THE STUDY OF PROJECT MANAGEMENT PRACTICES TO ENHANCE THE PROJECT SUCCESS

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THE STUDY OF PROJECT MANAGEMENT PRACTICES TO ENHANCE THE PROJECT SUCCESS

ABSTRACT

Project Management can be described as the application of a certain guideline to the process of completing the project. It is the function of specific knowledge, suitable tools and techniques, and excellent skills to meet the objective and requirements of the Project Management (Rozenes, 2011). Successful projects created various definitions from a different views, as it can be a perception from sponsors, project managers, and system analysts (Shokri-Ghasabeh & Kavousi-Chabok, 2009). Factors that contribute to a project failure may be varies and complex to understand. Previous research studies by Kaming et al. (1997) and Noor et al. (2020) shows the biggest challenges in managing the housing project was mainly due to incompetent project manager and inexperienced project management team such as contractors and consultants. The objective of this study is to assess the implementation of project management practices in Malaysia, to evaluate the impact of project management practices on the project and to recommend the best practice for the project manager in managing the project. To have a better understanding of the project management practices, this study has referred to the Project Management Body of Knowledge (PMBOK) guide with the support from the previous research studies. This study is conducted based on samples selected i.e., housing development located at Klang Valley area. From the data collected and case studies explored, the most contributing factors in project failure are due to poor Project Schedule Management, Project Cost Management, Project Communication Management and Project Quality Management. Furthermore, it summarised the common issues for all projects selected are the project progress which all projects are delayed for more than 90 days, poor contractors' performance in terms of financial and quality, and internal management control where

the internal project team did not have enough knowledge to implement the best practice of project management. Therefore, PMBOK guidelines are proven to be the most effective way in promoting successful project management. Even though failure in project management practices does not mean the project itself is failed, it is proven that implementing proper project management practices helps in increasing the project success.

THE STUDY OF PROJECT MANAGEMENT PRACTICES TO ENHANCE THE PROJECT SUCCESS

ABSTRAK

Pengurusan Projek boleh digambarkan sebagai penggunaan garis panduan tertentu kepada proses dalam menyiapkan projek. Ia adalah fungsi pengetahuan khusus, alat dan teknik yang sesuai, dan kemahiran yang sangat baik untuk memenuhi objektif dan keperluan Pengurusan Projek (Rozenes, 2011). Projek yang berjaya mencipta pelbagai definisi dari pandangan yang berbeza, kerana ia boleh menjadi persepsi daripada penaja, pengurus projek, dan penganalisis sistem (Shokri-Ghasabeh & Kavousi-Chabok, 2009). Faktor yang menyumbang kepada kegagalan projek mungkin berbeza-beza dan kompleks untuk difahami. Kajian penyelidikan terdahulu oleh Kaming et al. (1997) dan Noor et al. (2020) menunjukkan cabaran terbesar dalam menguruskan projek perumahan adalah disebabkan oleh pengurus projek yang tidak cekap dan pasukan pengurusan projek yang tidak berpengalaman seperti kontraktor dan perunding. Objektif kajian ini adalah untuk menilai pelaksanaan amalan pengurusan projek di Malaysia, menilai kesan amalan pengurusan projek kepada projek dan mengesyorkan amalan terbaik kepada pengurus projek dalam menguruskan projek. Untuk lebih memahami amalan pengurusan projek, kajian ini telah merujuk kepada panduan Badan Pengetahuan Pengurusan Projek (PMBOK) dengan sokongan daripada kajian penyelidikan terdahulu. Kajian ini dijalankan berdasarkan sampel yang dipilih iaitu pembangunan perumahan yang terletak di kawasan Lembah Klang. Daripada data yang dikumpul dan kajian kes yang diterokai, faktor terbesar yang menyumbang dalam kegagalan projek adalah disebabkan oleh kelemahan Pengurusan Jadual Projek, Pengurusan Kos Projek, Pengurusan Komunikasi Projek dan Pengurusan Kualiti Projek. Justeru itu, dapat dirumuskan bahawa isu-isu yang biasanya berbangkit bagi projek-projek yang dipilih adalah berdasarkan kemajuan projek

meliputi projek-projek yang tertunda lebih daripada 90 hari, prestasi kontraktor yang lemah dari segi kewangan dan kualiti, dan kawalan pengurusan dalaman di mana kurangnya tahap penguasaan pengetahuan oleh pasukan projek dalam melaksanakan amalan pengurusan projek yang terbaik. Oleh itu, garis panduan PMBOK terbukti berkesan dalam mempromosikan pengurusan projek yang berjaya. Walaubagaimanapun, kegagalan dalam amalan pengurusan projek tidak bermakna projek itu gagal secara keseluruhan, tetapi dengan melaksanakan amalan pengurusan projek yang betul dapat membantu dalam meningkatkan kejayaan projek.

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Even in the chaos of everyday life,

moment of gratitude reminds us to hold on to good things…

I would like to take this opportunity to express my gratitude,

To my parents, Shahari bin Baba and Rahela binti Shariff for the mental, moral and financial support since the first day I expressed my intention to pursue my Master's Degree.

To my supervisor, Dr. Nur Mardhiyah binti Aziz for the continuous guidance, patient, and positive advice. No matter if it is exceeded office hour, weekend, or public holiday, you are still there to support and guided me throughout this thesis journey.

To all my family and friends that always with me to cheered me up during my struggle times.

I'm going to miss the feeling of sleepless nights and days, cracking my head to critically think, be creative and fast, zombie eyes and zombie's life, at the same time need to manage my working life as well. I literally went to one café to other cafes just to get the mood and ideas to write. After all, these hard works paid off…

They said,

"Today's tears water tomorrow's gardens"

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CHAPTER 1: INTRODUCTION

1.1 Research Background

According to PMBOK Guide (2017), project is a set of events and activities that produced the economic, social, environment and materials deliverables and it led the changes in an organization. A Project Management can be described as the application of a certain guideline to the process in completing the project. It is the function of a specific knowledge, suitable tools and techniques, and excellent skills to meet the objective and requirement of the Project Management (Rozenes, 2011). According to Duncan (1995), project and organization shared the same criteria such as, the project and organization are both perform by people, constraint by limited resources, and it was plan, execute, and control.

A project is known as a sequence activity, while a successful project can be defined when it can complete within the timeframe without delayed and without exceeding the cost estimation as well as met the quality criteria with the compliance to the contract. Successful project created various definition from different view, as it can be a perception from sponsors, project managers, and system analysts (Shokri-Ghasabeh & Kavousi-Chabok, 2009). A study has proven the relationship between time management with project success.

Generally, few unpredictable factors can cause the delay and affect the project progress and performance such as environmental conditions, resource availability, etc. (Demirkesen & Ozorhon, 2017). Furthermore, the factors that contribute to the success rate of the project includes the availability of understanding of the whole project, the method used in order to smoothen the process, risk assessment, weekly meetings to ensure

everything was on track, and supportive teams. Meeting the goals and objectives as agreed in the project can be defined as project success (Abu Hassan et al., 2011).

This study will be supported with the factors that contributing to the projects failure as well to have a better understanding on the implication of project success rates. Factors that contribute to a project failure may be varies and complex to understand. From the previous research study, it was noted that major common failure factors are due to the concept of project failure is still unclear, a project failure in a huge project population is not generalized, various types of failure are due to different type of project studied, and fourth the failure of a project is varies depending on the project stages itself (Pinto & Mantel, 1990).

Therefore, it is important for a researcher to identify the failure caused to identify the project success rates. To have a better understanding of the project management practices, this study has referred to the Project Management Body of Knowledge (PMBOK) guide with the support from the previous research studies. In order to meet the objective of this study, the groundwork will be focusing on project management practices implemented according to the PMBOK Guide (2017), that reflect the project success. Besides that, the fieldwork will be conducted based on samples selected to ensure the factors that contribute to the project success rates can be identified.

1.2 Problem Statement

Project Management Body of Knowledge (PMBOK) guide is a well-known guideline for project management in all industries, especially in construction. As of 2021, PMBOK has been recorded to have a sixth edition where the contents in all editions have been improvised on average every four years. The latest sixth edition has provided additional scope that focuses more on agile project management. Despite the presence of the Project

Management Body of Knowledge (PMBOK) guide, the issues in project management still can be seen and unresolve. According to the study by Murguia et al. (2017), poor project integration management results in a poor design phase due to a lack of understanding of the goals set, failure in communication between team members due to poor project communication management and incompetent stakeholder appointment result in bad engagement with other parties due to poor project stakeholder management. Furthermore, Abu Hassan et al. (2011) states that most of the abandoned houses are due to poor project quality management.

Based on the study conducted by Kaming et al. (1997), a project manager that handle the housing project was interviewed and from the feedback given, most of the highrise project in Indonesia was delay in completion. The delays problem in construction industry is difficult to be avoided if the organization did not practice a proper project management guideline (Abedi et al., 2011). Highrise projects seem to have more problems and complexity compared to landed development projects. Besides that, the experienced and skilled project manager is necessary in managing a highrise project due to its complexity. Previous research studies by Kaming et al. (1997) and Noor et al. (2020) shows the biggest challenges in managing the housing project was mainly due to incompetent project manager and inexperienced project management teams such as contractors and consultants. Thus, it will lead to poor project performance and can result to project failure.

Therefore, proper implementation of project management is very important to ensure the project success. In this research study, in order to identify the project management practices that affect the project success, highrise and landed housing development will be selected. This study will be conducted based on samples selected i.e., housing development located at Klang Valley area. Further clarification will be gathering through interviews and documents review on the overall performance of the project performance.

Based on the previous studies conducted by Noor et al. (2020), Kaming et al. (1997), and Dumont et al. (1997), interviews of the related parties and the result were analyzed in order to obtain the relevant and major contributing factors of the project success rates. Common feedback was gathered, and the researchers recommended to conduct the analysis on project management practices for future research studies on a bigger scale to ensure the guideline in PMBOK could be implemented and practiced in an actual construction site. Lastly, previous researchers recommended the study on project management practices should be highlighted more to increase the awareness among the project team on the importance of proper project management practices with regards to the PMBOK guideline.

1.3 Research Aim

The aim of this study is to recommend the best practice for the Project Manager in managing the project as promoted in the Project Management Body of Knowledge (PMBOK) to increase the project success.

1.4 Research Objective

To achieve the purposed of this study, an objective has been drawn up as follows:

i. To assess the implementation of project management practices in Malaysia.
ii. To evaluate the impact of project management practices to the project.
iii. To recommend the best practice for the project manager in managing the project.

1.5 Research Methodology

This study starts with preliminary studies by reviewing the literature review of the project management practices based on the Project Management Body of Knowledge (PMBOK) guide, the study on the factors that contributed to project success and failures elements. This study will be using the qualitative technique. Figure 1.1 illustrates the summary of the research methodology for this study.

