

**COMPUTER AIDED PROJECT MANAGEMENT
CASE STUDIES IN SABAH AND KELANTAN**



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**THIS THESIS IS TO OBTAIN THE BACHELOR
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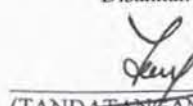
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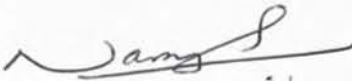
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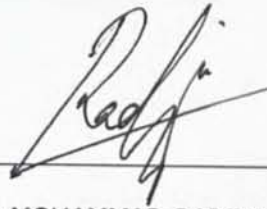
This thesis is based on the result obtained from the research, except the information from the journal, reference book and data. The source of the information from journal and book are explained in the reference section.



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Without the help from various parties, this thesis will not be able to complete on time with the relevant information on project management since the feedback from the companies is very useful to understand further how the application of computer aided project management enhanced the work flow on construction site.

ABSTRACT

COMPUTER AIDED PROJECT MANAGEMENT

The construction process is generally divided into three major phases, the project conception, project design and project construction phase. In each of the phases involved different tasks by different group of project participants. Such as client, consultants, contractors and supplier who are often new to each project. The thesis studies how software is integrated in today construction project management. This research covers the method of project management and influences on the application of project management software such as Primavera and Microsoft Project Management. The research area is around Kota Kinabalu, Sabah and Aring, Kelantan for the case studies :-

1. "2 ½ Stories House in Kingfisher, Kota Kinabalu, Sabah" by using KA 3753 Contract and Estimation assignment.
2. "Road Project -Simpang Pulau – Lojing – Gua Musang – Kuala Berang Package 6 (From Aring to Jambatan Pasir Pulau)" by Kumpulan Liziz Sdn. Bhd.

In the research period, the efficiency of the computer aided work is discussed. Various scenarios is simulated in this thesis to discuss the problems occur on site and how is the problem rectify in order to ensure the project stay within the planning schedule. A survey is conducted during the research period to gain more information from various project managers in order to identify what type of software and method used in the respective project.

ABSTRAK

Pengurusan pembinaan pada masa kini boleh dibahagikan kepada tiga fasa yang utama iaitu, fasa menghasilkan idea-idea untuk projek, fasa rekabentuk dan seterusnya fasa pembinaan. Setiap fasa ini melibatkan pelbagai kerja-kerja yang utama dimana setiap pengkhususan kerja ini melibatkan pihak-pihak yang berlainan seperti Klient, Konsultant, Kontraktor dan pihak-pihak yang lain. Kajian ini bertujuan untuk menganalisis bagaimana penggunaan bantuan computer dalam pengurusan projek pembinaan disekitar kawasan Kota Kinabalu, Sabah. Pada masa yang sama, kajian ini merangkumi kaedah-kaedah yang digunakan dalam pengurusan pembinaan dan juga pengaruh yang mempengaruhi penggunaan perisaian dari segi kebaikan dan keburukan perisaian tersebut. Sebagai rujukan, tesis ini akan merangkumi dua projek pembinaan di sekitar kawasan Kota Kinabalu, Sabah dan Aring, Kelantan iaitu :-

1. Pembinaan "2 ½ Tingkat rumah di Taman Kingfisher2, Kota Kinabalu, Sabah" dengan menggunakan kertas kerja yang diperolehi daripada KA 3753 Aturcaraan Kontrak dan Taksiran.
2. Projek Jalanraya "Simpan Pulai – Lojing – Gua Musang – Kuala Berang Pakej 6 (Dari Aring ke Jambatan Pasir Pulau)" oleh Kumpulan Liziz Sdn. Bhd.

Keberkesanan penggunaan perisaian dalam pengurusan pembinaan turut dibincangkan. Beberapa senario telah digunakan untuk membincangkan beberapa masalah yang wujud dalam proses pembinaan. Pada masa yang sama, cara-cara mengatasi masalah tersebut juga dibincangkan untuk memastikan projek tersebut berjalan sepertimana yang dirancang. Pada masa yang sama, satu kajian telah dijalankan untuk mendapatkan informasi-informasi yang berkaitan dengan pengurusan pembinaan dimana kajian ini merangkumi beberapa aspek seperti, perisaian yang digunakan di dalam projek serta cara-cara pengurusan pembinaan.

