technical knowledge. The training also provides some personal competencies like: communication, leadership, negotiation, influencing and handling conflict. There are also some included sections to inculcate organisational values, like commitment, because they believe PWDM staff lack this—especially in terms of doing things whole-heartedly and seriously, as mentioned by one of the PWDM competency development:

> *CD2: Based on our observations, especially commitment—some of them are not fully committed to the project or to the customer. Maybe they do not actually know what to do. They are not doing things wholeheartedly. Maybe if they regard the project as their own business, they will see it differently. They will have more pride in doing it—not just for the sake of doing it to complete the eight working hours. [P40, competency development, male, age 52 years, experience 28 years].*

Nevertheless, the PWDM does not have a formal training institute to train their project managers. Most of the project managers have not received formal training in project management, as mentioned by one of the participants:

> *PT5: I think he needs first to go through training about what project management insight is. For myself, I learned project management through experience. I am suggesting that all project managers must go to a formal training course, so they are exposed to all that theory, all the mistakes that have been made, lessons learned—that's very important. I haven't been to any project management course, so it is a problem for me. You know, at the moment, we manage 13 hospitals at different locations. [P27, project team, male, age 47 years, experience 23 years].*

One participant insists PWDM should have right career path for effective project managers.

> *PM1: Time frame differs with individuals. If you have the right mentor, you have guidance for skills that you need. But if you have to discover yourself by trial and error, then it is really difficult. It is our policy. Do we have the right career path to be effective project managers? Sometimes they just put it you there and assume you will survive. Sometimes we are successful by chance, because we have a good contractor or a good site without many problems on ground. [R01, project manager, male, age 53 years, experience 21 years].*

Based on a similar premise, a participant shared his views that PWDM project managers must be exposed to the right training and the right experience and in the right position. In his words:

> *PT2: Not every one of the PWDM project managers has been exposed to the same kind of experiences. We might be working at the same amount of time. For example, certain project managers have been exposed to design or they have been involved in project management previously. Like the placement in the PWDM is not based on their competency in project management. So they may have been at cadre post and suddenly when they have been promoted, they become a project manager. So they lack skill in certain areas. We do not share the same competencies in project management, meaning that we don't have the same kind of training. Placement also plays an important part. Some of them have transferred to cadre post and suddenly have to be project managers, as they been long outside the PWDM—so they don't have the same level of competency in project management as the rest of us. They have to start from scratch, learning the ropes in project management to become effective project managers. The PWDM has now taken the right direction by having a tree matrix organisation with an expert/specialist branch. We should also train our people to support this sector. If someone has to go to the business sector, then we have to make sure that he really has the skills needed. The project manager can be from an architectural, mechanical or electrical discipline and not always from a civil discipline [R24, project team, male, age 48 years, experience 10 years].*

In the meantime, the government introduced the Malaysian Remuneration System (MRS) in 2002. The competence level assessment is more exams and assignment oriented—which receives criticism from various participants:

> *CD2: Yes. The assessment is on how well he has done on the project paper. It is still general. Let's say you want to qualify people—if we want to be recorded as a project management specialist, you must be recognised in the field according to the standard. It is not like what we do now—they are just given an assignment from time to time and the topic is different, the assessor is different and there is no proper standard. As I said, it is very ad hoc and very arbitrary. [P40, competency development, male, age 52 years, experience 28 years].*

This situation reduces the motivation of project managers in Maintaining Project Alignment (MPA):

> *PM13: I also don't quite agree with the competence level assessment—which gives advantages to those who are not busy and can study instead of working, and then get scores and have increasing salary. Competence level assessment implementation is more theory and paper exam oriented which does not parallel with the nature of the project manager's work. [P13, project manager, male, age 41 years, experience 14 years].*

Training initiative has to implement systematically for the project manager. This training will help project managers to perform the task of Maintaining Project Alignment (MPA).

4.5.3 Project Autonomy

In Malaysia, under Treasury Instruction (TI) 182, all non-technical departments of the government are required to refer construction work contracts to the technical departments for implementation. According to TI 182, the technical departments of the government are the PWDM and the Drainage and Irrigation Department (DID). These two departments generally act as the government's technical advisors for public construction projects. Binding with this Treasury Instruction, the PWDM has to accept all kinds of projects given by clients—who take it for granted, especially as the service given by the PWDM is free of charge. Clients can simply give or pull projects without thinking that these actions may affect PWDM planning for job distribution among project managers, as mentioned by PMS5 below:

> *PMS5: You know that the nature of our work is such that we have to undertake anything that is given to us. So you may have many projects coming over at any time and projects can also be pulled back at any time. Basically, anything that fails will come to the PWDM. [P22, project manager supervisor, male, age 51 years, experience 27 years].*

He added by saying:

> *PMS5: Yes, quite a number. In fact some years back—may be a year or two back—the government decided to stop PMC involvement and most of those projects came back to the PWDM. That kind scenario will affect us.*
> [P22, project manager supervisor, male, age 51 years, experience 27 years].

This sentiment was echoed by a participant, who made the point that:

> *PT2: Some of the things we can control, but there are also things for which we need support from the government—for example, in procurement some decisions are not made by the organisations themselves. Some decisions are imposed on the PWDM, such as: selection of the contractor, selection of the consultant, and where the central agency was involved. Certain appointments of contractors are influenced by the other side of the organisation. We can't do much to control that. But for things that we can control within our organisation—like putting up a good estimation, following up with very efficient contract management—we try to improve ourselves by looking back over our procedure and processes. Wherever we lack in those areas, JKR improves. [P24, project team, male, age 48 years, experience 10 years].*

The above scenario shows that the PWDM does not have full autonomy to define their goals at the macro level. 'The word autonomy has a Greek origin and means independent, self-governing, self-organising, and living according to its own rules' (Gemünden, Salomo, and Krieger 2005). This situation also occurs at the micro level where project managers do not have full autonomy to define their transfer of responsibility.

PWDM organisation structure can be divided into three structures: PWDM headquarters; PWDM state; and PWDM district. One project can be handled by these three structures. Most frequently—for projects costing more than RM 10 Million ($AUD 4 million) —the planning and designing is done by PWDM headquarters, the monitoring and controlling by PWMD state, and supervised by PWDM district. The smooth transfer of responsibility is needed to make sure the project succeeds. Mostly pre-contract work was done by PWDM headquarters and post-contract work done by PWDM district. In this case, a participant claimed:

> *PM12: In fact, all projects has their own problems. We were involved in the court project after an LA (letter of acceptance) had been issued. As we were not involved from the beginning, the problems were very hard for us to resolve. Because we were not involved during the planning, there were so many problems that they had or overlooked—but I have no idea. But during construction, there are a lot of problems. [P12, project manager, female, age 51 years, experience 23 years].*

The project manager has to manage the contractor to construct the building or the infrastructure according to the drawings, specifications and document tenders which

have been prepared by the PWDM design team previously. The discrepancy between drawings, specifications and document tenders frequently occur. This is due to *Janji siap* of the project stakeholder. The meaning of *Janji siap* is doing something half-heartedly for the sake of being seen to be doing something. He used these words to explain:

> *PM4: Sometimes our designs from headquarters also have problems. There is a contradiction between the contract and the drawings. We need to refer to headquarters to change it and it requires a month to change. Sometimes they are using old drawings and only Janji siap. At the site there are many problems involving many variation orders. We have to refer to the designer at headquarters, because they are following ISO instructions. Sometimes we have been scolded by the top management on-site even though it is actually the designer's decision. We at the district have given many comments but headquarters still has not attended to it. [P04, project manager, male, age 50 years, experience 24 years].*

PM12 mentions getting a hard time due to the constraints of site space that were not properly taken care of during planning—which had done by others. The cooperation from the person who did the planning is very minimal. The transfer of responsibility between planning stage and construction stage is very important and it should be done properly, otherwise construction will be harder. One participant strongly pointed out:

> *PM12: In fact we were involved in this project after the LA had been issued. As we were not involved from the beginning, the problems were very hard for us to resolve. Because we were not involved during the planning, there were so many problems that they had or overlooked—but I have no idea. But during construction, there were a lot of problems. [P12, project manager, female, age 51 years, experience 23 years].*

One of the competency development talks about transferring the blame to others:

> *CD2: Yes, they cannot pass the blame to others. If you want to be an effective project manager, you cannot transfer blame to others. Otherwise you are just playing the blame game—you are not playing the project. You should be able to foresee—you must do everything to ensure that the probability of the positive occurring is high. You have to manage the list starting from the beginning. [P40, competency development, male, age 52 years, experience 28 years].*

One of the competency development mentions the PMP (project management plan) to solve these problems:

> *CD1: A system to transfer the responsibility. Let's say you want to change the project manager, you need to prepare the PMP (project management plan). You have to prepare the PMP at the beginning of the project. The PMP will have all the information regarding this project—which is important for the new project manager who will take charge. Right now we just nominate SO and any previous information is not recorded at all. This makes it difficult for the new project manager to continue supervising the project. Australians call it the PMP (project management plan), but we call it the QP (quality plan). [P29, competency development, male, age 50 years, experience 26 years].*

Project managers usually do not have full autonomy to define their goals and to have adequate resources. As can be seen in the following comment:

> *CD1: This is because our team members also have to supervise other projects, so we are competing for the same resources. Many times when I call a meeting, they don't turn up. It is very irritating and frustrating. I tried as early as possible, preparing a one year project calendar to indicate when meetings will be conducted. Sometimes the representative cannot make a decision. Instead, site meetings are conducted once a month. Every week I conduct a coordination meeting and I hope that any problems that occur this week won't spill over to the next week. Problems can be settled within the week. But it is hard to make it a reality, because they don't attend the meeting. [P29, competency development, male, age 50 years, and experience 26 years]*

Another participant noticed that the project managers were simply told 'to just follow it':

> *PM3: It is not easy, because when I received this project, we already had documented contract documents with needs statements and drawings. Just follow it. [P03, project manager, male, age 40 years, experience 15 years].*

The degree of project autonomy affects how the project manager maintains project alignment. The higher the project autonomy given to the project manager, the higher chance there is that the project manager can maintain project alignment.

4.5.4 Role Conflict

Most of the participants report having roles as Superintendent Officer Representatives (SO) or Project Director Representatives and also working on behalf of the government. This representative role is quite general and leads to role ambiguity—which refers to a lack of information to perform the job adequately, and a lack of clarity about what is expected from project managers or how they will be evaluated. But at the same time, they have a very important role—which consists of monitoring major activities and making sure that the required targets can be met, coordinating and managing multi-disciplinary teams in the project and controlling overall project performance. At the top of these, they were also the centre of the project.

One of the PWDM project managers felt that everything should be done by the consultant, as the government already pays the consultant to supervise work done by the contractor.

> *PM4: Most things are done by consultants. We just oversee things to be in the proper place in the schedule. This is a design and build project. We just chair the site meeting. I oversee on behalf of my SO. Let's say we're behind time—I have to highlight it. Everything is done by the consultant. The consultant is totally under the contractor. We pay the consultant through the contractor. We pay the contractor and then the contractor pays the consultant accordingly. We evaluate monthly. To me, we should have a team to oversee everything. I am just here alone. I also get confused. Before it was Mr S., but now I have to sign the evaluation. Payment is done at HQ and sometimes I am also not aware if the payment has been done or not. From now on I have to insist on having a certified copy. [P04, project manager, male, age 50 years, experience 24 years].*

One of the participants mentions that he as a PWDM project manager has to execute and monitor in order to make the project a success. The PWDM project manager's role in the design and build mode is to verify works done by the main contractor with support from the consultant. The consultant looks through the method of the statement given by the main contractor and then verified by the PWDM project manager.

> *PM3: I act as a project director representative, which is my role. The contract is design and build. My project team is quite skeletal, consisting*

> *of one project engineer and one architecture technician to help me. The rest is the consultant and the contractor's team. My role is to execute the contract and then to monitor and to make sure the project is completed on time—because, as the project manager, you are the centre of the project. I view it that way. Whatever people want to know or want to get done, they have to go to that project manager. [P03, project manager, male, age 40 years, experience 15 years].*

Conflicts occur when the consultant hired by the contractor gives reports based on the contractor's interests and not the government's interests.