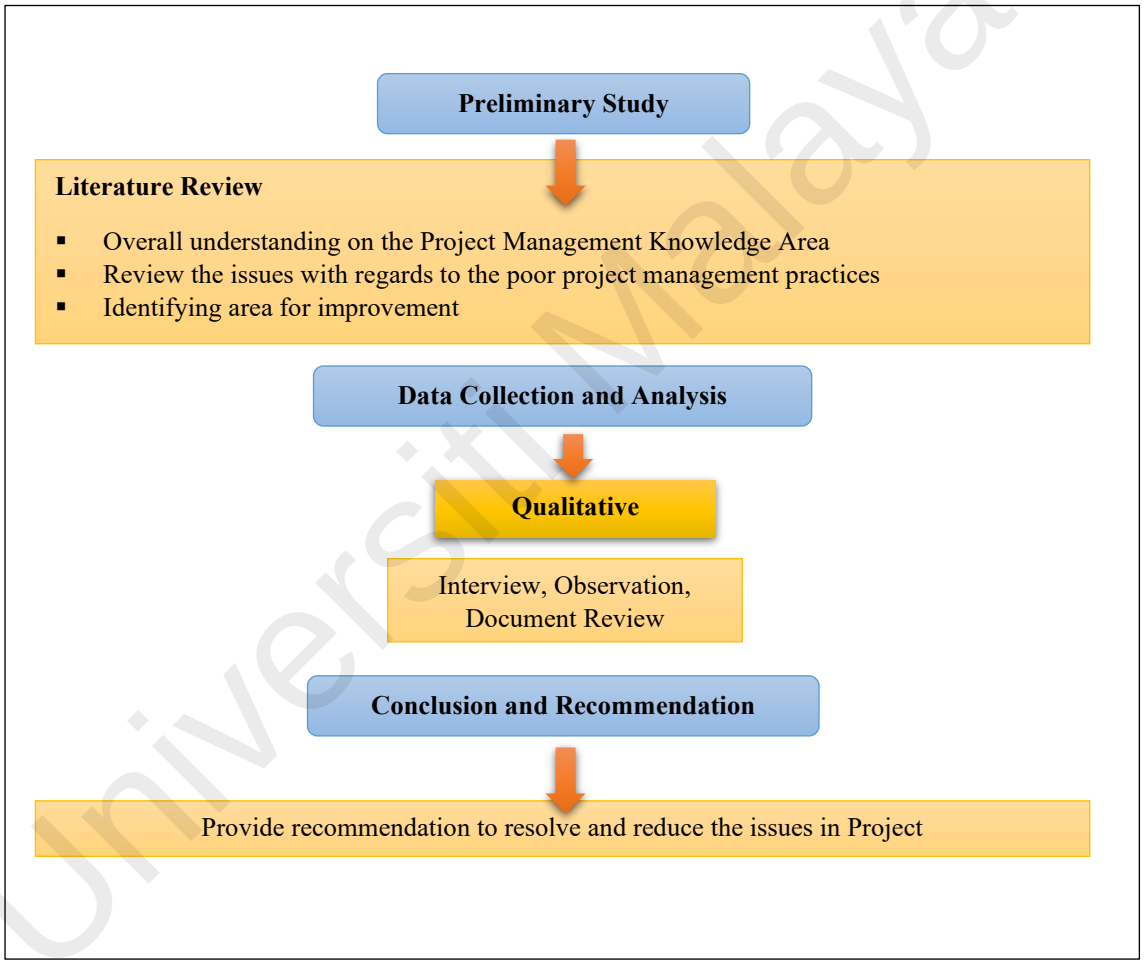

Figure 1.1: Research methodology flowchart.

1.6 Scope of Research

For the purposed of this study, housing development including highrise and landed under the Government-Linked Company (GLC) located at Klang Valley is selected as the sample. These companies are a well-known developer company with an excellent track record for the past few years in the property industries. However, under few circumstances, the housing development seems to be more complex especially for a highrise. Therefore, the project management practices will be studied.

In this study, a study on project management practices based on previous literature will be used as a reference. The interview sessions are conducted with the Project Manager, Project Management Team, and related parties as well as the observation and documents review in order to study the actual project management practices in the construction industries and the guideline as promoted in the Project Management Body of Knowledge (PMBOK) that affect the project success rates.

1.7 Research Contribution

The findings of this study will provide the awareness to the organization on how to improve the project success rates by adopting the actual project management practices according to the Project Management Body of Knowledge. The importance of the actual project management practices is to ensure the risk of project could be reduced. Moreover, the knowledge of actual project management practices will provide benefits to the employees to implement for future projects as a guideline.

1.8 Thesis Structure

Chapter 1: Introduction

The first chapter of this study will be discussing on the information of project management background and the problem statement related to the samples selected. Furthermore, to have a clear direction for this study to complete, the aim, objective and scope were also identified. Besides that, the method of research in this study was also be discussed briefly. Moreover, the significance results of this study will be providing benefits to the employee and organization in terms of practicing and understanding the overall project management in Malaysia.

Chapter 2: Literature Review

The next chapter in this study is dedicated to the literature review that was made from previous studies including the review of journals, books, and other sources that can be used as a reference to support this study. On the other hand, this chapter helps in providing an overall understanding of the project management practices that were implemented all over the world based on PMBOK guide of Project Management Institute (PMI). Furthermore, the contribution factors to the project success also be studied.

Chapter 3: Research Methodology

Next, chapter three will be explaining on the research methodology used in this study. This chapter will be describing the tools and processes implemented during the study to reach the conclusion.

Chapter 4: Data Analysis and Result

The data collected will be discussed in chapter four as a result of this study. This chapter is mainly focusing on the data analysis and will be the most crucial part to conclude the overall research study.

Chapter 5: Discussion and Recommendation

This chapter will be discussed the data analysis where the result is compared to the literature review in Chapter 2. The outcome of the discussion will provide the best recommendation for this study and for future research.

Chapter 6: Conclusion

Then, chapter six will be the last chapter of this study where this chapter will be discussed with regards to the conclusion to be implemented by the organization.

1.9 Summary

Project Management information was generally discussed in this chapter. The aim of this study is to determine the actual project management practices in the construction industries as promoted in the Project Management Body of Knowledge (PMBOK) that affected the project success. Moreover, the findings of this study will be providing information and knowledge to the selected organization in order to practice project management as per PMBOK guideline in order to minimize the poor impact on future housing development.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter described the study from the previous research to obtain an overall understanding of the context of this study. The data and information gathered from previous studies provide a helicopter view of how project management practices could affect the project success rates. In this chapter, the history of Project Management Body of Knowledge (PMBOK) will be discussed as preliminary information. The ten knowledge areas in PMBOK and its processes will be further discussed to have a better and clear understanding of project management.

2.2 History of Project Management Body of Knowledge (PMBOK)

In 1969, The Project Management Institute (PMI) was founded with the various types of management practices involving the construction as well as pharmaceutical before they decided to establish the practices into a documented standard policy in 1976 (Duncan, 1995). According to Weber (2018), the PMI was founded by five personnel with project management backgrounds named James R. Synder, Eric Jennet (PMP), Gordon Davis (PhD), E.A. “Ned” Engman, and Susan Gallagher. Therefore, the Board of PMI has approved a project proposal in order to support the development of standard which mainly focusing on a practicing professional’s unique characteristics (ethics), the structural framework of the professional’s body of knowledge (standards), and the professional’s accomplishment recognition (accreditation) (Duncan, 1995).

PMI standards and goals were mainly to furnish the guidelines for the development of a career in the project management industry. Duncan (1995) added that the first PMP certificate was issued in 1984 at the Western Carolina University (USA). Furthermore, in August 1986, the first standards were finally published for comments in the Project Management Journal and the comments include the requirement to add three new sections that involved the framework of project management, management of risk, and the management of procurement/ contract. Figure 2.1 below illustrate the chronology of the PMBOK:

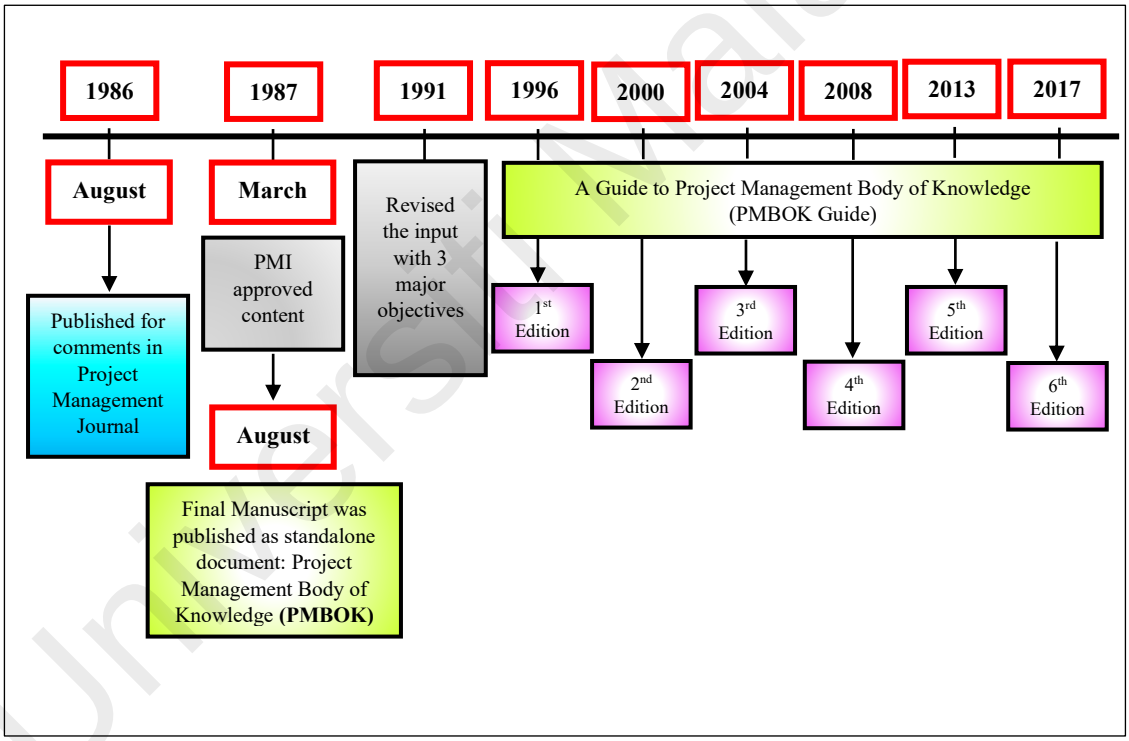

Figure 2.1: The chronology of A Guide of Project Management Body of Knowledge (PMBOK).

The knowledge areas in Project Management Body of Knowledge (PMBOK) have been revised to ensure the comprehensiveness of the guides to the industries. The third edition of PMBOK becomes more stable and acceptable due to varies comments from second edition were taken into consideration and thus, it makes the PMBOK useful not only for construction but also in other industries. The fourth edition was then being introduced and published after five years in 2009 where new processes were expanded and replaced the old version. In the year 2013, fifth edition of PMBOK was published with a new amendment to the guidelines and they introduced new terms called processes, inputs and outputs and focused more on adaptive lifecycle.

Currently, the PMBOK sixth edition was widely used in all industries. The additional scopes which are called agile project management create fast growing methodologies of project management. Therefore, the latest PMBOK 6th edition involved ten knowledge areas such as Project Integration Management, Project Scope Management, Project Schedule Management, Project Cost Management, Project Quality Management, Project Resource Management, Project Communication Management, Project Risk Management, Project Procurement Management, and Project Stakeholder Management and each of the processes includes the input, tools and techniques, and output. As of 2007, the International Organization for Standardization (ISO) was accredited the PMP certificate as an industry standard. According to the Sam et al. (2015), the guidelines in PMBOK are widely accepted and proven to increase project success rates all over the world.

2.3 PMBOK Ten Knowledge Area

According to Zwikael (2009), Project Management Body of Knowledge (PMBOK) guide is a knowledge areas of project management that need to be focus by project manager in order to have a clear understanding of project life cycle. This is also helping the project manager to make a decision with regards to the various areas.

2.3.1 Project Integration Management

Project Integration Management encompasses all parts of a project, with a governance framework in place to ensure smooth and orderly processes throughout the project lifecycle. Integration involved the characteristics of consolidation, unification, interrelationship, and communication that should be applied in an overall project from the start until completion (PMBOK Guide, 2017). The factors that need to be considered in Project Integration Management includes the allocation of resources, balancing opposing needs, determination of alternative method, processes alteration, and governing the interdependencies of the knowledge areas.

According to Demirkesen & Ozorhon (2017), effective integration of project management components such as project charter, integration of knowledge, processes and staff, integration of supply chain, and changes integration determined the performance of project management. In other words, integration of project management is important to provide proper sequence and coordination of project activities. Furthermore, the Project Manager is fully responsible and accountable for the Project Integration Management as it cannot be transferred or delegated to other parties. The aims are to gather all the projects information, knowledge areas, and result for the overall projects.

In general, Project Manager is to ensure the objectives of the projects are meet in terms of services, timelines, and management plans itself. It is important for Project Manager to make a rigorous decision by considering the key factors and impact to the projects (PMBOK Guide, 2017).