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CHAPTER 1.0

INTRODUCTION

1.1 IMPORTANCE OF PROJECT MANAGEMENT

Construction planning is a fundamental and challenging activity in the management and execution of construction projects. It involves the choice of technology, the definition of work tasks, the estimation of the required resources and durations for individual tasks, and the identification of any interactions among the different work tasks. A good construction plan is the basis for developing the budget and the schedule for work. Developing the construction plan is a critical task in the management of construction, even if the plan is not written or otherwise formally recorded.

In addition to these technical aspects of construction planning, it may also be necessary to make organizational decisions about the relationships between project participants and even which organizations to include in a project. For example, the extent to which sub-contractors will be used on a project is often determined during construction planning. Essential aspects of construction planning include the generation of required activities, analysis of the implications of these activities, and choice among the various alternative means of performing activities.

In contrast to a detective discovering a single train of events, however, construction planners also face the normative problem of choosing the best among numerous alternative plans. Moreover, a detective is faced with an observable result, whereas a planner must imagine the final facility as described in the plans and specifications.

More often than not, the majority of today's construction projects encounter events or changes that affect the original plan of executing a project. Further, resources such as labor, material, and equipment may be scarce, in high demand and as a result may hamper project execution. Attempting to solve these unforeseen issues during a project without a plan in place to determine the immediate impact is a major risk which can often lead to delayed projects and disputes between the parties. But how far does the implementation of software such as Microsoft Project and Primavera helps to improve the project management in the construction industry to performance a better management process which can create a better understanding on the delay or ahead of the certain project?

On the other hand, various methods are available in the current project management such as **"Critical Path Method (CPM)"**, **"Precedence Diagramming Method (PDM)"**, **"Program Evaluation and Review Technique (PERT)"** and others method may available in the management area. The coordination between the method and software will be the overall findings in this thesis especially to ensure the whole project is running according to the original schedule and planning.

Therefore, 2 case studies will be carried out in Sabah and Kelantan in order to understand how the combination between software and the project management method in real construction industries. For the moment, there is lack of reported studies of project management using software in Malaysia. This thesis attempts to study the use of software for project management in the two projects selected for the case studies.

1.2 OBJECTIVES

The application of computer aided into the project management may be well established as the evolution of the Information Technology in Malaysia during the strong support from the government in the Multimedia Super Corridor concept. There may be various factors in order to achieve a successful project by identifying a correct path for all the construction works. The overall planning of the construction management and how it forms the roles of every element in the project is highlighted based on research. Thus, the following objectives form as the part of the thesis.

- i. To highlight the fundamental of project management in the construction industry.
- ii. To identify the key planning before the project start by the construction management team.
- iii. To identify the features of project management before and during the construction stage.
- iv. To identify the efficiency of computer aided project management during the construction stage.
- v. To identify the benefits of Microsoft Project and Primavera during the planning and how the programs can make the project run smoother with the features provided by the programs.

The importance on the basic understanding of the software such as Microsoft Project and Primavera in the application of project management will give a better view where the understanding of the application on the programs and all information and finding upon the fundamentals of the project management would enrich the knowledge as required to excel and survive in the construction industry.

1.3 SCOPE OF STUDIES

This thesis is to highlight the application and implementation of project management by using software such as Microsoft Project and Primavera before and during the construction stage. In order to ensure the chosen subject is approached totally in matters relating to the current situation of the construction industry locally, certain scopes of the research needs to be clearly stated. Hence, the scope of studies for this thesis will cover the following aspects :-

- i. **Project management in a construction site** – The approach towards the application and its implementation of the computer aided into the project by the project management team.
- ii. **Organization of management on site** – The hierarchy in the power of control and also teams involved with it's own role that goes hand in hand with each other and supervised by the project management team.
- iii. **Issues concerning present situation of construction in local industry** – The approach taken by the project management team in tackling the current issues that might affect the project in related matters.
- iv. **Does computer aided project management play a different in local industry?** – This is discussed based on the outcome of the project as can be seen from the case studies.
- v. **The essence of a successful project management** – Factors that contributes towards the success of a project based on the part played by the project management team by using computer aided programs.