> *PM10: Yes, they have profited. They have two bosses, one is the client and the other one is the PWDM. And another one is the contractor. Sometimes they design based on the contractor's interests, and if we are not well-versed, many things can happen. That is why technical knowledge and attitude need to be together. [P10, project manager, male, age 48 years, experience 24 years].*

Nevertheless one of the PWDM project team feels that even though project managers don't have full power, they can make decisions provided they have good communication with top management.

> *PT2: Yes. They are the very essence of the project. There are certain powers not given to certain project managers, because they are not superintendent officers (SO). They cannot decide on certain changes on-site. They cannot decide on the extension of the project. Overall they have a certain level of authority and can decide on many things, if they are able to communicate and convince top management to support their decision. It is not having authority that is the problem, but to be able to communicate well with top management is more important. They are the key people who can determine project success. [P24, project team, male, age 48 years, experience 10 years].*

In the design and build mode procurement strategy, the contractor has the power to control the entire project from design works to completion of the work. Contractors have the single point of responsibility for the whole design and construction (Seng and Yusof 2006). Nonetheless, this does not deter the involvement of the client. The client's needs and requirements are always taken into consideration—which consequently presents a uniqueness of the system. Achieving the client's needs and requirements is the responsibility of the PWDM project manager.

> *PM10: The biggest challenge is the contractor. It is design and build, and we need a contractor with these skills as he is responsible. Even though, let's say the design is 'A', one plus one is two. They want to*

> *change it to say, one plus three is four and minus two, and make it the same amount, even though we are not allowed. But this is my design, I take full responsibility—even though in the design stage my design is like that, but when it comes to the ground I will change it because of certain conditions. Yes, but problems, problems. Sometimes the contractor reasons, 'I am responsible for the job'. But he doesn't know that in the end, the responsibility is the SO's. From the government's view, they don't mind whether it's design and build, tendered or direct issue—as long as the PWDM is responsible. [P10, project manager, male, age 48 years, experience 24 years].*

The degree of role conflict affects how the project manager maintains project alignment. The higher the role conflict given to the project manager, the lower chance there is that the project manager can maintain project alignment.

The Context condition was Organizational structure (OS) consisting of Recruitment, Training initiative, Project autonomy, and Role conflict. It was the broad condition that influenced strategies/actions. It was called the broad condition in term the involvement of the system and structure in the organisation. Meanwhile, the narrow conditions that influenced Strategies/actions were Intervening Conditions. It was called the narrow condition in term the involvement on individual project manager.

4.6 Intervening conditions – Project management competencies (PMC)

Intervening conditions are conditions that pertain to the phenomenon. They facilitate or constrain the strategies, taken within a specific context (Strauss and Corbin, 1990). These are narrow conditions that influence strategies external to the phenomenon.

Intervening conditions are those that mitigate or otherwise alter the impact of causal conditions on the phenomenon. Intervening conditions also can help to explain why some PWDM project managers continue to maintain project alignment whereas others do not. The researcher identified five intervening conditions: leadership competencies; problem solving; reflective practice; team work; and innovating as illustrated in Figure 4.5.

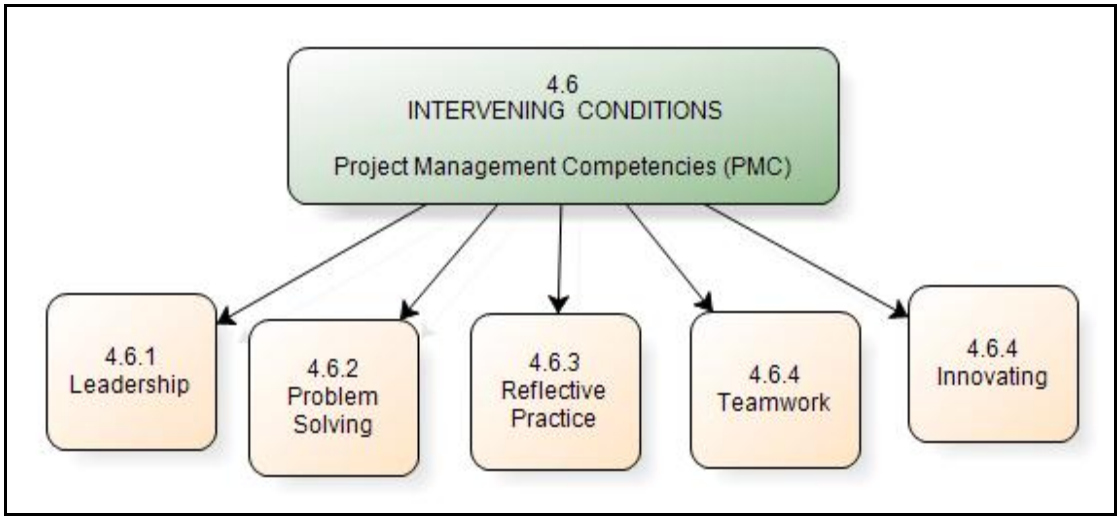


Figure 4-5 : Intervening Conditions

4.6.1 Leadership

Project managers must have leadership competencies. Leadership includes efficient task allocation and the ability to provide appropriate directions for project team members towards achieving project objectives. They apply a lot of effort in order to communicate effectively, solve problems, make decisions, set goal planning, implementing plans, and tracking. Recollecting his experiences, a participant observed that project managers do not just become managers, but also the leaders:

> *CD2: If you are the project manager, you are the leader—providing leadership and guidance, and must be able to influence, and to do tracking. That is why we reach milestones in project management. We have to plan everything, see everything as per plan, and see what the changes are. That's why we do such things as fast tracking, crashing everything to cope eventually. [R30, competency development, male, age 52 years, experience 28 years].*

The high level of role management involved in this kind of work results in a high level of communication. Participants frequently indicate that one of the key requirements for effective performance is their ability to communicate with others—including team members, clients, other departments and external organisations. Observing the importance of this, a participant emphasised:

> *PMS3: Since we are working in a team, we need to have communication skills. It is very important because you don't deal just with an internal group but also external ones—for example, contractors and other department agencies. Third parties—for example, supplier's transporters and some special groups, such as: community leaders, JKK, Yang berhormat—all have an effect in terms of project success. The successful project depends on their contribution—for example, a united agency, because your project involves property, some public amenities, power lines, and water supply pipes—as we need their cooperation to shift their properties before we can construct. So you need to tell them your project, give them ample time to move their properties, and to budget and tender. [P20, project manager supervisor, male, age 51 years, experience 27 years].*

Communication includes: verbal, non-verbal, written, unwritten, formal and informal. One participant noted:

> *CD1: I try to approach them on a personal basis. I meet them face to face. You have to use your communication skills. By rights, we can settle it in the meeting. But if I don't do it, the thing will be unsettled and take time. I am not blaming them, because they are quite busy with other projects. [P29, competency development, male, age 50 years, experience 26 years].*

Another participant added:

> *PM1: Communication skills. There are so many stakeholder, you must be able to communicate with them all and be able to listen. Listening skills! Sometimes they may say something but they mean something else. They are saying actual words but there is a double meaning. You must be able to read body language and so on. You must be able to talk to lower subordinates and also to top management. [P01, project manager, male, age 53 years, experience 21 years].*

Participants also mentioned communication strategies in order to effectively inform, explain, motivate, persuade and instruct project stakeholder. One of the many participants who talked on this issue stated:

> *PM1: My communication strategy is: to whom do I need to adjust? Who should be the one I am talking to? You may waste your time talking to the wrong person. Get the right person. Who is actually the stakeholder? Who can make the decision? You must try to understand that person's view, his concept or view of the project. You have to talk and get it out of him, which is not easy. You want green, what kind of green? Sometimes we need to have a sample. It is really subjective. To be successful you have to. [P01, project manager, male, age 53 years, experience 21 years].*

One of the participants indicated a difference between PWDM project managers and project managers from developed countries is their communication:

> *PM13: For me, it is just the communication—the technical knowledge is the same. The way they communicate, that is the difference—the style of communication is different. Their communication is more advanced. [P13, project manager, male, age 41 years, experience 14 years].*

When asked about their day to day activities, most of the participants mention about solving both hard (technical) and soft (human) problems. The issue that the project manager needs to take care of is to identify the obstacles and make fast decisions about them. Decisions will be about almost any aspect of the project: people, problems, policies, or plans that will affect the key project dimensions of time, cost and quality. The vital ingredient in all of these decisions is information. This was acknowledged by the participants and is evident in the following statement:

> *PM3: It is not easy, because when I received this project, we already had documented contracts with needs statements and drawings. Just follow it. You have to make decisions about which part we have to entertain and which one we have to put our feet down on. As a personal experience, the client wanted to reorganise the layout of the area towards the end. I only had two months to hand over the project. I put my foot down and said we couldn't do it, because it was unreasonable. If you want to do it, do it after I finish the project. The issues are, you must identify the stumbling block of the project—such as: materials, and approval from the authorities. We must make decisions faster each day. When the contractor wants the answer, we must prepare the answer. You must not delay it. Another thing that is important to make the project successful is we must make sure the contractor is getting paid. That is the most important thing. But I must make sure they do the job correctly, otherwise how do I pay them? For me, it is better to make a decision than*

> *to not make a decision. As simple as that! If we make mistakes, we make mistakes. But it is better to make a decision than not to. [P13, project manager, male, age 41 years, experience 14 years].*

In addition to the above, another participant pointed out the decision making must be immediate, in order to make the project progress on time. In his words:

> *PM9: Yes, immediately. We do not have to wait a few days, because the contractor needs a fast decision. We cannot wait. Every hour, every minute is costing money. We need to solve it then and there. [P09, project manager, male, age 49 years, experience 23 years].*

This was further stressed by one participant when he comments on the timeliness in managing project:

> *PMS1: Another working philosophy is timeliness. If I promise to give approval on a certain date, it has been done in certain data. For the project to move, it is all about giving approval and decision making. As project managers, we have to make decisions and then people will respect us because we have integrity. [P18, project manager, male, age 53 years, experience 21 years].*

Decision making also must be *amanah*, meaning trustworthy, and every project manager must carry that responsibility to the best of their ability. PT1 believes whatever task is given will be judged at *akhirat*. The meaning of *akhirat* is life after death. One male participant shared his story about his working philosophy is *Amanah*:

> *PT1: My working philosophy is amanah. Amanah is the trust. It is the job that has been entrusted to you and you must carry out this trust to the best of your ability—because at the end of the day, you will be accountable for the task given to you. So if there are shortcomings then you are not performing your trust as required by the job. Every job given to me, I take as a trust. Being a Muslim, to me I am accountable to Allah Subhana Taala, as judge not only on this earth, but at akhirat. I am always looking from this point of view, because for me a value system is very important. The value is the basis for reference when you make judgments, as to whether they are right or wrong. These values help me in making decisions and in pushing me forward, so that I will fulfil my trust to Allah Subhana Taala. [P23, project team, male, age 50 years, experience 27 years].*

In making immediate decisions and in resolving the situation, conflict occurs. To overcome it, project managers must have negotiation competencies. A participant made this observation:

> *PMS4: The project manager needs negotiation skills. You need to deal a lot with third parties—the museum people, who have very high sensitivities on conservation issues. So if you do not have the interpersonal skills in negotiating and things like that, it is difficult to move along—because for such a project, the other parties involved are interested in the total process of implementing which is not modern building where a lot of negotiations have been done. This is a rehabilitation project—which nobody knows what the outcome will be when we strip the building. We don't know what will happen and we need a very fast decision making process. [P21, project manager supervisor, male, age 50 years, experience 25 years].*

Project managers really need to listen to advice from the experts. It is necessary. Not using it will mean that they are not trusted by those with whom they negotiate—and that would not be good for either them or their project. For example, a participant commented:

> *PM13: Technical knowledge basically is a must. You have to listen to advice from the consultant. Don't jump in too fast, because these people have been in this area for the past ten years. Listen to them and whenever you feel it doesn't suit you, give your supporting argument to the consultant. In this case we work together as a team. A good project manager listens to the advice given by the experts like: C&S, architect and M&E. Then you analyse it and make a decision. So we need to listen and of course you have to influence them as a project manager. [P13, project manager, male, age 41 years, experience 14 years].*

Individuals refer to certain characteristics they possessed that were suited to the way in which they worked—particularly how they dealt with communication, leadership and risk. A characteristic emerging as potentially beneficial and presented as an example in the interviews was trust. For instance, one participant explained that:

> *PMS3: My role is to solve problems, because if we don't have somebody within the government to take the lead, both parties—including the transporter and the contractor—cannot easily solve problems among themselves. This is because we need somebody to lead—somebody trusted by both parties. [P20, project manager supervisor, male, age 51 years, experience 27 years].*

Leadership is the main ingredient needed by the PWDM project managers in implementing the strategy of reconciling competing stakeholder goals, being intermediary and interfacing.