The Project Integration Management is the main knowledge area where it is the medium to combine all results from other knowledge areas. Therefore, few tools are widely used to integrate the processes including the method of automated, visual, knowledge of project, responsibilities of Project Manager expansion, and also the hybrid method (PMBOK Guide, 2017). The study conducted by Demirkesen & Ozorhon (2017) on the relationship between the Integration of Project Management and its performance of project management, shows that many respondents from different background such as construction, engineering and architectural agreed that integration of project management has positive effect towards the project performance with regards to the size and type of project controlling.

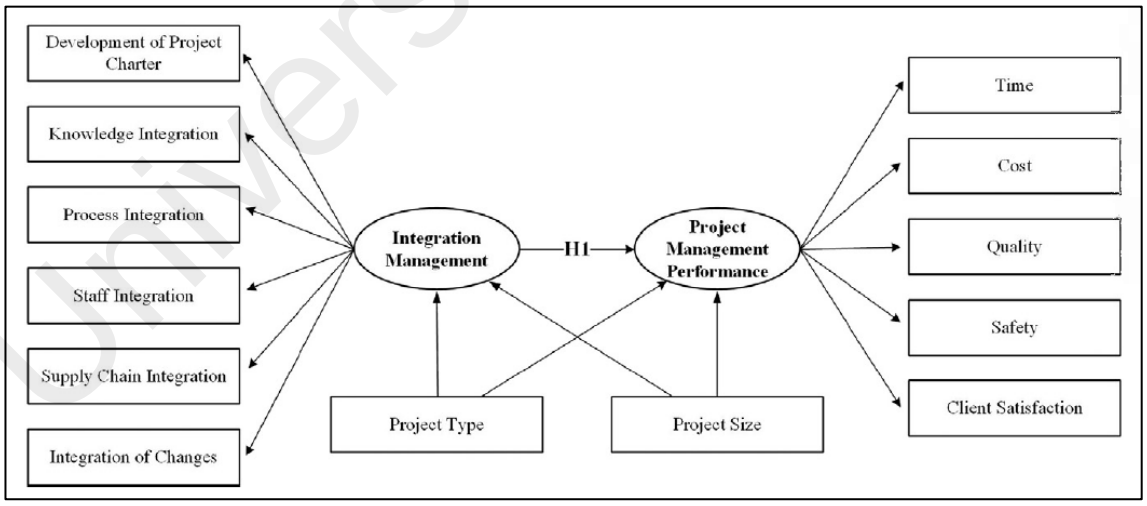

Figure 2.2: Conceptual framework (Demirkesen & Ozorhon, 2017).

Figure 2.2 shows the illustration of the conceptual framework where the Integration of Project Management reflects the positive outcome of the time, cost, quality, safety, and client satisfaction.

2.3.2 Project Scope Management

Project Scope Management is the process which helps to define a project by documenting all project tasks, goals, budget, planning, and detailed systematic strategy to meet the objectives of the project (Dumont et al., 1997). On the other hand, Project Scope Management can be defined as the requirement of procedure that need to obtain a successful project. According to the PMBOK Guide (2017), there are five total processes for Project Scope Management which are management of the scope planning where this is the process of scope being defined, review and controlled, the requirement of information collection to meet the objectives, more detailed scope definition of the product and projects, establishing the Work Breakdown Structure (WBS), validating the scope to ensure formal acceptance of the project, and lastly is the scope controlled process which involved the monitoring and managing the status and any changes to the projects.

According to Khan (2006), the Project Scope Management can be divided into five components and the five Project Scope Management components are connected through one major component which is WBS as illustrated in the Figure 1.4.

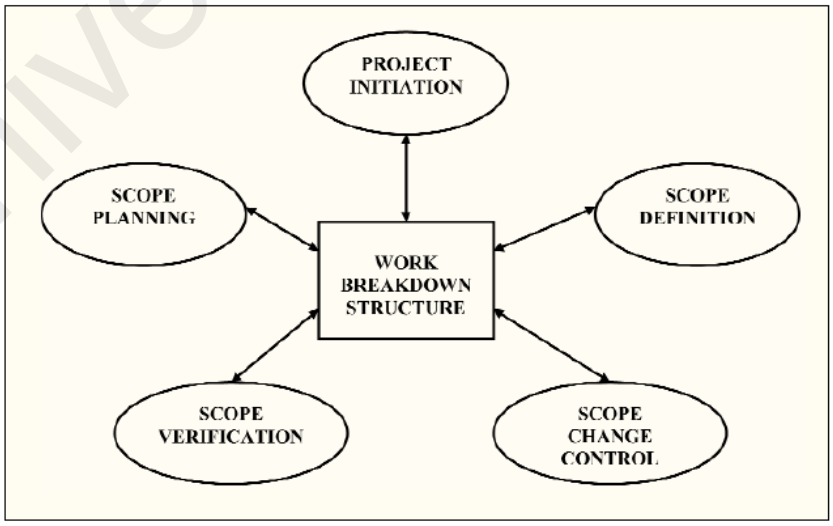

Figure 2.3: All components of Project Scope Management interact through WBS (Khan, 2006).

Furthermore, Dumont et al. (1997) supported the major component of Project Scope Management as per illustrated in Figure 2.3 and based on the study conducted, it was proven that another initiative to increase the project scope is by implementing the Project Definition Rating Index (PDRI) tools to ensure the poor project scope definition can be reduced as PDRI will be a benefit to both parties i.e., Contractor and Owner of the project. Uncontrollable project scope could lead to uncertain changes to the project without the authority and customer approval, thus, it is important to have proper Project Scope Management.

2.3.3 Project Schedule Management

Project schedule management addresses six necessary processes to develop a good project. A properly developed schedule is the main principle for a project (Carson, 2011). In this process, a detailed plan that represents the whole project idea is discussed thoroughly. The first process identified is planning schedule management. This process provides a better view of the overall project and can act as a solid direction on how to manage the project successfully. A good schedule can avoid unnecessary delays which may increase the operating cost. Next is the process of identifying a set of tasks that need to be performed. Defining activities will break down work packages for ease of executing, controlling, and monitoring the project work.

According to Alsakini et al. (2004), the traditional planning method should be replaced with project schedule management in order to proact the impact of the projects because with a small scope of work, mistakes and carelessness can be avoided. In the third process, sequence activities are taking their part in identifying the relationships between project activities. Each activity should be linked to produce a great relationship.

This great relationship in between activities is required to create a practical project schedule. In the fourth process, estimating activity durations is the process of estimating and forecasting the number of the working period needed to give group members ample time to complete each activity successfully. Next, the activity sequences, durations, and resource requirements are analyzed to execute the project. Finally, a process of monitoring the project status to level with the schedule is performed. Work performance data is required to remark on activities that already started, ongoing and finished.

2.3.4 Project Cost Management

Project Cost Management can be described as the costing and financial measurement throughout the project lifecycle. According to the Jainendrakumar (2015), Project Cost Management includes the involvement of cost controlling, budgeting, and estimating to ensure the project could be completed without cost overrun. Based on the PMBOK Guide (2017), there are four major processes for Project Cost Management such as cost management planning, cost estimation, budget determination, and cost controlling. Starting with project cost planning which is identifying the method used to estimate and control the budget, then the process of managing any changes related to the project cost.

Furthermore, the plan cost management provides the guidelines and procedure at the early stage of the project to ensure smoothen of the processes (PMBOK Guide, 2017). The cost incurred in a project was usually by the contractors which required the addition of labor, services, utilities, services, and design that need to be a review, inspected, and approved by the client.

2.3.5 Project Quality Management

Project Quality Management involves the compliance to the organization's policies and guideline with regards to the project planning, managing, controlling and quality to meet stakeholders' objectives and criteria to ensure continuous process improvement (PMBOK, 2017). On the other hand, project quality management can be defined as one of the tools which ensure a final product or project met every requirement without any deviations from a standard that have been set earlier.

According to Gvozdenovic et al. (2008), three processes involve completing the functional areas which are Quality Planning, Quality Assurance, and Quality Control. Quality planning is the most important process where project requirements, international standards, and regulations as well as ways to meet the quality standard are determined. Inspection and Testing Plan (ITP) is set at this stage by the project manager and project team on how the project will meet the needs and expectations of stakeholders.

Quality assurance will focus more on risk management to reduce as many possible mistakes as possible that could arise while creating a necessary mitigation plan to avoid any additional cost of Nonconformance during the project due to failures. Quality assurance team also responsible to conduct an internal Quality Audit within the organization to ensure all related standards are complied with by all team members. As for quality control, it is a continuous process of monitoring, identifying, and eliminating the root cause of a problem in order to enhance the efficiency of processes. These include gathering all necessary data and conducting internal testing or analysis.

2.3.6 Project Resource Management

According to PMBOK Guide (2017), project resource management consists of the process of identifying, acquiring, and managing resources needed for the successful completion of the project. Project resource management comprises six stages which are planning, estimating, acquiring, developing, managing, and controlling. In the early stages, a plan on how to work on the rest of the stages is established. The level of resources required to achieve the quality standards set up can be achieved from the project management plan.

Followed by estimating the activity resource, the type and quantities of materials, supplies, and equipment necessary which contribute to project success is performed. A selection of raw material is decided based on the quality plan for the said project. Then, the process of acquiring materials, supplies, facilities, and team members is carried out. Two resources are involved which are internal and external resources. An internal resource may be assigned from resource managers while external resources need to be acquired through procurement processes. The fourth stage is developing a team that has a direct impact on the project. In this stage, an improvement in competencies, interaction, and the overall team environment is build-up to strengthen the project performance. Human resource is highly required and centered in this process and several studies show a positive result that human collaboration in a project has to be developed and not a natural behaviour (Calamel et al., 2012).

Next is the managing team process in which the performance of team members is tracked, issues are resolved, and conflict is cut out to optimize project performance. Finally, a continuous process of controlling resources should be performed in all project phases. Proper control of strategies will strengthen the organization's ability to manage and mitigating supply chain risks (Manuj & T. Mentzer, 2008).

2.3.7 Project Communication Management

Project communication management describes the process required to ensure relevant information of the project and team members are met and effectiveness of information exchange is achieved, PMBOK Guide (2017). Communication is a crucial part between a person, ideas, and information (Jana et al., 2013). It includes processes like planning, managing, and monitoring communication. Plan communication management is the process where communication activities among stakeholders or groups are established based on accessible information. This approach may efficiently engage stakeholders with relevant information when expected.

Managing communication process includes all aspects of effective communication, including suitable methods, technologies, and techniques. This will allow adjustments to lodge the changing needs of stakeholders and as well as the project. Monitoring communications is the last process that guaranteed the project requirement, and its stakeholder are at par. This outcome of this process usually needs adjustment and involvement in communications activities mentioned in the communication management plan.

2.3.8 Project Risk Management

Project risk management aims to manage risks why may cause the project to diverge from early planning and causing out of standard characteristics to the project. A well manage risk may increase positive occurrences and at the same time reducing the negative occurrences concerning the project's goals. As mentioned in the PMBOK Guide (2017), the effectiveness of Project Risk Management is closely related to a success of a project. Risk management can be classified into six steps including planning a risk

management, identification, analysis, planning response, implementation, and monitoring the risk.

First and foremost, before initiating a project, risk management shall be planned. Risk management shall consider all risks from various timeframe either past, current, or future which one might think of. All sources of risk need to be considered such as technical risk, management risk, commercial risk, and external risk. The risk assessment shall include a probability and impact matrix where descriptive terms or numeric values could be used to evaluate the impact. These probability and impact values can be multiplied to give an overview of a probability-impact score for each risk. These values then allow each risk to be classified into each priority level.

According to Taghipour et al. (2015), the main objective of risk analysis is to evaluate the quantitative value of risk for estimating probability and impact as the Table 2.1 and Table 2.2 below.

Table 2.1: Guideline for risks impact rate (Taghipour et al., 2015).