1.4 ORGANIZATION OF THE REPORT

The organizations of this thesis are divided into 6 sections. The summary of each section is listed below :-

Chapter 1 - Introduction

In this chapter, the main discussion is basically an over view of project management and its importance in construction today. The objectives and scope of research for this thesis is clearly definite in order to have a more specialize research area. A short summary on each chapter of this thesis is written in order to give the viewer an over view of this thesis before further reading is conducted later on.

Chapter 2 – Literature Review

The Literature Review section is mainly contain the materials such as journals, books and internet resources where a clear definition of project management is discuss in order to give a better view before further research is carried out. At the same time, the overall project management concept is discussed in order to produce a clearer view in the requirement for basic project management work.

Chapter 3 – Methodology

In this chapter, the methods used for this thesis is clearly stated in order to provide a proper guidelines to ensure the materials needed for the accomplishment of this thesis at the end of the day. In this section, every materials used in this thesis is listed and it can be divided in various sources such as from the journal, internet, survey, case studies and modeling works.

Chapter 4 – Project Result

This chapter will covered up all the results from the case studies and survey in order to produce a better support since there is lack of reported studies of project management by using software in Malaysia. This would be the most important section for this thesis since the research work mainly consists in this section.

Chapter 5 – Discussion of project result

In this section, a brief discussion will be carry out based on the result contains from Chapter 4. The contain in this section will be most likely based on my own interpretation from the collected data and if there is anything needed to have a further research, thus, it will be discuss in Chapter 6 .

Chapter 6 – Conclusion

This section marked the conclusion for the thesis and a proposal for further work will be discuss in order to enhance the necessary study area for any other students which will be doing the same title in near future.

CHAPTER 2.0

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter reviews the relevant information regarding project management and the use of software in project management. The aspects are discussed in the following section are given below :-

- i. Definition of Project Management
- ii. Function of Project Management
- iii. Project Phases and Life Cycle
- iv. Organization Influences
- v. Primavera Project Planner Review
- vi. Microsoft Project Review

2.2 DEFINITION OF PROJECT MANAGEMENT

Construction projects are unique and temporary in nature and so is their management. Project Management Book of Knowledge, PMBOK (1996) defines project management as the application of knowledge, skills, tools, and techniques to project activities to meet project requirements. The project requirements or objectives vary from project to project and person to person. The attributes (also referred to as "factor" in some Literature) responsible for achievement of these requirements and the attributes obstructing the achievement of these requirements has fascinated the researchers since the 1960s.

Project Management involves a process of first establishing a plan and then implementing that plan to accomplish the project objective. This planning effort includes clearly defining objectives, dividing and subdividing the project scope into major “pieces” called work packages, defining the specific activities that need to be performed for each work package, graphically portraying the activities in the form of a network diagram, estimating how long each activity, estimating the cost for each resource and calculating a project schedule and budget. But, when the construction is in process and in motion, is not a self-regulating mechanism and requires expert guidance if events are to follow the plans.

Project Management can be defined as the planning, co-ordination and control of a project from conception (including commissioning) on behalf of a client requiring the identification of the client’s objectives in terms of utility, function, quality, time and cost, and the establishment of relationships between resources (materials, equipment, funds, people etc.), integrating, monitoring and controlling the contributors to the project and their output, and evaluating and selecting alternatives in pursuit of the client’s satisfaction with the project outcome. (Anthony Walker)

At the conceptual level, project management is the process of thinking carefully about what need to be accomplish, laying out all the steps, and obtaining the resources required to carry out those steps. At the practical level, project management is response to the problems, delays, changes and obstacles and sometimes opportunities that arise during the course of a project.

Another definition for Project Management is focuses on a project. A project is an undertaking that has a beginning and an end, and it is carried out to meet established goals within cost, schedule and quality objectives. At the same time, Project Management also brings together and optimizes the resources necessary to successfully to complete the project. These resources include the skills, talents and cooperative efforts of a team of peoples, facilities, tools, equipment, information, systems, techniques and money. (Haynes)

At the same time, Project Management also defined as the adoption and implementation of management. Procedures to be observed by clients, professional consultants, contractors and other parties involved in the project from the inception to completion use of manpower, materials, financial resources and technical know-how, close co-operation and co-ordination, better communication, reporting and feedback and more adequate control and monitoring are essential aspects of Project Management. Generally, an overall view of project management can be seen or as a tool to be applied in making a project successful within the time, cost and quality measurements. The contribution of every unit is the key element to reach it. (Reiss)

2.3 FUNCTION OF PROJECT MANAGEMENT

The functions of project management are shown in Figure 2.1, 2.2 and 2.3. This function contains general ideas on how the project management should be carrying out.