4.6.2 Problem solving

These competencies were confirmed by participants when they were asked directly for characteristics that support their way of working. Several actions characteristics appear to be influential to the participants' experiences. The ability of problem solving seems to alter the perception of risk. The ability to solve problems due to previous experiences mitigates the negative impact of risk. A participant shared his view:

> *PM9: Seeing problems every day, it is more like a puzzle. When you come to work, you know you will face a problem. It is really interesting. Most of the problems you had faced before, but you don't know which problem will come that day. It's like a puzzle. We have to solve puzzle problems. It is really interesting. [P09, project manager, male, age 49 years, experience 23 years].*

Reflecting on this, one participant mention PWDM project manager needs to have the technical knowledge (engineering, nine knowledge areas in project management, and contract procedure) to solve the project problems:

> *PM7: Actually, first you must have basic technical knowledge. If you do not have basic technical knowledge, you cannot manage; you will be fooled by them. Secondly, you need to have knowledge of what is stipulated in the contract. When I started this contract, I always refer to the contract and they always sit beside me. I cannot remember all the terms but if I have a problem, I can open this contract. I never make decisions without opening and referring to this contract. The contract must in our hand, we must be well-versed. We are not expected to memorise it but we must know how to refer to it. If you have problems, do not decide before referring to the contract first. You must remember the contractor is not stupid. They know their rights. They know how to find their rights in the contract. We have to be prepared. We must know more than them. Every time I give instructions about anything, I check first whether it is in the contract, variation order or the contractor's responsibilities. If you are not well-versed in the contract, the contractor can manipulate you. This project is RM 70 million initially and becomes RM 50 million after deducting some portions of the project. But this contractor's target is to get that RM 70 million. That is why their people really want to find the loopholes, so they will get a VO (variation order) until it reaches RM 70 million. I was told earlier by the director about this contractor's attitude and I am really very careful. The director asked me to make no VOs on this project. Contractors look to find loopholes, because I was informed that if any staff from that contractor's company can get a VO, then the profit can be shared between the company and the staff. [R07, project manager, female, age 45 years, experience 14 years].*

This is further supported by another participant, who stated:

> *CD1: A good project manager must have knowledge of how to manage the project based on nine knowledge areas. You must have relevant technical skills in project management and know how to use that knowledge in the project. Apart from that, you must have some engineering knowledge, be good at decision making, and have leadership skills—because you have to lead the project and if you do not give direction it will be difficult, as the project team and the contractor may do something differently. Teamwork is very important also. [R29, competency development, male, age 50 years, experience 26 years].*

Technical knowledge is important in order to make fast decisions, as every minute will cost money. Project managers must ensure that an appropriate trade-off is made between the time, cost, and performance requirements of the project. At the same time, unlike their functional counterparts, project managers generally possess only rudimentary technical knowledge to make such decisions. On this point, one participant suggested:

> *PM1: In terms of knowledge—it seems we talk about a technical project—of course technical skills are needed. This is because we need to make technical decisions. We are doing an engineering project so it requires engineering decisions—whether you want to accept the soil or remove it from site. Even though we are engineers, the final decision is still with you. That is the ideal project manager. If he doesn't have it then he must have the skill of knowing and understanding people and depending on other people's opinions. He must have the skills and make effective decisions. Sometimes no decision is also a decision. Sometimes I have decided not to decide. Sometimes it is hard to know whether we made the right decision. That is experience and exposure, and that is why we can't get someone fresh and throw him in as the project manager. [R01, project manager, male, age 53 years, experience 21 years].*

The competent project manager should have the ability to make decisions, control the consultant and the main contractor, make full use of whatever resources are left, and interface with all the project stakeholder. In this case, a participant claimed:

> *PT2: To be an effective project manager, you should be able to understand what you're supposed to do on-site; understand very well what is required from the contract; be able to optimise whatever resources that you have; be able to communicate very well; and make the right decisions based on all the facts on the site. Not management by book and not based on gut feeling. [R24, project team, male, age 48 years, experience 10 years].*

Problem solving is the main ingredient needed needed by the PWDM project managers in implementing the strategy of being intermediary and interfacing.

4.6.3 Reflective practice

Most of the participants mention that experience is a very important factor that helps PWDM project managers manages projects. This is the first factor mentioned, instead of prior knowledge received from formal education (like from university), or from any informal education like attending seminars. As one of the participants said:

> *PM9: Number one of course to me—being here about ten years and having gone through so many projects—I think the number one must be experienced. That is very important. If you are experienced enough, you can foresee what problems will come and you can take action. [P09, project manager, male, age 49 years, experience 23 years].*

Each of the project managers have been transferred to many places and been involved with many projects. Each of them has different previous experience. These experiences made them gain confidence. They believe that their success now is due to their previous experience in tackling a variety of problems on site. They were very grateful for their transfer to various projects with a variety of problems. As can be seen in the following comment:

> *PM3: I gained quite a lot of experience, because a lot of problems appeared in this project concerning the structures, repairs and all kinds of problems. To me, why this project is successful is that I have previous experience where I learned a lot that helped me make a lot of decisions in this project. The contractors trust that I know things, so they do as I plan. [P03, project manager, male, age 40 years, experience 15 years].*

An observation about gaining experience in the whole cycle of project life is important in making a good project manager, PWDM project managers should have a mixed experience of design, supervision and management are illustrated in the following comment of one participant, who claimed:

> *PM5: For me, to be a good project manager, you must have good experience. For example, first you must work in the design section. Civil engineers must undergo structural design for several years and then go to site supervision and then come back to headquarters to do managing. Then they will have a mixed experience of design, supervision and management. As a project manager, you have to manage humans and*

> *manage our resources. If you do not have that experience, how are you going to manage? If we only do design all the time, for example, how will we manage the contractor? [P05, project manager, male, age 51 years, experience 27 years].*

Most of the PWDM project managers mention that the main ingredient to being a good PWDM project manager is to have valuable previous experience. This experience can make PWDM project managers learn tricks and foresee any problems occurring. Some problems on-site cannot be solved by reading from a book. Theory and practice have a very big gap. This is because theory looks very simple compared to practice. Theories explain things in a nice sequence—but in practice, it is not beautiful like that, it is very messy, as one of the participants mentioned:

> *PM3: The theory has it, but we must go to practice to identify whether we can use it. Some are different. We can't simply follow the theory that indicates a sequence of number 1, number 2, number 3, number 4 and number 5. In practice things may be different. We may start with number 4, and then may use the number 3, then number 5 and then number 1. It is not that simple. [P03, project manager, male, age 40 years, experience 15 years].*

Nevertheless, theory is important as indicated by CD1:

> *CD1: Actually theory is a guide for us to go on to practice. You cannot go on to practice without the theory, because you are unguided. If you go to practice without theory, you will be unguided. You need theory to go on to practice. But of course, not everything in theory can be applied. [P29, competency development, male, age 50 years, experience 26 years].*

And he added:

> *CD1: For example, in the communication it doesn't mention any details about how we approach the stakeholder. It really depends entirely on me, based on creativity. It is a guide, but you still need your ingenuity for how to translate your theory into the practice. [P29, competency development, male, age 50 years, experience 26 years].*

This was further stressed by another participant:

> *PM3: Just do it. If you don't do it, nothing can happen. You can have all kinds of theories, but if you don't do it, it is nothing. [P03, project manager, male, age 40 years, experience 15 years].*

Most of the PWDM project managers learn project management skill through experience. Sometimes they make mistakes and use them as lessons learned. The experience is very important in order to be a good project manager—because with that, he can foresee and make judgments about what problems will come, and he can take action before the end. Construction business is like a wheel, sooner or later you meet the same thing again. This participant revealed:

> *PM9: Yes. Although it is not right, you still have to make the final decision. The project is a very limited experience. If you have experience, then 99.9 percent of your decisions will be correct. It is just like the wheel. You go around and around again. In another two years, it pops up again, the same problem. The construction business is like a wheel—sooner or later you meet the same thing. [P09, project manager, male, age 49 years, experience 23 years].*

This is further supported by another participant, who stated:

> *PT1: KKM employs Western project managers to draft the contracts. The process of work is more systematic and there is a process flow. That experience really helped me during my early involvement in project construction. I think the ones who come to us are all experienced, so they are better than us—but if they are young, maybe they are the same as us. It is not so much about whether you are a Western or Eastern—it is more about the experiences that they have already gone through. Whatever we discuss with them, they are able to give ideas, because of the exposure they have had. Knowledge, exposure, and the job they carry out determine who is really a good project manager and who is not. [P23, project team, male, age 50 years, experience 27 years].*

It became apparent that attitude plays a role in how these experiences develop. One participant explained:

> *PM3: Your attitude must be right. You must be willing to do all the work. Your personal relationships must be good and you can approach various staff right up to the director. To get the work done, I go from the bottom to the top. You must have knowledge and expertise. To me, this project is successful because I have previous experience. I learned a lot that helps me make a lot of decisions in this project. The contractors trust that I know things, so they do as I plan. [P03, project manager, male, age 40 years, experience 15 years].*

One of the participants also mentioned the need for experience in tackling problems—which cannot read from books. As an experienced person, already knows the moment they see it whether it is right or not, and can solve the problem:

PM12: Experience, because experience covers all. You should know how to tackle problems. Sometimes the solution to problems can't read from books. We tackle these problems through experience. I am not saying that education is not important. But if anybody is experienced, then they will know what to do and how to solve the problems. The skill from experience is, the minute you look at the completed work, you already know whether it is right or not. This is a very special one because there are not many who can do that. [P12, project manager, female, age 51 years, experience 23 years].

Before this, the researcher's perception of the main ingredient in being a successful project manager was having competence. Competence is having the right knowledge, skills and attitude. Bright (1995) mentions that 'the aim of reflective practice is to increase the level of competence relative to that which already exists, rather than raising it from a level of incompetence to competence. It is a question of relative levels, not the absolute existence or absence of competence'. PWDM project managers gain competence through their experiences by reflection.

Firstly, project managers can reflect upon the technical aspects of practice—for example, the Gantt chart and critical path method (CPM) —and other tools of project management. The systems for the practice of project management could all be illustrated as technical knowledge. As can be seen in the following comment:

PM3: In tracking, I use the critical path method. It is more and less. In control, we refer back to the contract on what we can do to control the contractor. In theory, we just write a letter to the contractor and warn them, but in actuality, we must understand their problem. Definitely in tracking we use the critical path method and in control we use the payment to the contractor. If they don't work according to specifications, they don't get paid. For example, I insist that the contractor clean the site, then I go to the contract, hire a third party and deduct it—and then they know I mean serious business. After that they follow instructions. But at the same time we also have to be nice to the contractor. That is, we need skills for when we should be firm and when we shouldn't.
[R03, project manager, male, age 40 years, experience 15 years].

Secondly, project managers can reflect upon the practical aspects. To illustrate this, one participant shared his views in this way:

PMS3: And the technical skills. In terms of how to build the road, specification and method statement. Because of this project, our project is started after LPT 1 from Karak to Kuantan is completed. Once it was open to public, LPT 1 has a very serious public scrutiny because of there a lot of road condition is very bad, the supervision is not right, under

election, a lot of accidents occur in LPT 1. So for this project, the government asked we don't repeat what's happening with LPT 1 and the worst case is half of LPT 1 is travel in soft ground and also the LPT 2 in soft ground. So we have a lot of stress on part to ensure that we minimize the certain amount of post construction settlement to ensure the surface is even. So in our specification, we have some modification to the earlier one, so LPT 1 has CVR (sub grade) 5 percent but in LPT 2 we increase to 7 percent. [P20, project manager supervisor, male, age 51 years, experience 27 years].