Impact		Delay	Cost	Quality	Span
9	Very High	The possibility of failure to complete the project	It harms project	Inability to estimate performance	It creates human casualties
7	High	Overall delay more than determined limitation of delay fine	It removes project interest margin	Lower than employer expectation	It will lead to physical injuries
5	Medium	Project's delay more than the contract estimation	Costs are more than estimation.	Lower than industry medium	There is safety danger
3	Low	Initiated delay with increase in non-compensable cots and resources	Compensation possibility is provided with increase in country internal resources.	Higher than industry medium	The need for embedding systems to increase security
1	Very Low	There is delay in ratio with time initial estimation.	Cost increase can be predicted	Cases of employer complaint	There are not any considerations for security

Table 2.2: Guideline to quantify risks probability (Taghipour et al., 2015).

Probability	
Very high	>80%
High	60- 80%
medium	40-60%
low	20-40%
Very low	<20%

Next, the process goes on with risk identification where information is being gathered by various effective techniques and a standard list of risk methods is being used. This data is then needed to be analyzed by several well-known methods such as root cause analysis, SWOT analysis and document analysis.

Thirdly, risk analysis shall be performed qualitatively and quantitatively. According to Barghi & Shadrokh sikari (2020), in this analysis step, a few criteria need to be determined including network time, critical path, critical activities and most importantly, costing. Project resources shall be analyzed, and initial scheduling needs to be changed according to the existing resources. The fourth process, risk responses planning is the process of determining project condition, developing options, selecting strategies with an appropriate method as well as addressing overall project risk exposure. Alternative strategies that are useful when dealing with risks are escalating, avoid, transfer, mitigate and accept. Risk can be accepted if the risk is a low-priority risk that seems to not change or diverge the result from the main goal. The risk response is then implemented most efficiently and effectively possible to the agreed-upon risk response plan before. The last step of risk management is monitoring the risk to ensure effectiveness throughout the project.

2.3.9 Project Procurement Management

Project Procurement Management includes the process required to acquire or purchase goods, services, or products to achieve project scope, or results needed from outside the project organization, PMBOK Guide (2017). This section will focus on the portion of the project which will be carried out by external sources. The project procurement process consists of three processes which are planning, conducting, and

controlling procurement. This area of interest involves two parties, a buyer and a seller with an agreement connecting between them.

Initially, in the planning process, a potential seller or supplier is identified with a specific approach and decision-making condition. This process is of the utmost importance since this process will determine who, how, and when goods or services need to be procured. Related bidding document such as Request for proposals (RFP) or Request for quotation (RFQ) will be used to solicit a proposal from a potential supplier (W. Fleming, 2016).

The next process is the conducting process of evaluating seller proposals by expert's judgment from a group of skilled and specialized knowledge, selecting a best seller in accordance with project requirement and ends with awarding a contract to a seller.

A set of agreements including formal contracts that obligate suppliers to provide designated results are then established. The last process in project procurement management is controlling procurements where procurement relationship is managed, contract performance is monitored and closing out contracts is made. This process ensures both parties met the project's requirements as per agreed in the legal agreement. The records as preserved and assessed to benefit future projects.

2.3.10 Project Stakeholder Management

According to PMBOK Guide (2017), a project stakeholder is a key person either individuals, groups, or an organization who may affect, be affected, or consider themselves to be affected by any activity or decisions and have influence in the success of projects. Project stakeholder management as mentioned in PMBOK Guide (2017) includes the processes required to identify a key person that could influence the project,

to plan and manage their expectation and to develop while monitoring a significant approach in project decision and accomplishment.

Identification of project stakeholders commonly involves information regarding their potential impact on project success. Their interest, power, legitimacy, and involvement also will be treated as a major key point in selecting a stakeholder. A good team and stakeholders' relationship can give a great impact on project success. The second process is the planning of stakeholder engagement where an approach is developed based on their interest, expectations, and potential impact on the project.

In a manner corresponding to a journal by Chung & Crawford (2016), an assessment matrix can act as a tool to analyse stakeholder engagement levels. These levels can be divided into five levels which are unaware, resistance, neutral, supportive, and leading. After the planning process, subsequently, the stakeholder engagement is managed by collaborating with stakeholders to meet the level of their expectations.

Any risk or issues that have been identified shall be clarified and resolved to attain their continued commitment to the success of the project. Finally, stakeholder engagement is monitored throughout the project to maintain or level up the efficiency as well the effectiveness of stakeholder engagement activities as the project expands.

2.4 Project Management Practices

Project management practices can be assessed based on the key factor which is quality of the project itself even though the project quality usually assessed throughout different stages of projects (Ofori, 2013). In addition, it can be classified as a guideline to be followed and implement of the project starting from the start until the project closed. Furthermore, it is important to adopt the project management practices from beginning of the project to the end to ensure the aims can be meet within the service time (Haron et al., 2017).

2.4.1 Project Management Practices in Malaysia

The concept of project management has been evolving tremendously especially in the construction industry for the past few decades. Somehow, the level of seriousness taken by each construction company is still below par. Construction companies in Malaysia surround by many elements in which these elements need to be balanced to ensure project success. The best result of a project comes from well-planned management. Driven by ten knowledge areas in PMBOK Guide which contain various and precise tools, method, and techniques on how to plan, manage and control gives a good impact on project success.

According to a case study by Ting et al. (2009), regarding the construction of an interchange in Sarawak which has been designed to ease the traffic congestion area, a series of knowledge area has been applied throughout the project in which impose that the local construction industry in Malaysia has a good understanding about project management knowledge when conduction a construction project. In the early stage of the planning phase, several techniques have been used for time planning such as the bar chart.

The contractors working on this project have workout a detailed 3-layer work breakdown structure (WBS) which indicates a very well-defined project scope management. By appointing an experienced quantity surveyor, the contractors can be seen treating the cost estimating tasks very seriously. As a result, the contractors had a very clear budget for the overall project.

As for the quality management, the contractors had shown an exemplary effort by delivering good quality jobs as per standard requirement which results in client satisfaction. A proper quality assurance consisting of an inspection and testing plan (ITP) had levelled up the quality control of the job delivered. A group of qualified personnel is hired specially to look after the quality aspect shows a very consistent effort by the contractors.

2.5 Issues in Project Management

A poor project can be considered as poor planning that results from frequent scope changes and limited budget. However, a project can be defined as successful when it can complete within the time frame (Ofori, 2013). Demirkesen and Ozorhon (2017), stated the same definition where a project can be described as successful if the project can be complete without delay, in the range of budget and met the quality criteria. The result of a successful project can be the results of full commitment from the project team, a clean project plan, and a comprehensive risk management plan. Table 2.3 shows the issues summary based on previous case study with regards to the knowledge areas in PMBOK.

Table 2.3: Issues with regards to project management knowledge areas.

Case study	Knowledge Area	Summary
Murguia et al. (2017)	Project Integration Management	The designing phase is inefficient due to a lack of understanding of the goals set.
	Project Communication Management	Failure in communication between team members.
	Project Stakeholder Management	Incompetent stakeholder appointed result in bad engagement with other parties
	Project Procurement Management	Bad relationship with the supplier, subcontractor, and clients
Abu Hassan et al. (2011)	Project Schedule Management	Housing projects over completion schedule
	Project Quality Management	Housing construction left abandoned by construction firm
	Project Cost Management	Losses of raw material used are unbearable result in discontinued of the project
	Project Scope Management	Logical scope management is undefined. Unable to manage the changes.
Homayounfard & Safakish (2016)	Project Resource Management	The wrong person is appointed to fulfil both individual and organizational objectives
	Project Risk Management	No risk assessment was performed before project initiation and not realized no predefined framework is made.

Project management in construction especially encompasses a set of goal and need to be accomplished by implementing a series of a process as suggested by PMBOK Guide (2017). These processes consist of ten knowledge areas in project management.

Any conflicts regarding scope, cost, time, or quality need to be resolved by any necessary action or alternatives. The main knowledge area out of the rest is the project integration management and it is proven that this area has a positive effect on a successful project. In project conduct with no integration management, there are several issues aroused. The design phase of the construction project might swarm by poor conditions including a lack of understanding regarding the whole project. By referring to a case study in Quinta Arrieta, Lima, Peru, the design phase is frequently plagued by inefficiencies due to a failure of communication between the client and the appointed construction firm.

According to Murguia et al. (2017), in his case study regarding process integration framework in his local place, Lima, Peru, he states that in construction projects, the designing phase often swarms by poor conditions. This poor condition is a result of a failure of integration management which is the main knowledge area of all. Lack of understanding of said goals and failure in communication is the main contributors to this condition. The stakeholder also failed to play its role in ensuring a good relationship between suppliers, subcontractors, and clients. This is due to the failure in identifying good stakeholders in the early stages of project stakeholder management.

According to the second case study by Abu Hassan et al. (2011), there were about 126 housing schemes that have been left abandoned relating to completion schedule, quality, and costing. This proves that project cost management, project schedule management, and project quality management as suggested in PMBOK Guide (2017) could be used to resolve this issue. By having a logical scope on construction development, a bearable amount of cost can be achieved thus a promising quality can be delivered to the end-user in an agreed period.

A good and deliverable project shall have a well-planned resource and risk management. Team members who came from different professional backgrounds and no relationships previously may cause difficulties to coordinate. In a case study by Homayounfard & Safakish (2016), this issue arises as a result of not having resource management planning. Through human resource management, a manager should employ the right person to fulfil both individual and organizational objectives. In this study regarding mega-size industrial projects, having no predefined framework is a common defect observed. This defect is a serious risk need to be borne by the project manager.

2.6 Summary

Most of the organizations implement the project management practices, however, the detailed process in the PMBOK did not fully comply by the organization which results in poor project performance. In order to have a successful project, the project should be completed without delay, within the budgeted cost, and meet the stakeholder's objective. Poor project management practices lead to deterioration of the project performance. Therefore, the project manager should be able to manage the project as promoted in PMBOK to reduce the poor impact to the project.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

The methodology adopted to achieve this research study objectives and scopes was described in this chapter. Figure 3.1 illustrated the methodology summary in this study. This study will begin with the data collection from previous research studies followed by the data analysis of case studies. Therefore, this study will be involved in fundamental research where required further understanding of the existing issues highlighted.