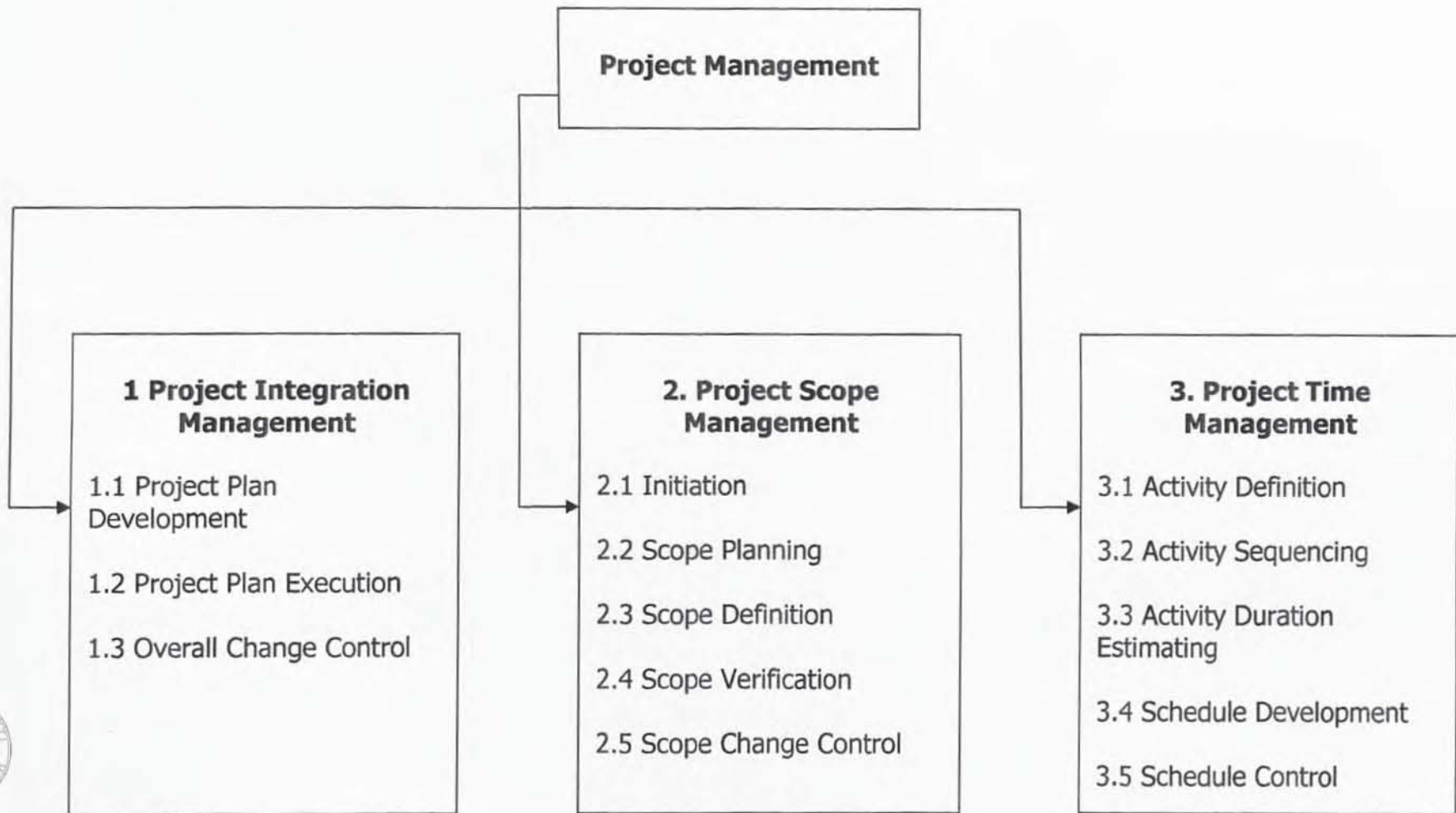


Figure 2.1: Overview of Project Management Knowledge Areas and Project Management Process