Thirdly, a project manager may reflect on the time constraints that are placed on him as a result of changes in the way the project is running and, in the spirit of reflective practice, change the way he works. 'Reflection on this form of knowledge leads to improvements in the efficiency and effectiveness of practice' (Clarke, James, and Kelly 1996, p. 173). This is reflected in the statement of one participant:

PM12: As I said just now, by experience you actually know that the project cannot be completed. So you give a report. The best thing is to give a report and give an opinion as to whether they can really complete it if you give them more time. Complete the job. It is really critical, because from monthly progress, from a few months they increase it by two per cent. How long should it take? We just monitor them and then give them advice about what they should do. But if they cannot prolong it, there is no point. [P12, project manager, female, age 51 years, experience 23 years].

Fourthly, an important dimension of knowledge, upon which a project manager can reflect, is his knowledge of himself. Here, the focus is on the personal qualities, experiences and attributes the practitioner brings to their practice. The following comment by the participant explained how he coped with project problem through previous experience:

PT1: It depends. It varies from project to project. Maybe on your first project you are not very sure what direction you must go, but for the next project, because of your previous experience, you're sure. As a project manager you must be able to foresee the problems you have to face in implementing the construction project. In that manner, you have to list down all the possible problems you may have to face. Then you have a pretty good idea how you want to overcome problems in the various phases of the project cycle. The most important thing is to forecast. In any project, if the architect is able to include you in the design concept stage and you are able to contribute your experience, then you would be able to reduce problems during the construction stage. Normally, during the design stage, the architect shows you the idea of his building, the

process function. So in that manner we can contribute the layout for the electrical requirements, such as cable routes and an electrical room being needed. The problem can be discussed with the other facilities in the building like mechanical and structural engineers. We can choose how best to solve the problem. It reduces the cost for the overall project. [P23, project team, male, age 50 years, experience 27 years].

This is further supported by another participant, who stated:

CD2: The competencies are something that you practice and not something that you memorise. Once you get it, it is hard for you to lose it or to forget it, but if you forget something you can refer to the book. Actually competence is more the ability towards the job, ability to deliver. Once you have done it you will know how to do it. Maybe your efficiency is slightly low, maybe you need some refreshments. Maybe if you are posted back as a district engineer you may take only a few months in order to perform. [P40, competency development, male, age 52 years, experience 28 years].

Finally, PWDM project managers should review and reflect and make analysis as to whether to let the contractor continue the work that seems to be slowly progressing or just terminate it and call another contractor to complete the job. One participant used these words to explain:

PM12: As I said just now, by experience you actually know that the project cannot be completed. So you give a report. The best thing is to give a report and give an opinion whether they can really complete it if you give them more time. Complete the job. It is really critical, because with monthly progress, over a few months if the increase is just two per cent—how long should it take? We just monitor them and then give them advice about what they should do. But if they cannot prolong it, there is no point. [P12, project manager, female, age 51 years, experience 23 years].

Reflective practice is the main ingredient needed by the PWDM project managers in implementing the strategy of reconciling competing stakeholder goals.

4.6.4 Teamwork

A typical construction project is a collaborative venture that involves a number of different organisations, brought together to form 'the construction project team'. Selection processes thus focus on organisations' individual professional capabilities

rather than their collective ability to integrate and work together effectively. Discussing this matter, a participant said:

> *PM5: I am very glad to say that we have a good team. We have the architectural team, mechanical and electrical team, and structural team working together very well—and we are in one office at the site office near the project. We can work together, and the contractor can construct our plan. If there are any amendments, the contractor can quickly inform us and we can rectify the problem as early as possible. This is because we have our own team over there. [P05, project manager, male, age 51 years, experience 27 years].*

Being able to work with anybody and as a good team player is a must, in order to solve problems arising in project management. This highlights one of the main ingredients for making a success of the project—which is that the entire project team has one objective: to complete the project as per schedule. As explained by one participant:

> *PMS4: What makes a successful project is the whole project team—the people who manage the project, the coordination among the team, and a competent project manager who is able coordinated the various disciplines in the project team to listen to the implementation of the works. [P21, project manager supervisor, male, age 50 years, experience 25 years].*

The project will be ahead of time and finish well. This is all because of 'teamwork' and the PWDM project manager who controls it through a method of statement. Project management is all about skills + tools + knowledge, all integrated. To be a success, first of all have the mindset that it will succeed and at the same time, all stakeholder must also share the same mindset. The PWDM project manager must know all the stakeholder and how to push them, how to bring/push the goal together and share the same dream. As one participant expressed his thoughts on respect:

> *PM15: Both must play the role. It is a win-win situation. In project management, we cannot change the time. If we change the time, it is a different project. We no longer give them any extension of time. We have so many budibicara, we must be firm. We must also push and guide our main contractor. Consultants play it safe, not wanting to make decisions. They don't want to take the role and responsibility. This is an attitude problem. They don't want to think any more. Project management is about team spirit. As a project manager you have to play the role to make*

sure all the stakeholder share the same goal. [P15, project manager, male, age 53 years, experience 15 years].

The problem is because everybody wants to play safe and does not want to think more. This, in turn, often results in a 'blame game' where the various team members seek to blame others for the failure of the project, rather than working together in a team spirit. For example, a participant commented:

CD2: Yes, they cannot pass the blame to others. If you want to be an effective project manager, you cannot transfer the blame to others. Otherwise you are just playing the blame game, you are not playing the project. You should be able to foresee. You must do everything to ensure that the probability of the positive occurring is high. You have to manage the list starting from the beginning. [P40, competency development, male, age 52 years, experience 28 years].

Teamwork is the main ingredient needed by the PWDM project managers in implementing the strategy of reconciling competing stakeholder goals.

4.6.5 Innovating

In general, project managers perform the same functions as other managers. That is, they plan, schedule, motivate, and control. However, what makes them unique is that they manage temporary, non-repetitive activities, to complete a fixed-line project.
All projects have problems. In successful projects, these problems are identified quickly and then analysed and solved without delay. These problems grab the PWDM project managers' attention when they become aware that there is a significant gap between what is actually happening and what the PWDM project manager wants to happen. To tackle problems in the unique condition, PWDM project managers have to be creative and innovative.

PM5 mentions about solving technical problems using creativity and innovation. It can be done by bending the rules, not breaking them:

PM5: For any work activities—for example if they want to do the plastering—the main contractor has to prepare the mock-up. We choose one site, they do the mock-up and our engineers and architecture technicians certify it. If we agree with the mock-up, we ask the main contractor to do the same for the rest of the activities similar to the

> *mock-up. This requires fewer technicians to do standing supervision, to make sure the main contractor has done similar work to the mock-up that we all agreed upon. We just need to do the random checking only. [P05, project manager, male, age 51 years, experience 27 years].*

Project managers try to overcome the challenge of lack of resources by making the best of everything. This is because resources (money, manpower, materials and machines) are never enough, but work has to be completed and so there is a need to use them wisely. This situation resonates with a statement from a participant, who explained:

> *PM11: As you know, we may have to thin out our organisation. We have to make use of what we have. If you want to wait for the ideal, wait for staff—until the end, you won't get it. [P11, project manager, male, age 49 years, experience 24 years].*

Another participant added:

> *PM11: We have to work overtime and we have to make full use of whatever resources we have. We have to get help from other areas, from a third party. [P11, project manager, male, age 49 years, experience 24 years].*

Innovating is the main ingredient needed by the PWDM project managers in implementing the strategy of reconciling competing stakeholder goals and being intermediary. In summary, these project management competencies alter the impact of causal conditions on the phenomenon. The more PWDM project managers have project management competencies , the more they can perform the strategy in maintaining project Alignment (MPA). PWDM project managers have to be competent, because it gives them a much better chance of success—and success is what they want to achieve.

4.7 Consequences conditions – Success Criteria Factor (SCF)

Consequences conditions are the certain outcomes of strategies/actions (Strauss and Corbin 1990). Consequences conditions occur after PWDM project managers apply the strategies/actions of managing change mentioned previously in section 4.5. The researcher identified the consequences conditions: intrinsic goals, tangible results and user satisfaction as illustrated in Figure 4.6.

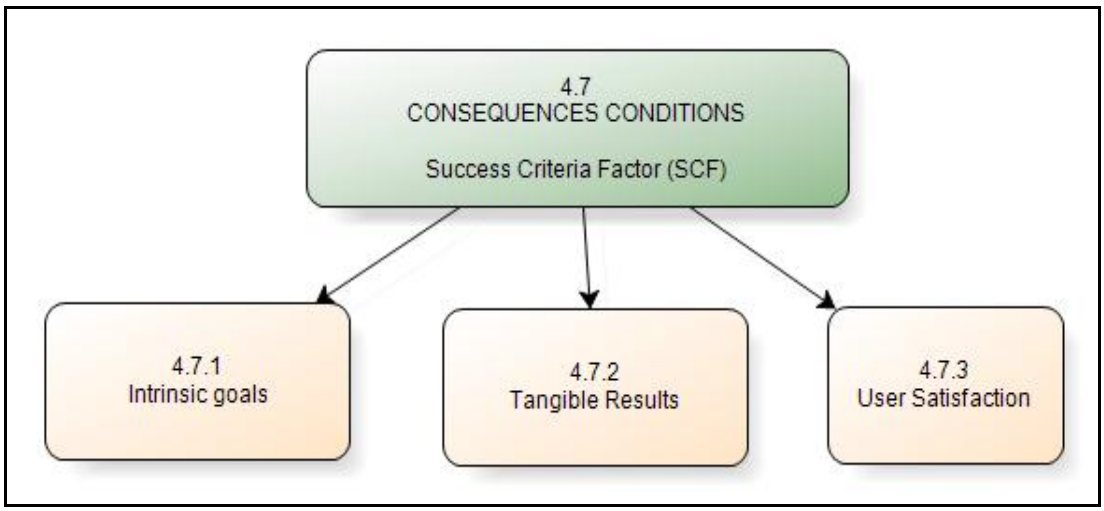


Figure 4-6 : Consequences conditions

4.7.1 Intrinsic goals

Most of the participants mention that factors that are beneficial to them for managing projects are from an intrinsic side—such as, managing the project is a new experience and they learn a lot of things during implementation of the project. This was acknowledged by the participant and is evident in the following statement:

> *PMS4: It is successful in the sense that one learns a lot of things during implementing the project, and as for me it's a new experience. Most of the time, when people do projects, you start clearing the site, the foundation, the substructure and the super-structure—but now it is the reverse, as we move from the roof downward and move outward again, in order to completely refurbish the building. That gave me a lot of experience in dealing with rehabilitation and refurbishment projects. [P21, project manager supervisor, male, age 50 years, experience 25 years].*

Besides that, they are proud to say it was their project and they want to look at it again as it seems to be some sort of achievement. For instance, one participant explained that:

> *PM3: Project success is if we look at the project and we want to look it again. We can still remember it, and if we pass that project location, we are proud to say that it was our project. When I pass the Institute of Diplomacy and Foreign Relations – Malaysia, I am proud to say that it was my project. [P03, project manager, male, age 40 years, experience 15 years].*

This is further supported by another participant, who stated:

> *PMS4: Basically the success of the project is to see the project come out life, from nothing to something and when those days when I was managing project hospital unit to see the hospital been build and been used is really motivate me and feel dearly to the hospital unit because I sense that building as such is very useful and you are paying back to the society because the publics use the building in they way the building was design and serve for the people who are sick and they may be grateful to you for actually getting build. I am never built schools or army camp. For me, hospital complex is serving the public well from birth to death. You are using the facilities. [P21, project manager's supervisor, male, age 50 years, experience 25 years].*

Working on projects can be an extremely rewarding experience and make life on projects more interesting, as each day is different from other days. They enjoy the act of solving problems. One of the participants shared his ideas in this way:

> *PM9: Seeing problems every day, it is more like a puzzle. When you come to work, you know you will face a problem. It is really interesting. Most of the problems you had faced before, but you don't know which problem will come that day. It's like a puzzle. We have to solve the puzzle problem. [P09, project manager, male, age 49 years, experience 23 years].*

4.7.2 Tangible results

The tangible results mentioned by participants regarding project success outcomes were: a good product, completed within the quality as per specified drawings and specifications required, within agreed costs and specified time, no defects at the end of the product, and no serious user accidents. A quote from a participant explained it thus:

PM5: Project success means: firstly, the project can be completed on time. If the contract says four years, then the project should be complete within four years. Secondly, the quality of the project—if the client was satisfied with the project, then we can call it a successful project. Thirdly, there will be fewer defects at the end of the project or no defects at all. If there are some defects after completion, for me, it is not a successful project." [P05, project manager, male, age 51 years, experience 27 years].