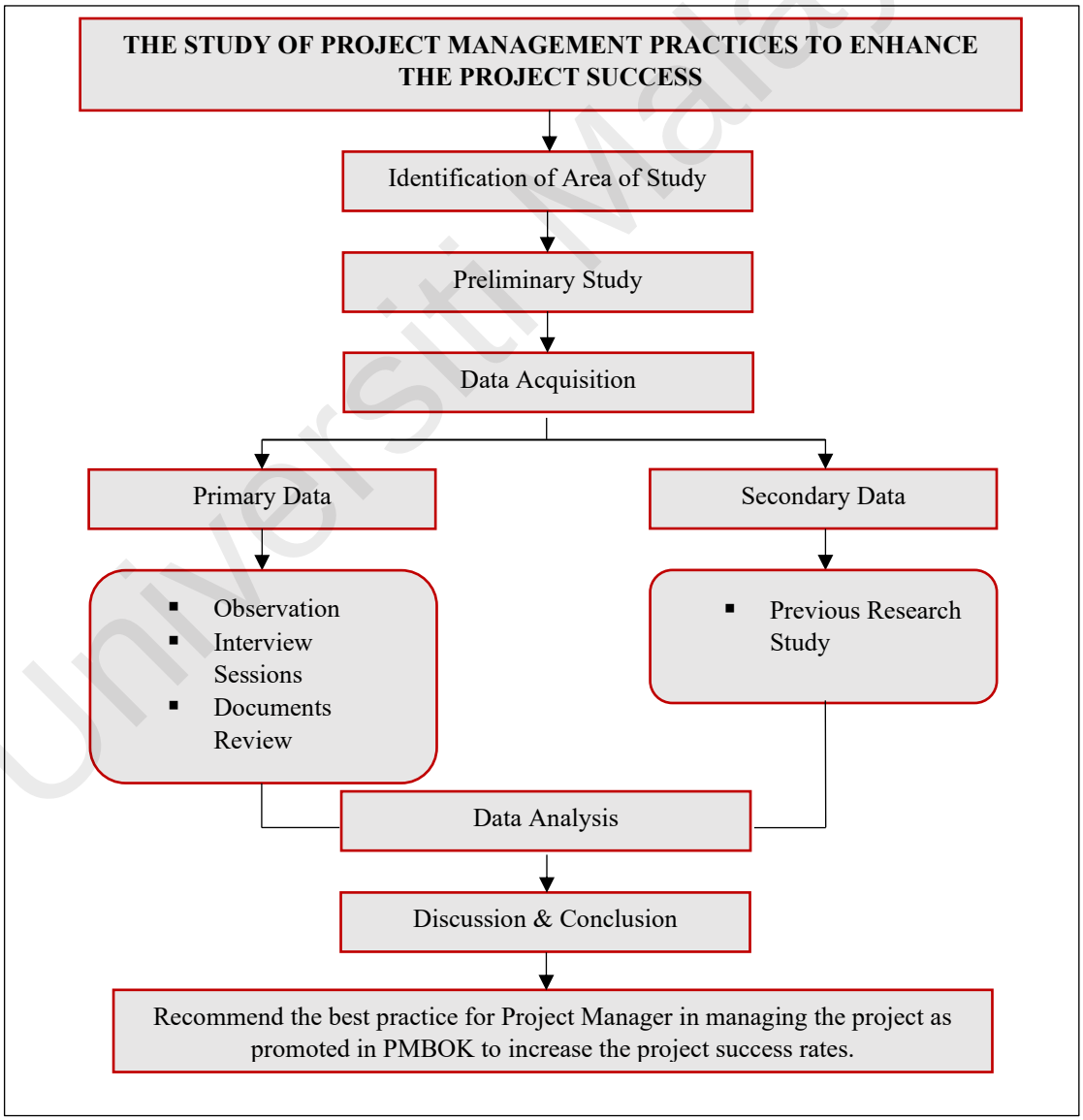

Figure 3.1: Research design framework.

3.2 Purpose of the Research

Research is the action of finding information on certain things which is the purpose is to discover certain objectives through the scientific procedure's application (Kothari & Garg, 2004). In general, research is divided into two types which are fundamental and applied research. According to the Kothari & Garg (2004), the research that requires depth understanding on the existing issues is called as fundamental research, while applied research can be defined as the solution of an issue. Research provides depth understanding of the focused area or scope of the study. For instance, the purposed of research is to obtain accurate data and information, before analyzing based on the method chosen to ensure the impact of the research can be used for future references to provide relevant recommendations and prevention.

Furthermore, research helps the researcher to obtain hands-on experiences in completing throughout the overall processes where the researchers have an opportunity to build connections and boost self-motivation with regards to the collaboration with other teams or personnel. Despite a tool for knowledge and learning medium, research allows to promote confidence in writing, analyzing, and sharing the information. According to Snyder (2019), systematic research can be defined as identifying process and research methods including the data collecting and analyzation to ensure comprehensive results for the research.

3.3 The Research Design

The preliminary study of this research is to determine any interesting areas to focus on, then formulated the research problem. The issues related to this study were extracted from previous studies to ensure the problem statement could be formulated. An extensive research and background study for all incidents, cases, and events through previous research studies helps in establishing the aim and objectives of this study. Next, a literature review of the ten knowledge areas based on PMBOK was studied to develop the working hypothesis in providing the research focal point. Furthermore, a thesis structure was created to have a proper framework of the study such as preparing for the research design. Moreover, at this stage, the samples were confirmed, and the data are ready to be collected and analyse.

This study is conducted based on five (5) case studies selected within Klang Valley. The study is using the qualitative method in collecting the data and information in detail throughout the interview sessions with representative personnel, observation during the site visits and documents review such as Progress Report, Project Development Report, Management Dashboard, Risk Register Report, Township Development Report etc before the project was selected and another details of documents review related to the specific projects selected are conducted. Therefore, the data collection in this study that are based on the previous research studies, documents review, observation and interview sessions will be critically analyse and providing output and recommendation.

3.4 Multiple Case Studies

According to Barratt, Choi & Li (2010), one of the most critical considerations when conducting theory-building case studies is to explicitly describe the rationale for the study. An analysis from the case studies helps researchers to get the data extracted in developing the theories and identify the main problems for the case studies. This study was conducted based on multiple case studies in Malaysia to ensure accurate information are considered and to obtain an overall understanding and satisfaction of the implementation of project management practices that resulted in project success. Therefore, the research gap was identified and new strategies to improve the research were set up. The aim of reviewing the case studies is to identify and determine the issues in project management practices with regards to the PMBOK and to recommend the best practice for Project Manager in managing the project. The case studies are focusing on a group of project management team such as Project Manager, Development Engineer, and Clerk of Work (COW) that involved in project samples selection. The criteria of the case study selection are due to the project completion (i.e., project delay), cost overrun, location of the project, and contract amount (i.e., to relate with project procurement management).

The data collection tools that are used in this study involved observation, interview sessions and documents review. The interview will be conducted via Microsoft Teams due to the pandemic COVID-19 situation and limited face-to-face interview sessions, based on the prepared questions to help the interviewee provide more detailed clarification. Moreover, the data collected from the interviews will be analyzed to differentiate the project management practices for all projects selected.

3.5 Criteria of the Samples Selection

There is no one-size-fits-all sampling approach in statistical research. However, planning a statistical study necessitates a strategy for selecting a sample method from a list of options. A collection of selection criteria is used to choose the best appropriate sampling method. The criteria setup allows this study to identify and discover the consequences as well as to examine the sampling in greater depth and with emphasis. The criteria for this project are based on selection through companies with excellent track records and experiences in constructing the houses, commercial and industrial building. Therefore, able to provide views and perspectives on the matters that will be discussed in this study.

a) Listed as Government-Linked Companies (GLC) that developed housing;
b) Excellent track record, including numerous accolades in the country's prestigious awards;
c) Experienced companies that involved with construction business for more than 15 years; and
d) Housing development companies that constructed more than 10 projects within the last 15 years.

The projects selection criteria were developed based on the available projects under selected companies to provide consistency on the development analysis. Therefore, the projects selected as case studies are selected based on the following criteria:

a) Projects are constructed and developed within the Klang Valley area;
b) Product pricing in the range of low cost, medium cost and high cost houses;
c) Housing development project that more than 80 units; and
d) Projects delayed more than 90 days.

3.6 Data Collection

The preliminary study of this research involved the review and data extraction through literature review to gain depth understanding of the research areas. Data selection basically with regards to the PMBOK guideline. In order to search for the related materials from google scholar, Science Direct, Research Gate, etc. specific keyword is identified.

The searching tools using the keyword such as project management practices, Project Management Body of Knowledge (PMBOK), project success rates, PMBOK knowledge areas, Project Integration Management, Project Scope Management, Project Schedule Management, Project Cost Management, Project Quality Management, Project Resource Management, Project Communication Management, Project Risk Management, Project Procurement Management, Project Stakeholder Management, SPSS, research methodology, and qualitative were widely used in this study. The samples size selection is varying from the 1990s up till year 2021.

According to the research study conducted by B. Mohr (1999), to fully understand respondents' experiences, beliefs, and behavior, a qualitative method is the most suitable approach due to its availability to obtain the data by conducting interview sessions and through observation. In this study, to ensure the data was perfectly collected, the observation was to carry out, interview with project personnel, and documents inspection.

There are five (5) projects selected as case studies for this research where interviews with key informants in these case projects were based on the instrument. The goal was to interview the Project Manager in charge of the design, construction process, and post construction as well as the overall process management. Each session of interviews was written up as a case study, complete with supporting documentary evidence.

Their suggestions were taken into account throughout the data analysis. The interview questions are divided into three (3) major sections namely section A, section B, and section C. Section A is the inquiries about the personnel background in industries, such as years of services and experiences, and also the education background. Followed by Section B is to dive more about their awareness with regards to the project management knowledge, implemented practices, comparison of the guidelines and actual practices. Lastly, section C is regarding the projects selected itself which are required documents review and observation.

Based on the study conducted by Hagemaster (1992), the comprehensive interview session should be conducted not more than two hours to prevent the loss of interest from the interviewee side. One session required around 60 minutes to review all the related documents such as progress report, minutes of meeting for Client Consultants Meeting (CCM), contract documents, and financial statement including the documents of Extension of Time (EOT). The interview is one of the most important factors that contributed to data collection in direct and indirectly. In addition, to kept respondent details confidential, the feedback from each respondent will not be disclosed.

After the samples were selected, the data collection has started. The collection of data took around three (3) months to complete. The interview sessions were conducted at the management office and site visits to the actual projects selected to ensure the case are observed closely. There is one individual involved for each case study which is the Project Manager.

3.6.1 Data Analysis

From the criteria setup, the interview is conducted with the key personnel as per tabulated in Table 3.1.

Table 3.1: Participants involved in the interview sessions.

Projects	Position
A	Project Manager
B	Project Manager
C	Senior Project Manager
D	Project Manager
E	Project Manager

The data will be collected manually throughout the interview sessions by obtaining all the information from Project Managers, observation during site visits, and documents reviewed.

3.7 Case Study Protocol

Multiple case study is essential in order to increase the reliability of the case study and as guidance to the researchers in carrying out the collection of data (Yin, 2003). The elements for case study protocol as mentioned by Yin (2003), are as follows:

a) Case study introduction and protocol purposes

   In this item, the framework of the study has been set up including the literature review in Chapter 2, and relevant issues that shall be investigated involving the questions and hypothesis for this case study.

b) Procedure of data collection

   i. Selection of case study location, key personnel to be contacted, and access to the organization

   ii. Prepared mechanism for the data collection such as expected result, issues to be covered, and things to observe during the site visits.

c) Framework of the case study report

   Suggested general idea to have the chronology of the events, the practice outcome as off to date, recommendation of the practices, references to the relevant documents, and all personnel interviewed to be listed.

d) Questions of the case study

   Described the processes and details of the projects, the goals, objectives and targets set up, also the nature of the business. The questions shall be conducted based on these protocols starting from definition and design stages, followed by preface, collection and data analysis, and lastly conclude the research.

3.8 Summary

This chapter describes the overall research methodology for this study. The process involves the method used to collect and analyze the data. The data will be collected based on qualitative technique methods such as interviews as primary data followed by data analyzing to obtain comprehensive results.

CHAPTER 4: DATA ANALYSIS AND RESULTS

4.1 Introduction

As explained in Chapter 3, there are four (4) criteria in the selection of projects as case studies for this research study and the invitation was sent to ten (10) different Project Managers. However, only five (5) responded and agreed to participate. Therefore, only five (5) projects were selected as case studies for this research. However, due to confidentiality and to protect anonymity, the case study involved will be referred to as Project A, Project B, Project C, Project D, and Project E.

4.2 Background of the Interviewees

Based on the interview conducted, there are two (2) sections focussed on the interviewees' background that is the years of working experiences in construction industries, and education background on Section A. Followed by Section B which required the Project Manager to explain the project management practices implemented and awareness of the PMBOK guidelines.

4.2.1 Project A

Section A

This project is managed by an experienced Project Manager with more than 15 years' experience in construction industries including working with contractors, consultants' firms, and developers. Project Manager for this project is graduated from local government university in Bachelor's Degree of Civil Engineering. For almost more

than 10 years managed the mixed development projects such as landed and highrise housing, commercial and industrial.

Section B

He is aware of the project management practices as per stated in PMBOK. However, he did mention that the PMBOK guide is as a framework and actual practices at the site did not fully follow and complied with the theories and guideline in PMBOK. For Project A, a proper framework was established and implemented. For instance, Project A was guided with comprehensive project planning, goals, objectives, and the project was executed based on the targeted project activities sequence. Furthermore, Project Schedule Management is the least implemented in Project A which caused delays for 14 months in completing the project. Followed by Project Quality Management where there is a lack of quality control and monitoring.

Table 4.1: Knowledge areas for Project A based on PMBOK.