Sources : Project Management Book Of Knowledge, Project Management Institute 1996 pg. 13

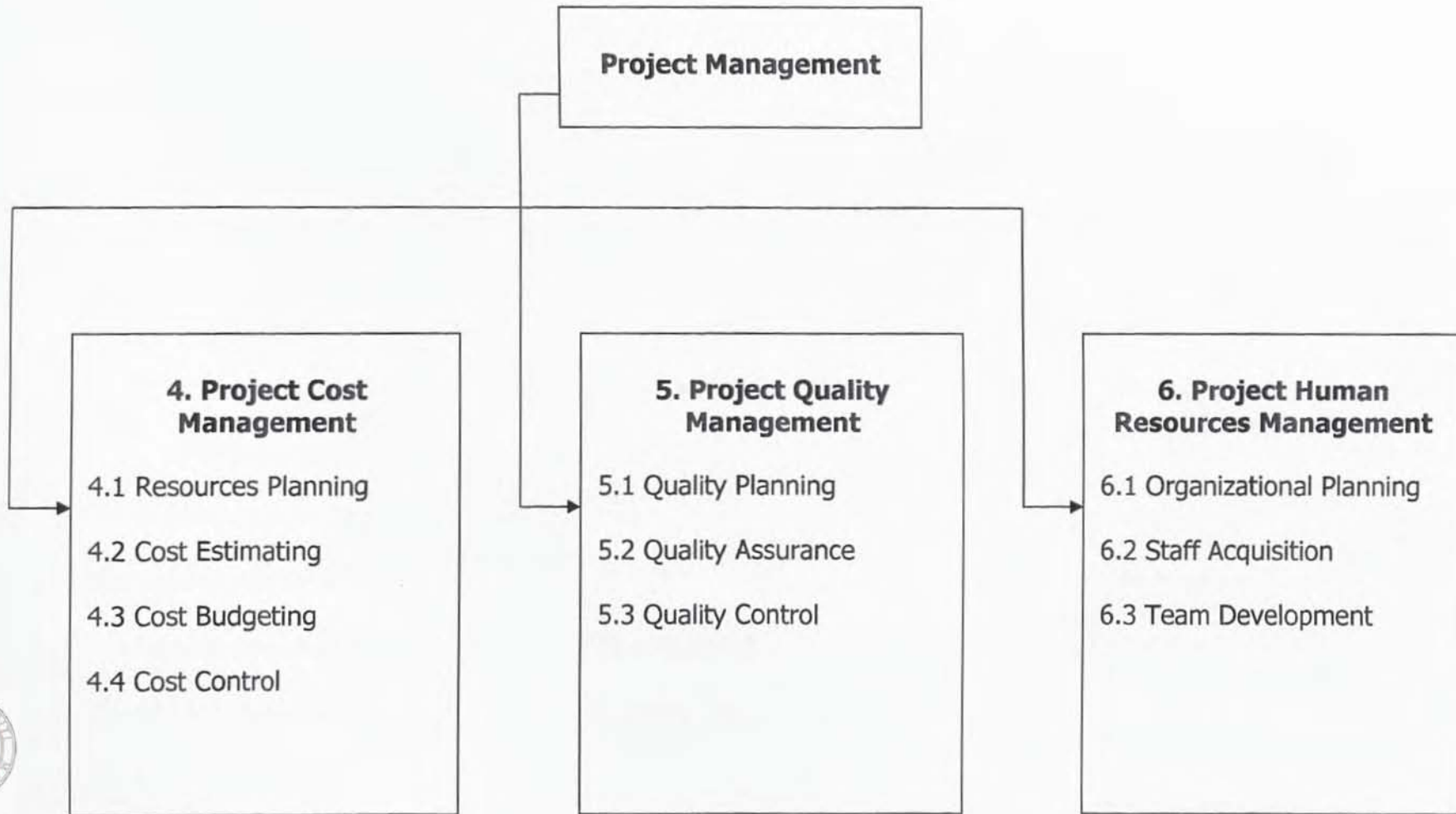


Figure 2.2: Overview of Project Management Knowledge Areas and Project Management Process