This is further supported by another participant, who stated:

PT4:First thing in my mind is you manage to complete the project on time with the agreed contract price/ cost, not so many variation order and man loop hole to cater it, and then must be quality in the sense that once you handing over the project, there are not so many complaints or defect on it. Meaning you manage to carry the project on time and with quality. [*P26, project team, male, age 48 years, experience 24 years].*

This is further supported by another participant, who stated :

PMS1:In conclusion to be successful , number one, we have to be customer focus. A lot of companies successful because they are considering what customers want. Another part is we equip ourself with knowledge, leadership skills and managerial skills and also having the right attitude. Culture is involved, and at the moment culture of quality in our country is still there yet. Malaysia is willing to compromise on quality. For example like buying the product like house before it completed. That is called compromising. Number two, if there is defect work; it wasn't re done but only repair. In our country, any defect is solved by repair, it should not. It should solve by redo. We should follow the specification and obey it. That is why the contractor don't mind making defect because they know that they only repair and not redo it. [P18, project manager, male, age 53 years, experience 21 years].

4.7.3 User satisfaction

Several participants mentioned project success is meeting user requirements to their satisfaction and their expectations. It is about fulfilling the client's desires and requirements, the project can be used by the end user, and having zero public complaint. The participant further stated:

CD1: Success is meeting customer requirements to their satisfaction and their expectations. Whatever you do, if your customer is not happy, then you are not successful. Even though you have done it on time or within cost, if the customer is not happy with you, you cannot consider yourself

as successful. [P29, competency development, male, age 50 years, experience 26 years].

This was further stressed by one the participants:

PMS3: Yes. Because it costs overrun, the public will know; EOT, the public will know. When we are open to the public they will see the product. Is this good or bad? We don't want it to be like LPT 1. When it was open to the public, the surface was not good, poor planning; there was not enough space, a lot of accidents. We don't want that. We want to have zero public complaints. [P20, project manager supervisor, male, age 51 years, experience 27 years].

4.8 Conclusion

The central concern of this study was to develop a theory of project management processes that explained why project managers in PWDM have varying success in delivering projects. Figure 4.1 showed the Paradigm Model of Maintaining Project Alignment (MPA) in PWDM. It described the experience of Maintaining Project Alignment (MPA) as the core category.

Maintaining Project Alignment (MPA) was defined as keeping project progress on track or in correct relative position, by bringing the projects' components or parts into proper coordination and aligning oneself with a group or a way of thinking.
The causal conditions that triggered 'Maintaining Project Alignment (MPA)' was Critical Success Factors (CSF) consisting of: Project Ambivalence, Project Stakeholder, Technical risk, External risk, and National culture—these conditions take the project off track.

The Strategies/actions for Maintaining Project Alignment (MPA) was through Managing Change (MC) consisting of Reconciling competing stakeholder goals, Being intermediary, and interfacing. The impact of these actions and strategies were varied with the existence of Context conditions and Intervening conditions.

The Context condition was Organizational structure (OS) consisting of Recruitment, Training initiative, Project autonomy, and Role conflict. . It was the broad conditions that influenced strategies/actions.

The Intervening conditions found in this study were Project Management Competencies (PMC) consisting of Leadership, Problem solving, Reflective practice, Teamwork, and Innovating. It was the narrow conditions that influenced Strategies/actions.

The Consequences conditions were Success Criteria Factor (SCF) consisting of intrinsic goals, Tangible results, and User satisfaction. It was the outcome or consequences that resulted from Maintaining Project Alignment (MPA). Maintaining Project Alignment (MPA) is critical to project success

CHAPTER 5. DISCUSSION AND CONCLUSION

5.1 Introduction

The aim of this chapter is to present a discussion and conclusions based on the research questions and findings. The discussion is presented in line with the findings detailed in Chapter 4, and the links to current literature, as detailed in Chapter 2 and research questions stipulated in Chapter 1. — as shown in Figure 5.1.

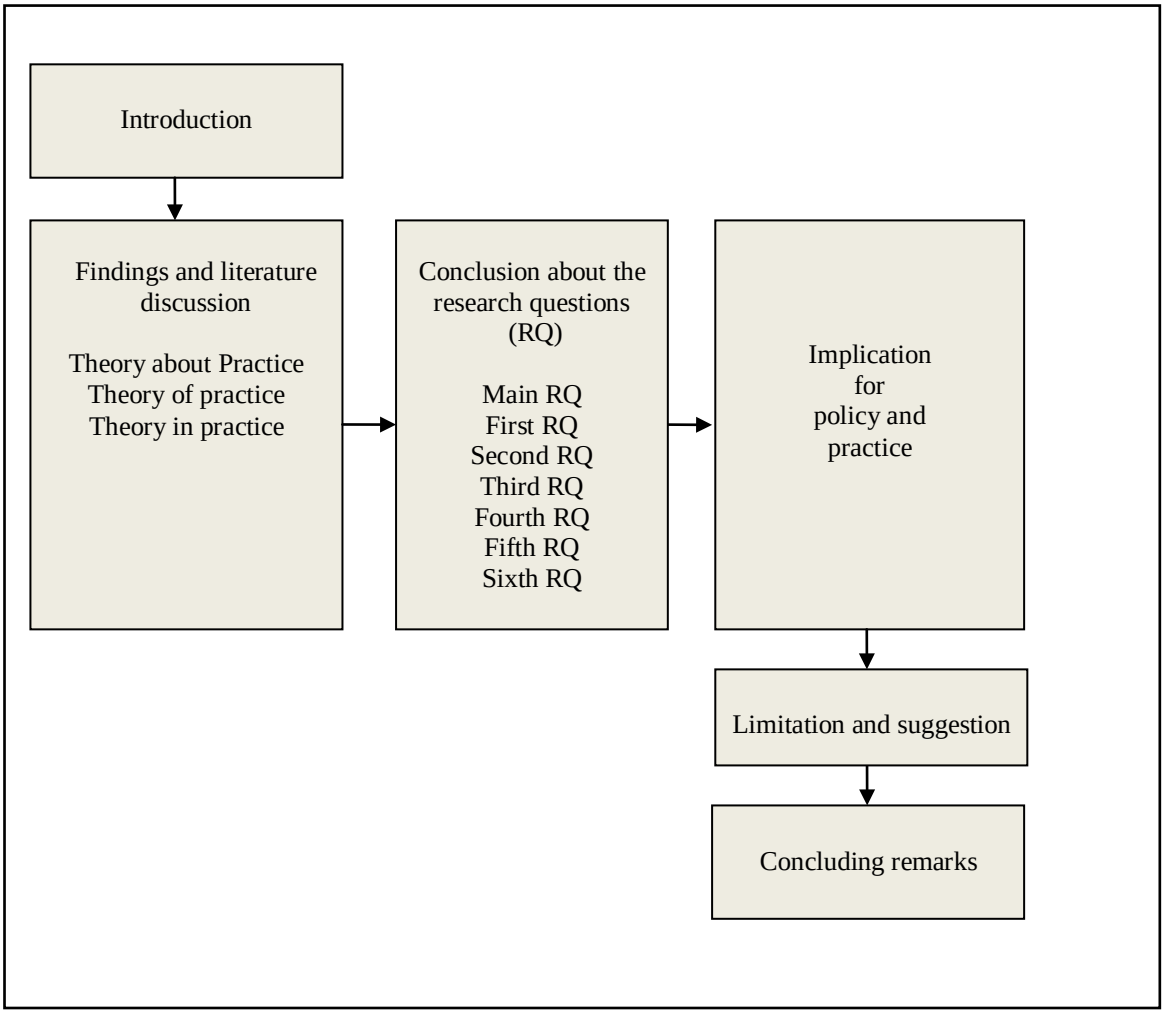


Figure 5-1 : Outline of the discussion and conclusion chapter

5.2 Findings and literature discussion

This section seeks a logical argument between the findings (in Chapter 4) and the literature (in Chapter 2) in each area. The findings are supportive of the existing literature and provide confirmatory evidence within this unique study setting, project management of construction projects in the Public Works Department of Malaysia (PWDM), in a non-Western and developing country. In grounded theory research the literature comparison is not only intended to validate the findings of a study, but to locate the study within the existing literature (Strauss and Corbin 1990).

The findings provide a better understanding of the project management process and answer three challenges in rethinking project management (Winter, Smith, Morris, et al. 2006) discussed in Chapter 2. Table 5.1 shows the relationship between emerging categories in the paradigm model—the findings—and the challenges in rethinking project management (Winter, Smith, Morris, et al. 2006)—the literature. A brief discussion of the relation) hip is presented as follows in Table 5.1 and the detailed explanation is in Sections 5.2.1–5.2.3.

Table 5.1 : Emerging categories in paradigm model and their relationship to the challenges in rethinking project management

FINDING FROM CHAPTER 4			LITERATURE FROM CHAPTER 2
Paradigm Model	**Emerging Categories in Paradigm Model**	**Description**	**Connection to the Challenges in Rethinking Project Management**
Phenomenon	Maintaining Project Alignment (MPA)	The phenomenon in the project management process which PWDM project managers must deal with in order to obtain project success.	
Context conditions - Organisation structure (OS)	Recruitment	The suitability of that person for becoming a PWDM project manager.	
	Training Initiative	A training initiative to train PWDM project managers.	

FINDING FROM CHAPTER 4			LITERATURE FROM CHAPTER 2
Paradigm Model	**Emerging Categories in Paradigm Model**	**Description**	**Connection to the Challenges in Rethinking Project Management**
	Project autonomy	The possession or right of PWDM project manager in actions	Theory about practice—demonstrates the complexities of projects Theory for practice—consistently viewing project as a social process. Theory in practice—indicated practitioners as reflective practitioners.
	Role conflict	Disagreement on the role of PWDM project manager in managing project	
Causal conditions – Critical Success Factors (CSF)	Project ambivalence	Clarifying of whether time, cost, or quality was more important	
	Project stakeholder	Client, consultant, main contractor, subcontractor and supplier who impact on project delivery.	
	Technical risk	Scope of the project, materials and labour that will impact on project delivery	
	External risk	The supplier, political, authority and nature factors that can inhibit project success.	
	National Culture	Espouses beliefs and values and underlying assumptions	
Strategies/ actions – Managing Change (MC)	Reconciling competing stakeholder goals	The process of placing and arranging project conditions (time, cost and quality) on the right track by overcoming all the problems arising from various project stakeholder	
	Being intermediary	The PWDM project manager being the centre of project progress.	
	Interfacing	PWDM project manager communicates to the entire project stakeholder	
Intervening conditions – Project management competencies (PMC)	Leadership	Project managers have to lead the team to solve problems and in order to obtain project success.	
	Problem Solving	Solving problem occurs in order to keep project progress on track or in correct relative position	
	Reflective practitioner	Experience can make PWDM project managers learn the tricks and foresee any problems occurring.	
	Teamwork	Entire project stakeholder having one objective: to complete the project as per schedule.	
	Innovating	Solving technical problems using creativity and innovation, by bending rules, not breaking	

FINDING FROM CHAPTER 4			LITERATURE FROM CHAPTER 2
Paradigm Model	**Emerging Categories in Paradigm Model**	**Description**	**Connection to the Challenges in Rethinking Project Management**
		them.	
Consequences conditions – Success Criteria Factor (SCF)	Intrinsic goal	Managing the project as a new experience, learning lots of things during implementation of the project.	
	Tangible result	Project success outcomes: a good product, completed within the quality as per drawings and specifications, within agreed cost and specified time, with no defect at the end of the product and no serious user accident.	
	User satisfaction	Manage to fulfil the client's requirement, can be used by the end user, having zero public complaints.	

5.2.1 Theory about practice: from life cycle model of projects and project management towards theories of complexities of projects and project management

This challenge is about the simple life cycle models of projects as the dominant model of projects and project management, towards the development of new models and theories which recognise and illuminate the complexity of projects and project management (Winter, Smith, Morris, et al. 2006).