Projects / PM Areas	A
Project Integration Management	√
Project Scope Management	√
Project Schedule Management	Not complied
Project Cost Management	√
Project Quality Management	Partially complied
Project Resource Management	√
Project Communication Management	√
Project Risk Management	√
Project Procurement Management	√
Project Stakeholder Management	√

4.2.2 Project B

Section A

The interview was conducted with the current Project Manager in charge of this project. This project is currently monitored by new appointed Project Manager that has seven (7) years of experience with a consultant firm. Graduated with a Master's Degree in Architectural from a private university located at Klang Valley provide this Project Manager challenges to resolve the current issues of this project.

Section B

Section B of the questions is mainly on project management awareness and practices. In addition, the project manager agreed that PMBOK is a comprehensive guideline, especially for someone that has a lack background on project management in construction. However, the project manager did not aware of the usage of PMBOK in Project B, as the person in charge of this project kept changing and there is no proper guideline and standards to be as a reference. Thus, the current practices did not comply with the PMBOK guidelines. Based on the interview conducted and documents reviewed, Project B is poor in Project Cost Management, Project Resource Management and Project Risk Management. Project B resulted in cost overrun that reflects negative Net Development Profit (NDP) and poor in sustaining the resources such as managing the team. furthermore, the risk on Sales & Marketing (M&S) strategies did not reflect in a Risk Register Report, which resulted in poor risk mitigation action plan for Project B.

Table 4.2: Knowledge areas for Project B based on PMBOK.

Projects / PM Areas	B
Project Integration Management	√
Project Scope Management	Partially complied
Project Schedule Management	Partially complied
Project Cost Management	Not complied
Project Quality Management	√
Project Resource Management	Not complied
Project Communication Management	Partially complied
Project Risk Management	Not complied
Project Procurement Management	√
Project Stakeholder Management	√

4.2.3 Project C

Section A

This project was managed by an experienced Project Manager who graduated from one of the universities located in Australia, with a Bachelor's Degree in Civil Engineer. He then started his journey in engineering school under the Government of Malaysia to serve the services. For a few years, he registered as a graduate engineer, resident engineer and professional engineer. After 10 years in the construction industry, he sat for an examination to get the Ir. (Ingenieur).

Section B

This Project Manager was well aware of the PMBOK guideline and implemented several PMBOK guidelines in actual practices. In addition, he mentioned that some processes in PMBOK are not required to follow in order to shorten the time taken for project execution. However, the consequences and impact of skipping the PMBOK guide are high. As for Project C, the project team overlooked on the risk when conducting the soil

investigation test. The risk register for Project C focused more on the construction stages compared to the pre-construction phases. Followed by the Project Schedule Management and Project Quality Management which the project was delayed for 7 months with an average quality due to soil settlement issues.

Table 4.3: Knowledge areas for Project C based on PMBOK.

Projects / PM Areas	C
Project Integration Management	√
Project Scope Management	√
Project Schedule Management	Partially complied
Project Cost Management	√
Project Quality Management	Partially complied
Project Resource Management	√
Project Communication Management	√
Project Risk Management	Not complied
Project Procurement Management	√
Project Stakeholder Management	√

4.2.4 Project D

Section A

Experienced in the construction industry for more than 6 years with landed housing and less exposure in highrise development. Nature of work in a consultant firm has resulted this Project Manager lack and poor in managing the contractors when he started to join developer. Graduating from local government university in Property Management with dissertation, which has provided him chances to be successful in career development.

Section B

In relation to the awareness and implementation of PMBOK guideline, he mentioned that he was aware of the PMBOK, however, did not practice in the actual situation. The current procedure and standard have been established by the company and they have mostly followed the current procedure instead of the PMBOK guideline, even though there is so many loopholes in the current Standard Operating Procedure (SOP). Project C was poor in and not comply with Project Schedule Management, Project Quality Management and Project Resource Management due to many defects found during post construction period and the Project Manager failed to manage the team and contractor. Moreover, the quality of the product is below an average standard due to poor Project Quality Management, followed by the partially complied to the Project Communication Management due to communication breakdown between client side and contractor.

Table 4.4: Knowledge areas for Project D based on PMBOK.

Projects / PM Areas	D
Project Integration Management	√
Project Scope Management	√
Project Schedule Management	Not complied
Project Cost Management	√
Project Quality Management	Not complied
Project Resource Management	Not complied
Project Communication Management	Partially complied
Project Risk Management	√
Project Procurement Management	√
Project Stakeholder Management	√

4.2.5 Project E

Section A

Project E was a highrise project under Joint Venture company. Therefore, the Project Manager chosen to be interviewed is from the developer side. Having experienced of 9 years in the construction industry has promoted him to be excellent in managing his past projects. With the certificate of Project Management Professional (PMP), he secured a place in a developer company. Having a bundle of experiences in managing landed and highrise development, and currently practicing proper project management practices as per PMBOK.

Section B

During the interview session, it was noted that this Project Manager was knowledgeable with most of the project management guidelines such as PMBOK, and PRINCE2. However, due to limitation in involving with Project E, the project management practices as per PMBOK is difficult to conduct and implemented. Project E shows low profit margin due to poor financial planning in Feasibility Study (FS) prepared by the contractor which resulted from poor Project Cost Management. The Project Communication Management was also poor due to limited meetings conducted between the client, contractor and consultants' team.

Table 4.5: Knowledge areas for Project E based on PMBOK.

Projects / PM Areas	E
Project Integration Management	√
Project Scope Management	Partially complied
Project Schedule Management	Partially complied
Project Cost Management	Not complied
Project Quality Management	√
Project Resource Management	Partially complied
Project Communication Management	Not complied
Project Risk Management	√
Project Procurement Management	√
Project Stakeholder Management	Not complied

4.3 Summary of Case Studies

The summary of the project selected for case studies is tabulated in Table 4.6.

Table 4.6: Summary of project selected for case studies.

Types of Development	Project A	Project B	Project C	Project D	Project E
	Highrise	Highrise	Landed	Highrise	Highrise
No. of Units	216	508	99	528	367 *0 units for sub-structure
Original Contract Sum (RM)	104,280,932.06	413,488,074.79	33,063,836.25	178,907,550.75	64,500,000.00 (Sub-Structure)
Revised Contract Sum (RM)	110,314,495.66	438,104,893.73	32,957,650.62	165,934,426.44	64,500,000.00
Original Completion Date	1-Aug-2014	11-Jan-2019	20-July-2015	4-May-2017	29-Nov-2018
Actual Completion Date	15-Nov-2015	30-Sept-2019	22-Feb-2016	30-Aug-2018	27-Feb-2019
Delays	14 Months	8 Months	7 Months	15 Months	3 Months

4.3.1 Project A

Background

Project A is a modern and luxury 16 floors highrise project with 216 residential units in total. The sizes are varying from 1,076 sqft to 4,207 sqft with development price up to RM,1500 psf. It is located at the city centre that connected to the several road access. The construction is supposed to be completed within 25 months, however, under several circumstances, the projects were delayed up to 14 months and took 39 months to complete. Several Certificate of Non-Completion (CNC) was issued to the contractor and Extension of Time (EOT) was granted. The governance structure for Project A is situated as the traditional contract of Persatuan Arkitek Malaysia (PAM) and was awarded to the contractor with an original contract sum of RM104,280,932.06. Furthermore, the contractor manages to finish the construction in 39 months with the additional cost amounting to RM6,033,563.00 which summed up the revised contract sum of RM110,314,495.66.

Issues on Project Schedule and Quality Management

The issue of project delayed in project progress of Project A due to contractor financial was notice during the construction stage.

Projects	Design Stage	Construction Stage	Post Construction
A		***Project Delayed due to Contractor's financial*** →	

Figure 4.1: Stages of issue occurred for Project A.

i. Outcome from the interview stated that this project had a delayed of 14 months due to the underperforming contractor. Major contribution to the failure is due to the financial issues throughout the project execution process.

ii. In addition, the contractor failed to maintain and roll the finances from the client and hence, affected the project performance. Several reasons for the EOT application are due to insufficient labours, materials changes, and insufficient machinery. Post-mortem report stated that the contractor's background is excellent with the previous history of projects, financial and quality assessment. However, throughout this project, the performance dropped due to insufficient funds to roll the businesses.

iii. During the project implementation stages, it was noted that another major contribution to this delay is due to lack of an experienced project management team in monitoring the project progress which resulted in poor Project Quality Management. However, few warning letters are issued to the contractor to solve this issue.

Project Manager Solution for the Issues

Normal practice in this organization is to evaluate contractors twice a year. However, due to this major issue, the Project Manager proposed a solution to evaluate and conducted a performance assessment of the contractor earlier and highlighted this matter to Procurement Department for management attention. Thus, the contractor has been backlisted for a future projects.

4.3.2 Project B

Background

Project B located on 6.74 acres of land consists of 508 units of freehold services apartments and consists of two residential towers that were launched in two different years dated May 2016 and April 2019 with a price range of RM516,888 to RM1,017,888 respectively. During the planning stages for Project B, the team has presented the budget and pricing paper to the board, and it was approved in May 2016 with the Gross Development Profit (GDP) of RM58.8 million and Net Development Profit (NDP) of 14.44%.

Issues on Project Scope, Cost and Resource Management

The issue of poor in financial planning and marketing strategies of Project B was noticeable during the planning and construction stage. However, the result was shown during the post construction phase.

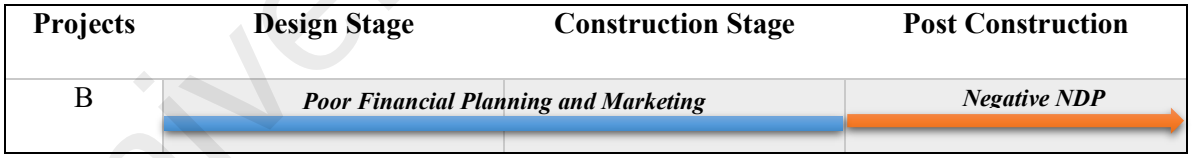

Figure 4.2: Stages of issue occurred for Project B.

i. However, the projects are failed to meet the targeted sales since 2017. The sales performance dropped due to fewer campaigns from Marketing & Sales to promote this project. Due to poor sales performance of Project B, the management and Marketing & Sales (M&S) team decided to provide more discounts and rebates to the purchasers, which resulted a major cost impact to the overall reduction in NDP. This is the result from poor Project Scope and Cost Management.

ii. This issue has grabbed higher management attention, and as a solution to this issue, they proposed solution to appoint third party consultant i.e., Project Management Consultant. Frequent changes of the project management and M&S have hampered the timely deployment of marketing and sales activities in response to market developments, which resulted in a loss of competitiveness and direction among sales consultants due to poor Project Resource Management.

iii. The appointment of third party project management consultant gave a positive impact on the project, however, it contributed to additional cost to the project which resulted in a negative NDP for the overall project.

Project Manager Solution for the Issues

Due to a lack of marketing strategy and poor project management practices in managing the project which has resulted in cost overrun, the Project Manager inquire the management to appoint a third part project management consultant to resolve the issue. This is due to insufficient and lack of a knowledgeable team in handling project.

4.3.3 Project C

Background

This is a landed housing development of 99 units double storey linked house with an EOT of seven (7) months. Project C was awarded to local the authority with an original contract amount in RM33,063,836.25 and managed to have an omission which resulted of RM32,957,650.62 for the final account. This is due to the reduction of piling numbers.

Issues on Project Risk Management

The issue of poor soil investigation and design failure of piling numbers for Project B was noticeable during the planning stage. However, the result of major soil settlement was shown during the post construction phase.