Sources : Project Management Book Of Knowledge, Project Management Institute 1996 pg. 13

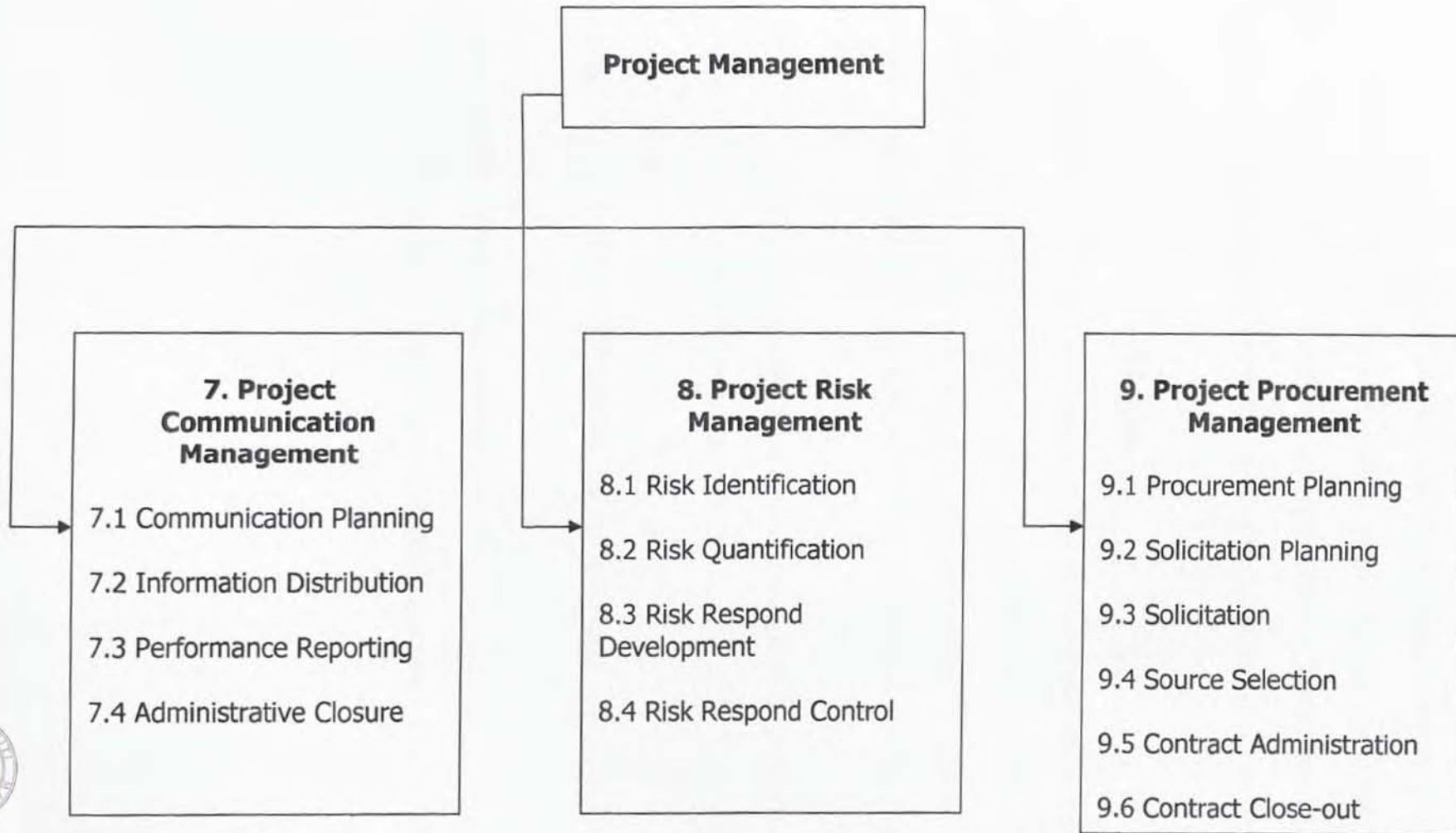


Figure 2.3 : Overview of Project Management Knowledge Areas and Project Management Process

Sources : Project Management Book Of Knowledge, Project Management Institute 1996 pg. 13

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