The finding of this research is a paradigm model of project managers' roles in the PWDM (refer to Figure 4.1). The central logic of the theoretical model developed in this thesis suggests that the causal conditions (Critical Success Factors (CSF))) contribute to the occurrence of the phenomenon (Maintaining Project Alignment (MPA)). The strategies/actions of Managing Change (MC) has been applied to overcome this phenomenon. The context (Organisational Structure (OS)) and intervening conditions (Project management competencies (PMC)) influence the strategies that are employed to bring about certain consequences (Success Criteria Factors (SCF)).

These interrelations between all conditions (causal conditions, context conditions, intervening conditions, and consequences conditions), strategies/actions and phenomena in the paradigm model develop the complexities of projects and project management. This model provides a holistic perspective that helps us fully take into account the complexity of project management. Maintaining Project Alignment (MPA is how the PWDM project manager achieves an influence on the delivery of project success.

We can conclude that the dimensions of complexities of projects in literature (Baccarini 1996; Macheridis and Nilsson 2004; Williams 2002) and from the findings, are similar in identifying the dimension of project complexity in terms of differentiation (which is dependent on the number of various elements) and interdependency (the degree of interrelatedness between these elements).

Nevertheless the paradigm model (refer to Figure 4.1) from this research has extended the existing research by showing the story of the connection of these dimension of project complexity towards project success factors (causal conditions), project success criteria (consequences conditions), and project management competencies (intervening conditions) in one model.

This model shows that achieving project success is not as simple as life cycle based models of projects—one problem is equal to various causes and the solution is also varied. Problems cannot be solved solely dependent on a set of methods, techniques and tools—which in project management is mostly a positivist one (Bredillet 2010). Problems can be solved by looking from human dimensions including: Reconciling competing stakeholder goals, Being intermediary, and interfacing. As a result, the paradigm model developed from these findings has recognised and illuminated the complexity of projects and project management.

5.2.2 Theory for practice: from the project as the instrumental process towards project as social process.

This challenge is about the instrumental life cycle image of projects as a linear sequence of tasks to be performed on an objective entity 'out there'—using codified knowledge, procedures and techniques, and based on an image of projects as temporary; a political production process towards concepts and images that focus on social interaction among people—illuminating the flux of events and human actions, and the framing of projects (and the profession) within an array of social agendas, practices, stakeholder relations, politics and power (Winter, Smith, Morris, et al. 2006).

The researcher discovered that managing projects is a social process, named 'Maintaining Project Alignment (MPA)'. Maintaining Project Alignment (MPA) is the phenomenon in the project management process that PWDM project managers must deal with in order to obtain project success. During management of the project, PWDM project managers have to monitor project health. Obviously if any these indicators of project health show a negative pattern, PWDM project managers must act to maintain project alignment. Maintaining Project Alignment (MPA) is defined as keeping project progress (time, cost and quality) on the track or in correct relative position (due to problems arising from causal conditions) —by bringing project components into proper coordination through Managing Change (MC) (Reconciling competing stakeholder goals, Being intermediary, and interfacing).

Because the project alignment is the main core process stated in the research finding, it is required to discuss how alignment has been conceptualised in management literature. Alignment concepts have been studied widely by information technology (IT) scholars—especially regarding the problem of aligning information technology (IT) strategies with business requirements (Gutierrez, Orozco, and Serrano 2009; Henderson and Venkatraman 1993; Reich and Benbasat 2000).

The operations management area also discusses the concept of alignment (Rondinelli, Rosen, and Drori 2001; Papke-Shields and Malhotra 2001). While in project

management, alignment has also been discussed (Griffith and Gibson 2001; Hacker and Doolen 2007; McKenna 2006; Moran 2007; Skulmoski and Hartman 1999).

Table 5.2 shows the comparison of alignment definitions from the literature (Griffith and Gibson 2001; McKenna 2006; Moran 2007; Skulmoski and Hartman 1999) and from these findings. From Table 5.2, we can conclude that the alignment definitions in the literature and from the findings are similar in the context of instrumental and social processes.

All mention the triangle of project objectives (time, cost, and quality) —which is the instrumental process—and the interaction required among the project stakeholder—which is the social process. This is in line with the findings of Cooke-Davies and Arzymanow (2003) and Eskerod and Riis (2009), that every aspect of project management has two dimensions: a technical dimension and a human dimension. The technical dimension has no greater weight than the human dimension.

Table 5.2: Comparison of alignment definition from literature and findings

Author	Alignment Definition
Finding from this research (2011)	Maintaining Project Alignment (MPA) is: to keep project progress (time, cost and quality) on the track or in the correct relative positions (due to problems arising from causal conditions) —by bringing project components into proper coordination through Managing Change (MC) (Reconciling competing stakeholder goals, Being intermediary, and interfacing).
McKenna (2006)	Alignment is founded on: the collective understanding of the project, incorporating the firm's separate interests, and inter-firm trust.
Moran (2007)	Goal alignment is the degree to which participant organisations in a multi-organisational project agree on the level of priority of: cost, schedule, and quality goals.
Griffith and Gibson (2001)	Alignment is the conditions where appropriate project participants work together within acceptable tolerance, to develop and meet a uniformly defined and understood set of project objectives.
Skulmaski and Hartman (1999)	Project goal alignment is the process of ensuring that key project stakeholder share a common understanding of project goals. This process requires that the key stakeholder expectations and objectives should be considered, documented, and prioritised.

We can conclude that the paradigm model of Maintaining Project Alignment (MPA) that has been discovered from this research is the integration of the performance evaluation model (Chen and Lee 2007), the project excellence model (Westerveld 2003) and the framework determining critical success/failure factors in projects (Belassi and Tukel 1996). The performance evaluation model (Chen and Lee 2007) is presented as an intervening conditions in the paradigm model of Maintaining Project Alignment (MPA). The project excellence model (Westerveld 2003) presents as strategies/actions and consequences conditions in the paradigm model of Maintaining Project Alignment (MPA). The framework determining critical success/failure factors in projects (Belassi and Tukel 1996) is presented as a causal conditions in the paradigm model of Maintaining Project Alignment (MPA). As a result, the paradigm model developed from this research has identified and clarified projects as social processes—which are filled with interaction among events and people.

5.2.3 Theory in practice: from practitioners as trained technicians towards practitioners as reflective practitioners

This challenge is about training and development which produces: practitioners who can follow detailed procedures and techniques prescribed by project management methods, and tools for learning and development—which facilitates the development of reflective practitioners who can learn, operate and adapt effectively in complex project environments, through experience, intuition and the pragmatic application of theory in practice (Winter, Smith, Morris, et al. 2006). The researcher discovered that reflective practitioner was one of the Project Management Competencies (PMC) required by PWDM project managers in order for them to execute strategies/actions Managing Change (MC) in Maintaining Project Alignment (MPA).

The actions and strategies to maintain project alignment were managing change (MC). These strategies/actions can only be executed if intervening conditions exist. The intervening conditions found to be important in this study was Project Management Competencies (PMC) consisting of leadership, problem solving, reflective practitioners, teamwork, and innovating.

By being reflective practitioner, PWDM project managers were able to look back at the previous and current experience as the lesson learnt and applied it to make improvement in managing project. PWDM project managers need for experience in tackling problems—which cannot read from books. As an experienced person, already knew the moment they saw it whether it is right or not, and can solve the problems immediately. The PWDM project manager was able to maintain project alignment. This can be done by the PWDM project manager being aware of every Critical Success Factors (CSF) occurred that may take the project off track. As a result, the paradigm model developed from this research has identified and clarified PWDM project manager as a reflective practitioner —which are filled with construction expectation nowadays managing projects in a shorter time and less cost but excellent quality.

5.3 Conclusions about the research questions

The aim of this research was to explore the phenomenon of project managers in managing projects for the PWDM in more detail—as there is currently no theory or process model of project managers in managing projects in the existing literature. The researcher did so by interviewing PWDM project managers about how they manage projects success. The researcher's aim was to construct a paradigm model that enables us to understand the process of project managers in managing projects for the PWDM more systematically. With this in mind, the main research question is:

Why do project managers in PWDM have varying outcomes in delivering project success?

In this respect, the following six sub-questions are also addressed:

1. What are the extant salient themes and core variables in the project management process in PWDM?

2. How effective is current project management theory in explaining this variation?

3. How do project managers at PWDM perceive the factors that influence project success?

4. What are the major obstacles (problems and risk) to the delivery of project success at PWDM and how do the project managers address these obstacles?

5. To what extent are project managers able to employ their competencies to achieve project success?

6. Can a substantive theory be formulated that contributes to the development of project management theory and how can this help understand and improve project management practice at PWDM and more generally?

5.3.1 Conclusion about the main research question

Why do project managers in this organisation have varying success in delivering projects?

The analysis suggested that the project manager at PWDM have varying success in delivering projects because due to their ability to maintain project alignment. PWDM project manager maintains project alignment through the actions and strategies called managing change by Reconciling competing stakeholder goals, Being intermediary, and interfacing.

Reconciling competing stakeholder goals, being intermediary, and interfacing are the terms used to describe the process of placing and arranging project conditions (time, cost and quality) on the right track by overcoming all the problems arising from various project stakeholder. The PWDM project manager will achieve his strategy's goal only if all these project stakeholder are willing to work to execute them. Nevertheless, there is a need for alignment between a good strategy from the PWDM

project manager and the execution of that good strategy by other project stakeholder. Without this alignment, the strategies go nowhere and project progress declines. This parallels with what has been mentioned by Itami (1987) that for strategies to be effective, it requires everyone's actions to be focused in the same direction, and everyone feeling the momentum, to increase the level of creative tension. This finding aligns with Verzuh (1999) who concludes that the project manager is a leader who has vision to motivate and unite people together—and most of all to attain great things

These actions and strategies can only be executed if the intervening conditions exist. The intervening conditions found to be important in this study are the project management competencies (leadership, problem solving, reflective practice, teamwork, and innovating). These project management competencies provide the ability for PWDM project manager to perform the strategies/actions of managing change. The PWDM project manager will use these project management competencies to manage change due to the Critical Success Factors occurrence.

In addition, these actions and strategies will also depend on the context conditions. The context conditions were Organizational Structure (OS) consisting of recruitment, training initiative, project autonomy, and role conflict. Organizational Structure (OS) provides the opportunity for the PWDM project managers to perform the strategies/actions of managing change. Without these Project Management Competencies (PMC) and matured Organisational Structure (OS), PWDM project managers do not have ability and opportunity to maintain project alignment.

The occurrence of Critical Success Factors (CSF), strategies/actions of managing change, organisational structure, and project management competencies in the paradigm model called Maintaining Project Alignment (MPA) are the reasons why project managers in PWDM have varying success in delivering projects.

5.3.2 Conclusion about the first research sub-question

What are–the extant salient themes and core variables in the project management process in PWDM?

The extant salient theme and core variable in the project management process in PWDM can be conceptualised as a social process called 'Maintaining Project Alignment (MPA)'. This is the core category and the phenomenon of a substantive theory, which emerged from the data analysis. In this study, it was found that project managers in the PWDM attempted to deal with the problem of overcoming the project status of failure towards success, through a process of 'alignment'.

Alignment is about searching for and balancing various angles; first, balancing project success criteria such as: the triangle of cost, time and quality; second, balancing project success factors such as: project stakeholder needs; third, balancing project success criteria and project success factors; fourth, the right balance between planning and implementation—planning without activity is as worthless as activity without planning; fifth, the balance in transferring responsibility between federal and state levels within the PWDM organization.

In the project manager's struggle to be effective in project management roles—in the context of failure and success—*alignment* was identified in the data as the core category or process that explained the major actions and the most variation in the behaviour of those involved. It was found that the core category is the central phenomenon around which other categories are integrated and which links the various data together. Alignment is not a single event, it is an ongoing process.

5.3.3 Conclusion about the second research sub-question

How effective is current project management theory in explaining this variation?

The current project management theory focuses on research regarding the role of the project manager in relation to project success. Various perspectives on project, project management, Project management Competencies (PMC), project Success Criteria Factors (SCF) and project Critical Success Factors (CSF) are examined. The literature puts everything in CSF,

The researcher examined exhaustive literature about the concepts of a project, project management, the construction industry, and project managers in project management within the construction industry. It provides an understanding of the five challenges of research into project management conducted by the UK Engineering and Physical Science Research Council (EPSRC) between 2004 and 2006. These five directions are: complexity, social processes, value creation, broader conceptualisation of projects, and reflective practice (Sauer and Reich 2009). Three of these challenges: complexity, social processes and reflective practice are the subject of this thesis—as they are closely related to the issues associated with construction project management—which are the focus of the analysis, particularly with regard to the focus on roles, responsibilities, and challenges of project managers, around which project success revolves.