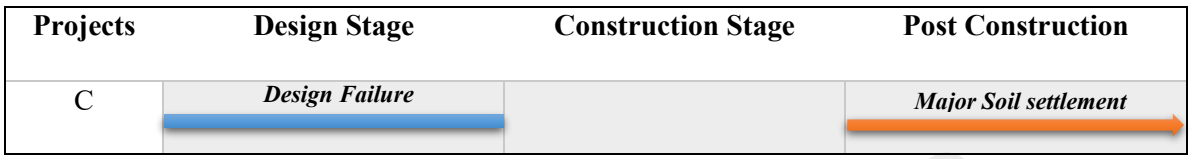

Figure 4.3: Stages of issue occurred for Project C.

i. During the post construction stage, soil settlement issues started to occur. Starting with minimum defects complaints from the purchaser on the hairline crack, and the obvious gap between the floor tiling, the same issue is repeatedly lodged by other purchasers.

ii. Based on the report of soil investigation reviewed, it was noted that the crack happened at the sidewalls, backyard fencing, and external fencing walls of the houses. The reason for the events is due to an ununiform settlement between the structure of the main building and its surrounding ancillary structures.

iii. This issue is resulted from Poor Risk Management where the risk on soil settlement was overlooked by Project Manager and project team.

Project Manager Solution for the Issues

The Project Managers is responsible to highlight this issue to higher management and as a result, third party contractors are appointed to identify the root cause of the soil settlement. Furthermore, Project Manager requested the contractor to do the rectification works during the Defect Liability Period (DLP).

4.3.4 Project D

Background

Project D is also a highrise housing development that consists of 528 units located at Klang Valley. The construction started in May 2015 with the original completion date of May 2017. This project was awarded to a local contractor amounting to RM178,907,550.75. However, the project manages to reduce 7% costing from the total of original contract sum. Based on the input provided by the current Project Manager, this project was delayed for 15 months due to contractor financial issues. Furthermore, there is no major issues that occurred during the project implementation, despite the delay in delivering the project within the timeline. During the project execution, the project team requested to omit several items therefore, the cost has been reduced due to the design changes.

Issues on Project Schedule, Quality and Resource Management

The issue of poor workmanship quality for Project D was noticeable towards the end of the construction stage. However, the result of major defects was shown during the post construction phase.

Projects	Design Stage	Construction Stage	Post Construction
D		*Poor Workmanship Quality*	*Defects and Pending Rectification*

Figure 4.4: Stages of issue occurred for Project D.

i. As of October 2020, which is two years after the project completion, this project recorded 151 units that are yet to be sold. Based on the findings, it was noted that all 151 unsold units are having minor, medium and major defects.

ii. The contractor shows poor performance in conducting the rectification works due to financial issues after the first Vacant Possession (VP) on 3 September 2018.

iii. Based on the data extraction from the sales forces system for sold units, defect list of the unsold units and the common area by Township, it was noted the common defects are found to be hollow tiles, missing sanitary fittings, wall hairline cracks, wall paint issues, rusty hinge, and ceiling leakages.

iv. Outcome from the interview shows that the project management team in charge of this project did not aware of the PMBOK as a project management guideline and lack of monitoring during the project execution.

4.3.5 Project E

Background

Project E is a highrise housing development with a total of 367 residential units. However, only package of sub-structure was selected as case study for this project. The planning of this project is mainly on mixed development with a land size of 4.14 acres consists of community retail, commercial, and residential development. Project E was officially launched in July 2016 with separate package awarded amounting RM64,500,000.00. in addition, this project is a project of joint venture company, and the contract implemented for this is Design and Build (D&B) basis. Moreover, the other party of this project conquer the financial profit as they appointed their own company as a contractor as well as consultants.

Issues on Project Cost, Communication and Stakeholder Management

Projects	Design Stage	Construction Stage	Post Construction
E	*Cost Overrun* →		

Figure 4.5: Stages of issue occurred for Project E.

i. Based on the Feasibility Study (FS) approved by the board, the GDP for Project E is amounting RM85 million approximately with GDP of 19.7% respectively.

ii. However, there are several requirements from the local authority related to an additional requirements for Development Order (DO) approval that were not taken into consideration while preparing for FS which resulted in additional cost amounting to RM6.5 million. Therefore, it affected the overall GDP and NDP for this project.

iii. Moreover, Project Manager for this project admitted that the team did not have any chance to comply and implement the guideline of PMBOK due to the types of contracts that they agreed with. The D&B contract has provided several circumstances for client to involved with the construction planning, execution, and monitoring.

iv. Moreover, the lack of meeting conducted has contribute to the failure of communication among the contractor, consultants and client as the contractor have full authority for this project.

Project Manager Solution for the Issues

Project Manager initiated a discussion and meetings to discuss this matter with contractors and consultants.

4.4 Summary

This chapter described the analysis based on the data collected. Further elaboration and comparison of the issues that related to PMBOK guideline and in comparison, of the actual practices are discussed in Chapter 5.

CHAPTER 5: DISCUSSION AND RECOMMENDATION

5.1 Introduction

This chapter discusses the result obtained from this study. This chapter begins with a discussion on the comparison of the Project Managers solutions to handle issues that happened at site with the PMBOK guideline, followed by internal management process, comparison of PMBOK guideline implementation against the actual practices, and relationship of project management practices with the project success.

5.2 Common Issues

Observation, in-depth interview, and collection of evidence from the project's material such as minutes of meeting, reports, and project records are conducted for this study to obtain an overall understanding of the issues that happened as well as to analyze the root cause and assess the project management practices. Consequently, the common issues are extracted from the overall data gleaned from these three methods. By approaching the two techniques of control and comparison, good design research is formed. Noted that the issues are quite common in terms of internal management control, project progress, and contractor's performance. Table 4.7 shows the common issues from these five (5) case studies.

Table 5.1: Common issues for Project A, B, C, D & E.

	Project A	Project B	Project C	Project D	Project E
Project Delayed	√	√	√	√	√
Contractor's Performance	√		√	√	
Internal Control		√	√	√	√

From the data collected, three common issues are highlighted in this study. All projects are having delayed in the range of 3 months to 15 months. The issues are mainly due to the reason of contractors' performance, and lack of control and monitoring from internal project management team. Construction delays are one of the most common issues in the construction business, and they frequently have a negative impact on project performance in terms of time, cost, and quality. The influence of contractors, consultants, and clients is usually the main cause of project failure. Delay has a high cost for all parties involved.

5.3 Root Cause

Based on the scenarios for all case studies and data gathered, the issues are noticeable during the stages as illustrated in Figure 5.1.

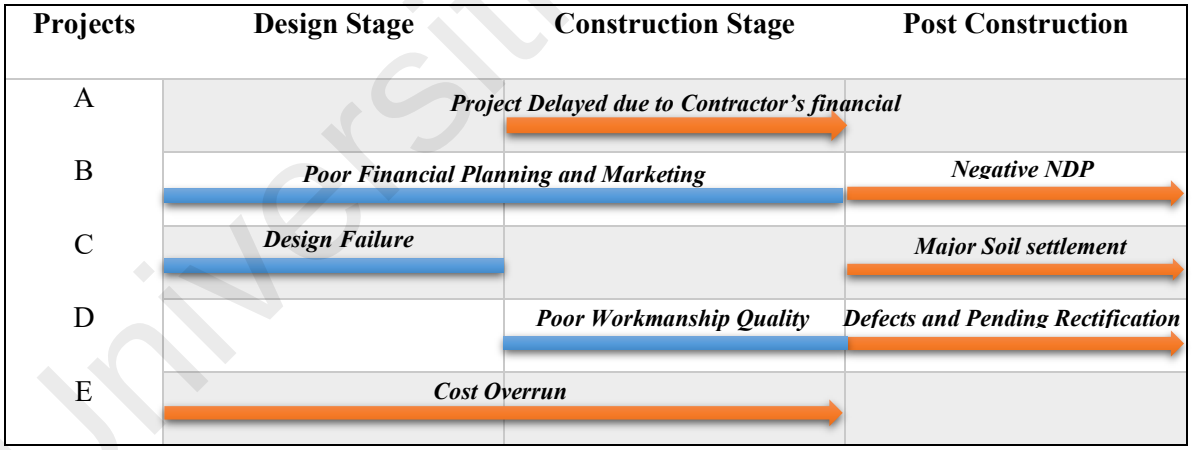

Figure 5.1: Issues for Projects A, B, C, D and E.

5.3.1 Project Progress

All case studies selected for this study are found to be delayed due to several reasons. However, the delays are valid for some reasons as the project granted the approved Extension of Time (EOT) ranging from 3 months to 15 months. The delays for Project A, B, C and D are mainly due to contractors' financial background. A depth analysis conducted found that Project A and Project B are the same contractors. Project A supposed to complete in August 2014, however due to a financial crisis, the project can only be completed after 14 months of delayed. After 4 years, this contractor was awarded Project B amounting to RM413.5 million.

However, due to lack of expertise from internal planning team and poor campaign to promote Project B, the profit and sales take up rate for this project is negative and slow compared to another project. Despite of normal Persatuan Arkitek Malaysia (PAM) contract, Project E is using Design and Build (D&B) Contract due to agreement of both joint venture parties. Highlighted of the D&B Contract are any design changes that required additional cost will be borne by the contractor and any omission or saving shall be reverted to the client. However, there are some discrepancies between the contractor and client which resulted in pro-long disagreement on the costing and thus affect the project progress.

5.3.2 Contractor's Performance

Common practices in this case study, all contractors and consultants need to register with the Procurement Department and to be on approved vendor list before can participate in any tender exercises. Every contractor and consultant appointed need to go through validation process during the construction process to assess their performance. This indicator is as benchmarking and Key Performance Indicator (KPI) that can be used to evaluate and measure potential contractors as well as their capabilities. The findings can assist construction companies in learning from one another's best practises and pursuing continual development. Because the research approach is generic, it can be extended to other contractors with small changes.

However, for Project A, D and E, the contractors performance dropped during the project implementation and execution stages. Preliminary checking on contractors' background is good before the project was awarded to them. It happens that these projects are having issued with regards to the unexpected financial issues from the contractor. The reasons are vague, varies and required further studies. Post-mortem from these three (3) projects was stated that contractor did not implement the actual and guideline of project management. The tight timeline from client resulted to contractors in skipping the important steps of proper project management guideline. It is agreeable that the most significant underlying factors were identified as contractors' insecure financial backgrounds, clients' poor financial and company management, difficulties obtaining loans from financiers, and inflation.

5.3.3 Internal Management Control

Despite of contractor's performance that led to project delays, the most contribution factors to poor project management are verily from poor internal management control and monitoring. In the construction of project, every stakeholder plays an important role to ensure the project success and meet the objective. Based on the case studies finding, it was noted that four (4) out of five (5) projects are lack and poor in internal management control. Project B shows that the monitoring and control in terms of financial scope where the marketing and sales team did not have any experts in allocating the budget, monitoring the sales take-up rate and supervised the marketing strategies. Besides that, Project E faced the cost overrun during the construction stage due to poor monitoring from internal management team.

Lack of monitoring in Project C has led to design failure that affected during the post construction. During early stage of project implementation, consultant is required to conduct a soil investigation test for Project C. With the aid, and financial budgeting from client, they soil investigation test is conducted with minimum supervision from client side. Resulted from poor and lack of monitoring the site condition during the soil investigation, the impact is showed after half year from the project completion. Major soil settlement occurred at the houses which led to customers dissatisfaction and major complaints. The project management team admitted that due to no previous issues related to soil has happened before, they tend to ignore the types of soil in that area and proceed with minimal point during conducting soil investigation and reduce the piling numbers at car porch area. Therefore, the settlement became a major issue for Project C.

5.4 Comparison of Project Managers Solution with PMBOK Guidelines

The summary of project management practices implemented by Project A, B, C, D and E are tabulated in Table 5.2 below.

Table 5.2: Project management practices implemented by Project A, B, C, D and E.

Projects / PM Areas	A	B	C	D	E
Project Integration Management	√	√	√	√	√
Project Scope Management	√		√	√	
Project Schedule Management					
Project Cost Management	√		√	√	
Project Quality Management		√			√
Project Resource Management	√		√		
Project Communication Management	√		√		
Project Risk Management	√			√	√
Project Procurement Management	√	√	√	√	√
Project Stakeholder Management	√	√	√	√	

√	Complied with PMBOK
	Partially Complied
	Not Complied

5.4.1 Project A

The contractor poor performance is noticeable during the construction period for Project A, therefore the Project Manager took the initiative to issue several reminders and conducted meeting to highlight on this matter. Based on the analysis, Project A are found to be poor in Project Schedule Management due to the tight dateline given to the contractor. As a result, the contractor has a financial issue when they cannot roll the financial as per tempo of the timeline. Thus, the poor in Project Schedule Management led to unstable financial control from the contractor and resulted in project delays. The guideline set for this project also poor due to contractor performance.

The quality framework of the Project A was developed, however, the implementation was poor. Therefore, the Project Quality Management of this project is not satisfied.

5.4.2 Project B

Project B has appointed third party contractor to handle the marketing issue and consultant for project management. Major failure for this project is poor Project Cost and Project Scope Management as the budget setup are not clearly identified and studied before starting the construction. Thus, it affected the cost and profit margin. In addition, Project Resource Management was also found to be poor due to the Project Manager failing to manage the team that handled this project which resulted in underperforming team. The communication between marketing team and project team as well as the higher management also not aligned. This happened due to frequently changing person in charge and team for this project. Therefore, the directions, objectives, leadership styles and strategies also changed which led to discrepancies in planning and execution that affected the team and project performance.

5.4.3 Project C

Project C is almost perfect in terms of timing, budgeting, and quality. However, due to poor Project Risk Management, this project is having post construction soil settlement issues. Lack of risk identified during the planning and construction phase has led to major settlement issue due to the Project Manager overlooked at the consequences of few point Soil Investigation test. However, fast action from Project Manager to highlight this issue to higher management to appoint third party contractor to study the root cause and proposed new solution are good exercises for project management.

5.4.4 Project D

Project D managed to complete by meeting the stakeholder's satisfaction. However, during the construction, the contractor is having a financial issue. They managed to complete the construction. However, there are many unattended defects at unsold units. This issue is mainly due to lack of monitoring by internal customer services team which are responsible to monitor all the defects and is required to maintain the unsold units. This project is poor in Project Quality and Resource Management due to underperforming contractor and internal management team. The Project Communication Management also seems breakdown since there is no meeting conducted with regards to the unattended rectification works.

5.4.5 Project E

Under the D&B Contract for Project E, it was stated that any additional cost shall be borne by the contractor and any omission shall be refunded to the client. However, the contractor did not present overall financial planning to the client which resulted in cost overrun and low profit. This project proved that poor Project Communication Management between the contractor and client side. The meeting held is to discuss the issue pertaining to the progress at the construction site. However, the meeting conducted is only once per month which is an insufficient period. Since this project is a D&B contract, the Project Manager from the client's side did not have any authority to propose any solution as the contractor is totally rejected any direction from the client's side.

5.5 Internal Management Processes

From the result of the analysis, it has shown that the organization selected has its internal processes with regards to the project life cycle. Based on the Standard Operating Procedure (SOP) provided, it was noted that those organizations have a comprehensive SOP to be implemented for the project. Starting with design and planning stages, those organizations have set up a separate team knowing as Master Strategic Planning Department, Land Administration and Land Planning Department, Product and Innovation Department, Main Infrastructure and Landscape Department, and Project Planning Department that covered the overall planning of a project starting from project initiation, planning, design, conceptual, including the budgeting and consultant's appointment. The approval process took a longer period as there are many levels of approval authority.

However, this is one of the initiatives that these organizations have. Few departments are established to segregate the scope of works to ensure the smoothen of the processes. Furthermore, the internal control of these organizations is well equipped with the PMBOK guideline. For instance, these organizations has several departments such as Procurement and Finance Department that help in controlling the financial and cost, Risk and Compliance Department that is responsible for identifying all risks in projects and organization, Project Management Office (PMO) Department that in charge of the project reporting and mitigation action. Therefore, the framework set up by these organizations is well equipped and aligned with PMBOK guideline.

5.6 PMBOK Guideline Implementation Against the Actual Practices

In the project construction industry, ten knowledge areas in PMBOK guide are most important to be implemented to ensure the project success. All these knowledge areas are comprehensive as a guide for the project team. Experienced project managers should be able to expert in all these knowledge areas. As a huge developer company in Klang Valley and in Malaysia, the processes are aligned with the PMBOK. However, based on the interview sessions conducted, there are some discrepancies on the PMBOK guideline implementation in their project practices. Five (5) out of five (5) case studies selected state that the team did not fully implement the PMBOK guide in their actual practices. For instance, the Project Integration Management in PMBOK described full details and processes, however, due to long processes, they tend to skip several processes to shorten the time period in a project.

Next, the Project Scope Management and Project Cost Management are the least focal areas for the project team as they are distributed the responsibilities to financial control team such as finance and credit department. The Project Risk Management are monitored by one key personnel that compiled all the risks throughout the whole township and reported it to higher management. In addition, Project Communication Management is successfully complied for all five (5) projects selected which include the fortnightly meetings, weekly meetings, and other special meetings when needed to discuss the project matters. Key department in implementing the Project Procurement Management is the Procurement Department itself, starting from selecting the vendors such as contractors, consultants, and suppliers until the blacklisted of the vendors. This department plays an important role in managing the current and future contractors or vendors for a project which resulted in project performance.

5.7 Relationship of Project Management Practices with Project Success Rates

Most of the organization in Malaysia are implementing the formal project management practices that are associated with cost, quality, and time. These three (3) elements are highlighted as most important elements in PMBOK guide as well as in previous research studied since it is the most crucial element that help to measure and evaluate a project. From the result analysis, it was noted that proper project management guideline helps to increase the project success rates. The previous studies show and prove that PMBOK guide is a comprehensive framework in order to manage a project.

In addition, special attention needed to be given to human resources and communication. Human resources and communication are important in managing the project stakeholders such as the project management team, contractors, consultants, investors, purchaser and many more. From the project initiation till project ends, project manager needs to play the role effectively. Project managers need to be multi-tasking and expert in every project management area to ensure smooth processes can be implemented which can result in project success. One of the most typical issues in human resource management and communication is the communication barriers and misinterpretation itself. The Project Risk Management is sometimes overlooked because risk management might take time. Many organizations will only carry out a risk management procedure if they run into issues with their project. In the vast majority of circumstances, this will result in a failure to fulfill the deadline.

5.8 Recommendation

This section is to provide the best practice and recommendations for the projects selected based on the observations, interviews conducted, and documents reviewed for future improvements. This study is recommended three (3) focus areas involving the establishment of in-house consultant teams, strategies to meet clients satisfaction and continuous improvement for the project management team.

5.8.1 Project Management Practices

All five (5) projects selected to implement the Project Integration Management and Project Procurement Management in their practice. Therefore, these recommendations are limited to other eight (8) knowledge areas.

i. Project Scope Management: Project Manager for Project B is recommended to establish the Work Breakdown Structure (WBS) to properly segregate the scope of works and roles for everyone involved in the project. While Project Manager for Project E is recommended to validate the scope as promoted in PMBOK before proceeding with project execution.

ii. Project Schedule Management: All Project Manager are recommended to develop a project schedule at planning stage and be able to monitor and control the schedule of the project.

iii. Project Cost Management: The Project cost management needs to be a plan by determining the cost estimation for the projects including any additional hidden cost to ensure no cost overrun occurs. Moreover, any financial and cost for a project need to be reviewed and controlled.

iv. Project Quality Management: most of the Project Managers are overlooked at the Project Quality Management, therefore, it is recommended for Project Manager to develop plan quality management, manage the quality and followed by control the quality of a project.

v. Project Resource Management: Managing resource of the team such as project team, financial team and risk compilation team is the most crucial factor to ensure the project can be constructed without having a poor performance from the team. Therefore, Project Manager is recommended to provide mental support and continuous training among the team.

vi. Project Communication Management: Project Manager are recommended to conduct more frequent meetings or engagements with the teams and contractors. The decision making and issues highlighted shall get approval from all stakeholders.

vii. Project Risk Management: The risk register is the best practice to identify potential risk and mitigation action plan. Therefore, Project Manager to ensure all contractors and consultants can highlight and report all sort of risk. This exercise could be started by requesting the contractor and project team to list down all the risk with proposed solution.

viii. Project Stakeholder Management: to develop stakeholder engagement strategies to meet their satisfaction.

5.8.2 In-house Consultant Team

Normal practice for all projects selected is to appointed external consultants to monitor and execute the project works related from the small scope of works to huge scopes. This has incurred additional cost to the organization. The team has gone through the same processes and requirements of all projects; therefore, it will be an advantage if the organization establishes an in-house consultants' team instead of appointing external consultants. Furthermore, the value can be easily added to future projects since the internal team is familiar with the objectives and strategies of the organization.

5.8.3 Strategies to Meet Stakeholders' Satisfaction

Meeting the stakeholder's satisfaction is the most difficult element in construction industries. Therefore, several strategies are recommended to meet the satisfaction. The project manager is recommended to conduct special meetings or sessions with the stakeholder depending on their levels and interest to ensure all requests can be entertained and take into consideration before, during and after project implementation. For instance, certain stakeholder required to have different agenda and planning for a project, therefore, as a project manager, they need to have a clear and creative strategies to ensure the interest can be combine and perform well throughout the project outcome. Establishing a framework, checklist and consistently update can helps in reducing the dissatisfaction of stakeholder. This is because any changes can be made upon relevant request and meet their satisfaction.

5.8.4 Continuous Improvement

Continuous improvement is needed in all projects and all organization to increase the project success rates and quality of the projects itself. Hiring and appointing experts in specific areas will lead to positive value added to the organization. The continuous improvement is involving the training provided to the project management team. An expert project manager helps in managing project, however, a good project execution team also are needed to ensure overall project success. In addition, other related and important department such as procurement, risk, and legal department are recommended to have a training related to project management. This is to prevent the poor and lack of understanding while handling the project matters.

CHAPTER 6: CONCLUSION

6.1 Introduction

This chapter describe the conclusion for this study which all the data are calculated, analysed, and summarized as conclusion. The implication, limitation and suggestion for future research were also discussed.

6.2 Conclusions

The objective of this study is to recommend the best practice for the project manager in managing the project by assessing the implementation and impact of project management practices of the project. In order to achieve the objectives, multiple case studies method is selected for housing development projects in Klang Valley, Malaysia. The study was conducted by reviewing the empirical work and theories regarding the project management guidelines as promoted in PMBOK and actual practices based on case studies selected. This objective has been met in Chapter 4 and 5 whereby the project performance is related to the implementation of project management practices. From the case studies explored, the most contributing factors in project failure are due to poor Project Schedule Management, Project Cost Management, Project Communication Management and Project Quality Management. These has been proved through the project performance and the root cause analysis. Furthermore, it has drawn to sum up the common issues for all projects selected are project progress which all projects are delayed for more than 90 days, poor contractors' performance in terms of financial and quality, and internal management control where the internal project team did not have enough knowledge to implement the best practice of project management.

Therefore, the project management guidelines are proven to be the most effective way in promoting successful project management. Even though failure in project management practices does not mean the project itself is failed, it is proven that implementing a proper project management practice helps in increasing the project success.

6.3 Limitation of the Research

The major limitation factors in conducting this study are the sample sizes which are only five (5) case studies selected. Due to time constraints, the samples size is very limited. Therefore, it cannot be representing the whole industries of project management practices. This study is mainly focused on PMBOK guide. As a result, the approach is solely limited to PMBOK. Furthermore, there are many guidelines and standards for project management such as PRINCE2, P2M and so on. PMBOK is just one of the project management standards that have been developed. This study focussed only on eight (8) knowledge areas of project management that are least implemented to the projects except for another two knowledge areas such as Project Integration Management and Project Procurement Management are practiced as promoted in PMBOK.

6.4 Suggestion for Future Research

In future studies, the sample size should be expanded to guarantee that the findings are representative of the respective industry. The precision of the outcome will also improve with greater sample size. Aside from that, research can be improved by comparing the other project management standards with actual practices. Moreover, a comparison of a few standards against the actual practices may aid in the development of a more thorough research questionnaire, as it contains a variety of viewpoints and theories that can be used in this study.

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