Literature does not consider how project managers should apply the new competencies. It is not sufficient to simply list competencies. It is essential to share some details why they consider these competencies to be desirable to have and apply, and what the benefits are if managers adopt these. These are sometimes assembled without using clear selection criteria that, for example, provide evidence why one competence works better than another. They do not show any logical links that bind these profiles together to support their suggestions.

It is not clear from the literature reviewed this for how these skills in working with people will assist project managers to manage their people more effectively.

Identifying a number of skills in working with people by themselves is not adequate to make such claims. Literature does not show why they think that their suggestions of makes competent project managers are valid. They do not provide solid evidence to strengthen their suggestions. It is relevant that all considered similar skills in working with people to be desirable for managers to have, independent of each other.

To date, no study has yet conceptualised and operationalised a model for addressing why project managers have had variances in delivering project success. The lack of clear knowledge of the determinants of project managers' experience in construction makes it difficult to establish an initiative to foster the needs of project managers in managing project success.

5.3.4 Conclusion about the third research sub-question

How do project managers at PWDM perceive the factors that influence project success?

Project managers at PWDM perceive the factors that influence project success as Critical Success Factors (CSF), Organisational Structure (OS), Project Management Competencies (PMC), and strategies/actions of Managing Change (MC).

When one of the Critical Success Factors occurs, for example client requirements keep changing frequently. This was due to the fact client often lacking clarity on whether time, cost or quality was more important. Let say, clients want to add new air conditioning installation in one of the buildings. This change request will make the project cost increase and project schedule delay. . Project managers had to maintain project alignment by bringing back the project progress on the right track by using strategies/actions of managing change. Project managers will see the changes in the whole picture with a clear overview of this sequence and communicate with all the project stakeholder on the revised project schedule and additional activity to be done.

The successful in managing change acquires project managers to have project management competencies consisting of: leadership to lead the project stake holder

move forward.; problem solving to develop solution in order to keep project progress on track; reflective practice to learn the tricks from the experience and foresee in advance any problems occurring; teamwork to make the entire project team united in completing the project as per project charter; and innovating to solve technical problems using creativity and innovation, by bending rules, not breaking them. In addition, matured organizational structured in possession or right of PWDM project manager in actions and training initiative to train project managers are needed to provide the opportunity for project managers to accomplish strategies/actions of managing change .

5.3.5 Conclusion about the fourth research sub-question

What are the major obstacles (problems and risk) to the delivery of project success at PWDM and how do the project managers address these obstacles?

The major obstacles (problems and risk) to the delivery of project success at PWDM are project ambivalence, project stakeholder, technical risk, external risk, and national culture. These factors include in the causal conditions portion of the paradigm model. Project managers address these obstacles through Managing Change (MC) consisting of Reconciling competing stakeholder goals, Being intermediary, and interfacing. These actions include in the strategies/actions portion of the paradigm model.

Project ambivalence is lacking clarity on whether time, cost, or quality was more important. This is because construction world is full of grey area which is difficult to make a decision. Project managers address project ambivalence by Reconciling competing stakeholder goals to ensure the outcome of the project are clearly set and agreed at an early stage until to the end.

Project stakeholder consist of: clients, consultants, main contractors, subcontractors and suppliers. Project managers must work with a diverse group of stakeholder to complete projects. They are typically the direct link to the client and must manage the tension between client expectations and what is feasible and reasonable. The biggest

risk is having poor quality project stakeholder. Project managers address project stakeholder risk by being intermediary in monitoring, facilitating and coordinating the focus of the project.

Technical risk are about risk that shortage of materials and labour could lead to instability of material prices, thereby affecting the project schedule and ultimately causing project delays and cost overruns. Project managers address technical risk by interfacing project in seeing the whole as a helicopter view. This is because project managers are the center of relation in project management. Project managers can arrange the coordination meeting with various stakeholder and come out with the right solution to overcome this risk.

External risk involve interference from politicians, local authority or infrastructure provider and nature. Project managers address external risk by Being intermediary and interfacing project into two directions: managing in (for the project team member) and managing out (for the external group including sponsor, authority, and political).

National culture involves a preference pattern of values affect how a project manager managing change. It is composed four dimensions namely power distance, individualism-collectivism, uncertainty avoidance, and masculinity-femininity. PWDM has a very high power distance, high collectivism, low uncertainty avoidance, and average masculinity. Meaning, PWDM team member having power unequally shared among members; base their actions on the interest of the group; feel threatened by uncertain situations; and emphasis on human relation. In other words PWDM team member do not argue on any issues with more powerful people; discourage competition and challenges between them; are not risk taker; and rewarding behaviour that is kind and considerate of others. Project managers address the national culture involvement by Reconciling competing stakeholder goals to ensure relying on the predefines role of the project team members as clearly set and agreed at an early stage until to the end.

5.3.6 Conclusion about the fifth research sub-question

To what extent are project managers able to employ their competencies to achieve project success?

As indicated in the previous research question, the causal conditions that influence project success from a project manager's perspective were Critical Success Factors (CSF) consisting of: project ambivalence, project stakeholder, technical risk, external risk, and national culture—these conditions take the project off track.

The project problems that occur from the above causal conditions create conflict and take the project out of alignment—and it is the role and responsibility of project managers to maintain project alignment by using their competencies (leadership, problem solving, reflective practice, teamwork, and innovating) to implement actions and strategies Managing Change (MC) consisting of Reconciling competing stakeholder goals, Being intermediary, and interfacing

Project managers use leadership competencies to lead the team, defining what a successful project looks like and when it is finished for the project key stakeholder, and prioritising which constraints are most important for success. They use their technical competencies in site layout techniques and provide effective solution to conflicts in reflective practitioner, simultaneously maintaining good relationships by communication skills. Project manager able to employ their competencies to achieve project success as long as they can perform the actions/ strategies indicate in this finding with one solid objective Maintaining Project Alignment (MPA.

The answer for this research question can be obtained from Context conditions in the paradigm model—which have emerged from the researcher's grounded theory study into the project management of construction projects in the PWDM. The context conditions are broad conditions that influence the strategies/actions taken. The context conditions that has been identified is organisation structure. The organisation structure consists of: recruitment, training initiatives, project autonomy and role conflicts of PWDM project managers.

Project managers believe they can contribute to project success if they have gone through these situations: their recruitment as project manager is due to their willingness to take responsibility as the project manager; they have gone through formal training in project management; they have full project autonomy to manage the project; and they minimise role conflicts as project manager.

5.3.7 Conclusion about the sixth research sub-question

Can a substantive theory be formulated that contributes to the development of project management theory and how can this help understand and improve project management practice at PWDM and more generally?

The researcher applied grounded theory methodology, because it is ideally suited to constructing a data-based theory that can be used as a basis for future research (Creswell 2008, Strauss and Corbin 1998). The end product of grounded theory is a paradigm model that systematically links antecedents, situational conditions, coping strategies, and consequences of the phenomenon of interest (Strauss and Corbin 1998). The theory of Maintaining Project Alignment (MPA) moves the project management body of knowledge by integrating and merging the concepts of: project success factors (causal conditions), project success criteria factors (consequences conditions), and project management competencies (intervening conditions) into one model that includes: fit, work and relevance in explaining the phenomenon of Maintaining Project Alignment (MPA)

The most important contribution made by the substantive theory of Maintaining Project Alignment (MPA) to the literature is: providing a paradigm model of project managers' roles that will describe the experience of Maintaining Project Alignment (MPA) through managing change (MC) (Reconciling competing stakeholder goals, Being intermediary, and interfacing). In addition, the literature relating to project management and project managers is unclear about the competencies required by project managers and how project manager competencies connect to project success. Lists of project managers' competencies vary in different studies in literature.

Although several lists of competencies are generated, they seem to tabulate individual competencies rather than grouping them according to some criteria—to help analyse the interaction between them and the possible consequences. Furthermore, many of these competencies do not, in practice, directly affect project success or failure. Usually a combination of many competencies, at different stages of the project life cycle, results in project success or failure.

Whereas many of these studies generate lists of project managers' competencies, each list varies in its scope and purpose. Their competencies are usually listed as either very general characteristics, or very specific characteristics affecting only a particular project. There might be additional problems with the use of these lists—for examples, due to the unique nature of projects, most of the competencies in a list might not be applicable to a particular project; or a competency which is the main determinant of success for a project might not be listed.

The researcher suggests a new framework grounded in data that classifies competencies, and describes the impact of these competencies on project success or failure. Emphasis is given to the grouping of competencies towards the strategies and actions performed by project managers and explaining the interaction between them—rather than the identification of individual competencies.

The framework that the researcher suggests here not only brings advantages by grouping competencies, but also helps project managers understand the intra-relationship between the competencies in different groups and the strategies and actions performed by project managers in maintaining project management through managing change (MC) (Reconciling competing stakeholder goals, Being intermediary, and interfacing). These relationships explain interactions among competencies groups. Using this framework, project managers can easily observe these cause and effect relationships between the competencies needed in these strategies of managing change (MC) (Reconciling competing stakeholder goals, Being intermediary, and interfacing) to maintain project alignment

The literature puts everything in CSF, but this research finding separates causal conditions, strategies/actions, intervening conditions, and context conditions. These

separations of conditions give meaning to explanations of the story of managing project success.

This model enhances previous research in two ways. One is to view the process of project managers in managing projects in a more systematic way, by focusing on the broader issues of how PWDM project managers achieve influence on the delivery of project success. A second is by examining in greater detail the relationship and integration of the phenomenon that explains how PWDM project managers achieve influence on the delivery of project success to potential causes, consequences, and situational conditions that affect it. Emphasis is given to the grouping of causes, consequences, and situational conditions and explaining the interaction between them, rather than the identification of individual factors. On the other hand, the previous research has separately studied the potential causes, consequences, and situational conditions of managing projects. As in the previous literature, potential causes are similar to project success factors and potential consequences are similar to project success criteria.

Although the need to integrate project Critical Success Factors (CSF) and project success criteria has long been advocated (Belassi and Tukel 1996; Westerveld 2003), until now a practical framework did not exist. The thesis seeks to contribute to the discipline of project management. The framework developed in this thesis includes: context conditions, causal conditions, actions strategies, intervening conditions and consequences conditions, integrated with the main phenomenon of Maintaining Project Alignment (MPA). The thesis offers the theory of Maintaining Project Alignment (MPA) for consideration in accordance with the three parameters of: fit, work and relevance. Maintaining Project Alignment (MPA) provides insight into the behaviour of those within the research context. Maintaining Project Alignment (MPA) has relevance primarily to two communities—researchers and practitioners.

To the research community, it provides for its generation a formal theory of project management process. This recognises that all formal grounded theory starts with a substantive theory (Dey 1999). It also prompts further investigation into its categories and its grounding in other substantive areas.

Drawing from the substantive theory of Maintaining Project Alignment (MPA), the following propositions are offered:

1. The experiences of managing project success contribute to a sense of Maintaining Project Alignment (MPA). PWDM project managers must perform the actions of Maintaining Project Alignment (MPA) which defined as keeping project progress on track or in correct relative position, by interfacing and being intermediary, to bring the projects' goals into proper coordination and align oneself with a group or a way of thinking.

2. The phenomenon of Maintaining Project Alignment (MPA) is needed due to the occurrence of Critical Success Factors (CSF) which affects the project off track and moving backward, far away from success.

3. Critical Success Factors (CSF) consist of Project ambivalence, Project stakeholder, Technical risk, External risk, and National culture.

4. PWDM project managers Maintain Project Alignment (MPA) through strategies/actions of Managing Change (MC).

5. Managing Change (MC) consists of Reconciling competing stakeholder goals, Being intermediary, and Interfacing.

6. Managing Change (MC) depends on the existence of Organizational Structure (OS) and Project Management Competencies (PMC).

7. Organizational Structure (OS) consists of Recruitment, Training initiative, Project autonomy, and Role conflict.

8. Project Management Competencies (PMC) consist of Leadership, Problem solving, Reflective practice, Teamwork, and Innovating.

9. Maintaining Project Alignment (MPA) offers benefits to Project Criteria Success Factors (CSF).

10. Project Criteria Success Factors (CSF) consist of Intrinsic goals, Tangible results, and User satisfaction.

5.4 Implications for policy and practice

The findings provide organisations with an understanding of the competency profile of their project manager in managing projects. This should therefore help to align their project manager in professional development towards improving their skills in these competencies. Organisations can also apply the findings to make an assessment of the profiling, recruitment and career path of project managers who have appropriate skills and competencies. The study lays a premise for increasing our understanding of what goes on in projects, the role of project managers, and in particular, the unique role of Maintaining Project Alignment (MPA). Such roles, it seems, are critical for learning and knowledge establishment in projects.

The finding of this study is a paradigm model of project managers' roles. The main role of project managers in order to deliver project success is Maintaining Project Alignment (MPA). In order to maintain project alignment, project managers have to perform strategies/actions Managing Change (MC) consisting of Reconciling competing stakeholder goals, Being intermediary, and interfacing. These strategies can be executed provided that project managers have Project Management Competencies (PMC) consisting of Leadership, Problem solving, Reflective practice, Teamwork, and Innovating.

The training for project managers should take into account how to develop these competencies of: Leadership, Problem solving, Reflective practice, Teamwork, and Innovating. The approach of this training should be actions learning—based on how to use these competencies in order to execute the strategies/actions consisting of Managing change (MC)

5.5 Limitations and suggestions for further research studies

This research focuses on providing an understanding of the underlying reasons why project managers in the past have failed to deliver project success. This research is exploratory in nature. It was not practical to acquire a sample of all project managers in Malaysia.

Data was collected from a single project organisation, the PWDM, and therefore precludes the possibility of generalization of the finding in the other contexts – such as private organization. This limitation on generalization has been addressed in qualitative research (Crotty 1998; Denzin and Lincoln 2003). However, such findings can be used as guidelines. It would be interesting to conduct future research to explore further the relevance of this research to other project management organization context such as private project management consultant as well as to those project managers working in other countries.

The proposed paradigm model of project managers' roles in this study was developed around a substantive theory of project management in PWDM. Further studies based on this model are recommended. More research is needed to substantiate and to explicate the factors which differentiate transformers from managing project at the other levels of Maintaining Project Alignment (MPA). The proposed paradigm model of project managers' roles in PWDM should be tested in other project management settings, as well as in other types of organization.

The present research findings call for future studies of two types. The first approach is to conduct quantitative studies. The researcher suggested that the further research had to convey additional correlation studies in which Maintaining Project Alignment (MPA) measures are correlated with the outcomes. A second approach is to conduct qualitative studies that differentiate such specific themes as realignment, co-alignment, misalignment and non alignment aspects of Maintaining Project Alignment (MPA). It may be able to distinguish among multiple reasons for Maintaining Project Alignment (MPA), including which reasons are most important in different circumstances.

It also suggested that future research could be undertaken involving the others project stakeholder. Thus select a few projects and study detailed about it by interviewing all the stakeholder involved in the project: the client, the main contractor, the subcontractor, the supplier, the designer,. It would provide a holistic view from all the stakeholder involved in the project, and more understanding of the detailed role-play of other project stakeholder in Maintaining Project Alignment (MPA). In this regard, a complementary and extended view of the substantive theory of Maintaining Project Alignment (MPA) would be achieved.

5.6 Concluding remarks

This is a study on the 'what and why' of successful PWDM project managers—what common characteristics they share and why there is logic behind their success. Every project manager needs the answer to these questions—yet few studies fill this need. Dozens of studies on project management success give readers the tools to analyse the 'how to' of strategies formulation, but little is said about the 'what and why'.

Itami (1987, p. 160) mentioned the Chinese strategist Tzu (1983) who once said, 'There are not more than five musical notes, yet the combinations of these five give rise to more melodies than can ever be heard, There are not more than five primary colours, yet in combination they produce more hues than can ever be seen. There are not more than five cardinal tastes—sour, acrid, salt, sweet, and bitter—yet combinations of them yield more flavours that can ever be tasted. In battle, however, there are not more than two methods of attack—the direct and the indirect—; yet these two in combination give rise to an endless series of manoeuvres'. Never the less in this research, there are not more than five Project Management Competencies (PMC) of Maintaining Project Alignment (MPA), yet the combination of these five competencies gives more actions than can ever be thought.

This research was exploratory in nature and contributes to the body of knowledge by expanding the previous research into the emergent theory of Maintaining Project Alignment (MPA). Previous literature identified the project Critical Success Factors,

project manager competencies and the project success criteria but did not attempt to identify the phenomenon relationship between them. This research expanded that research by focusing on the experience of project manager in managing projects and how project managers influence the delivery of project success. Major contributions of this research comprise of the following:

1. Develops a clear definition of the project managers' role as it relates to project Critical Success Factors (CSF), project manager competencies, and project success criteria. This research withdraws a complex phenomenon in project management and stipulates a simplifying theory of 'Maintaining Project Alignment (MPA)' which is easier to understand.

2. This study demonstrates that Maintaining Project Alignment (MPA) has a significant and positive effect on project success. It provides a theory for the project manager's role. Project management has been regarded as having a lack of theory (Koskela and Howell 2002) and not providing practice models to guide practice (Pich, Loch, and De Meyer 2002). This research fills this gap in the literature.

The focus of this research is for project managers in the construction industry and the public sector—with particular attention being paid to details regarding the project manager's experience in managing a project. This thesis introduces the social process of Maintaining Project Alignment (MPA). It links together Critical Success Factors (CSF), the need for project manager competencies, and project success criteria. It answers research questions regarding why project managers in this organisation have varying success in delivering projects. It is all about using competencies to perform strategies/actions, in order to maintain project alignment—which results in project success. This is a substantive theory—which has emerged from the researcher's grounded theory study into the project management of construction projects in the PWDM, in a non-Western and developing country.

In conclusion, the theory of Maintaining Project Alignment (MPA) makes a contribution to understanding the experience of project managers in managing

projects, and the understanding of grounded theory methods. The theory of Maintaining Project Alignment (MPA) has influenced the project management body of knowledge by integrating and merging the concepts of: project success factors (causal conditions), project success criteria (consequences conditions), and project managers' competencies (intervening conditions) into one model of: fit, work and relevance in explaining the phenomenon of Maintaining Project Alignment (MPA).

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Appendix 1: Information Sheet

Project title
Investigations of the nature of PWDM project managers in have varying success in delivering projects.

Research summary
The aim of this research is to generate theoretical contributions, grounded in data, about the nature of project management and project success in the context of the Public Works Department of Malaysia (PWDM). The grounded theory research used in this research has been designed to gain an understanding of how and why individual project managers have varying success in delivering projects.

Your role in the study
You are invited to participate in this research. You will be asked about the perceived skills, knowledge, behaviour, values, attitudes, and beliefs of an effective project manager. It is expected that the interview will last about 45 minutes, and will take place in a private area convenient to you. With your permission, the interview will be audio-taped.

You are free to withdraw from the interview at any time without providing an explanation.

How your personal information will be handled
The information gathered about you by the researcher will be treated in strict confidence and will be stored without your name attached. The researchers who handle your information will adhere to the University's standards of confidentiality and will also comply with all relevant privacy legislation. The Curtin University Ethics Committee obliges researchers to meet strict privacy standards, even where privacy laws do not apply. Where the research results are published in academic journals or elsewhere, no reader will be able to identify individual participants.

If you would like to discuss this research, or clarify any questions you may have, please contact my supervisor or myself:

Supervisor:

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Thank you for participating in this research.

Appendix 2: Consent Form

Consent to participate in researching Construction project management as a socio-technical process: A study of construction project managers in the Public Works Department of Malaysia.

I acknowledge that:

The investigator of the study will adhere to the usual standards of confidentiality in the collection and handling of my personal information and that the provisions of the Privacy Act 1988 will apply to the way my information is handled.

Individual results will not be released.

I voluntarily and freely give my consent to my participation and the recording of the interview required for this research.

I understand that aggregated results will be used for research purposes and may be reported in academic journals and other research publications.

I,……agree to participate in the above study. I have read and understood the attached information sheet and I have retained a copy of the signed document. I have been given the opportunity to ask questions about the study by the researchers. I understand that I may withdraw from the study at any time.

Signature……..
Date……..
Researcher ……
Date……..

Appendix 3: Participants' profiles

No.	Name	Gender	Age	Years of Experience
Participant 1	PM1	Male	53	21
Participant 2	PM2	Male	50	19
Participant 3	PM3	Male	40	15
Participant 4	PM4	Male	50	24
Participant 5	PM5	Male	51	27
Participant 6	PM6	Male	47	23
Participant 7	PM7	Female	45	14
Participant 8	PM8	Female	45	15
Participant 9	PM9	Male	49	23
Participant 10	PM10	Male	48	24
Participant 11	PM11	Male	49	24
Participant 12	PM12	Female	51	23
Participant 13	PM13	Male	41	14
Participant 14	PM14	Male	45	24
Participant 15	PM15	Male	53	15
Participant 16	PM16	Male	46	23
Participant 17	PM17	Male	46	24
Participant 18	PMS1	Male	49	27
Participant 19	PMS2	Male	56	30
Participant 20	PMS3	Male	51	27
Participant 21	PMS4	Male	50	25
Participant 22	PMS5	Male	51	27
Participant 23	PT1	Male	50	27
Participant 24	PT2	Male	48	10
Participant 25	PT3	Male	48	23
Participant 26	PT4	Male	48	24
Participant 27	PT5	Male	47	23
Participant 28	PT6	Male	39	13
Participant 29	CD1	Male	50	26
Participant 30	CD2	Male	52	28
Participant 31	HRM	Male	53	24

PM–project manager; PMS–project manager supervisor; PT–project team member; CD–competency development officer; HRM–human resource manager.

Appendix 4: Research and interview questions

Research Questions	Interview Questions
Why do project managers in this organisation have varying outcomes in delivering project success?	1. **Can you tell me about the issues you consider important in carrying out and monitoring routine day-to-day activities of the project, in order to achieve performance requirements?** *Note each major element/issue and when the flow stops ask:* Why will/did you take this approach? *(or)* What led up to the decision to approach it from that angle? *Then for each element ask:* What are your expectations for achieving an outcome, by taking that approach? *(or)* What are the consequences of doing it that way? *Another question might be:* What are your aims in doing that? **2. In your view, what are the relevant technical problems to solve in this project? Are there any actions that follow on from these?** *Take each item in turn. Note each major element and when the flow stops ask:* Why is this an issue/problem for this project? *(or)* What led up to the decision to approach it from that angle? *Then for each element ask:* What are your expectations for achieving an outcome by taking that approach? (*or)* What are the consequences of doing it that way? *Other questions might be:* What are your aims in doing that? What are the implications of that problem/issue for the project? 3. **In your view, what are the areas of potential conflict for this project? Are there any actions that follow on from these?** *Take each item in turn. Note each major element and when the flow stops ask:* Why is this issue/problem for this project? *(or)* What led up to the decision to approach it from that angle? *Then for each element ask:* What are your expectations for achieving an outcome by taking that approach? *(or)*

Research Questions	Interview Questions
	What are the consequences of doing it that way? *Other questions might be:* What are your aims in doing that? What are the implications of that problem/issue for the project?
How do project managers at PWDM perceive the factors that influence project success?	**1 . What do you believe a project manager needs to know in order to be effective?** **2 . What skills do you believe a project manager must posses in order to be effective?** **3 . What special qualities do you have?** **4 . Do you have 'working' philosophy?** **5 . What is it about the way you handled the project that resulted in success?** **6 . Could you describe your communication strategies?**
What are the major obstacles (problems and risk) to the delivery of project success at PWDM and how do the project managers address these obstacles?	**1 . What motivates you? (Money, power, autonomy)** **2 . How do you maintain energy at work?** **3 . Do you feel stress at work?**
To what extent are project managers able to employ their competencies to achieve project success?	**1 . Do you see yourself as an effective project manager?** *If yes,* Can you explain what your understanding of being an effective project manager is? *If no,* **2 . Can you describe other effective project managers that you know?** **3. Do you believe that effective project managers can influence the success or failure of projects?** *If yes,* Can you explain how you understand that effective project managers influence the success or failure of projects? *If no,* **4. What is another important factor that can influence the success or failure of projects?**