

**CRITICAL SUCCESS FACTORS OF PROJECT MANAGEMENT
OF RIVER NORMALIZATION PROJECT**

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OF RIVER NORMALIZATION PROJECT

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SPECIALLY DEDICATED TO

*“My beloved wife, son, mother, and father
Thank you for your everlasting support, love and
encouragement”*

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ABSTRACT

Project management is a generic terms. It is regarding the application of knowledge, skills, tools, and techniques to ensure the project activities succeed and meet the stakeholder's needs and expectations. Completing project successfully is a highly critical issue for the companies if they want to survive in a competitive business world due to the larger numbers of construction contractors now day. Subsequently, there are many factors that contributed to the success of the project. Among them are construction method, man power, machinery, material, money and process management that can contribute to the success of the project. This research embarked on the following objective i.e. to analyze the critical success factors that related to the river normalization project in terms of managing the project success. It is anticipated that the outcome of the research could be used as a references to assist the project managers and other project's personnel for effectively managing the river normalization project in the future. Within this context, a questionnaire survey was carried out and among 33 personnel from 3 construction companies and from 18 kinds of river normalization projects. They are involve directly in managing the river normalization projects in Indonesia and have given a very favourable response. Besides of questionnaire survey, interview with top-level managers and projects personnel were done. Based on the result analyzed, it is found that factors such as "proper construction method applied", "check, control and monitoring strictly on the project progress", and "project manager's skills, knowledge, capability, leadership and experience" were determined as the most important factors for the project to success.

ABSTRAK

Pengurusan projek adalah terma generik. Ia adalah mengenai permohonan pengetahuan, kemahiran, alat-alat, dan teknik untuk memastikan aktiviti-aktiviti projek berjaya dan memenuhi keperluan dan jangkaan pihak berkepentingan. Menyiapkan projek berjaya adalah isu yang sangat kritikal bagi syarikat-syarikat jika mereka mahu hidup dalam dunia perniagaan yang kompetitif kerana nombor yang lebih besar kontraktor pembinaan sekarang sehari. Selepas itu, terdapat banyak faktor yang menyumbang kepada kejayaan projek. Antaranya ialah kaedah pembinaan, tenaga manusia, jentera, bahan, wang dan pengurusan proses yang boleh menyumbang kepada kejayaan projek. Kajian ini memulakan iaitu objektif berikut untuk menganalisis faktor-faktor kejayaan yang kritikal yang berkaitan dengan projek normalisasi sungai dari segi menguruskan kejayaan projek. Adalah dijangka bahawa hasil penyelidikan boleh digunakan sebagai rujukan untuk membantu pengurus projek dan kakitangan projek lain untuk menguruskan dengan berkesan projek sungai kembali normal pada masa hadapan. Dalam konteks ini, kaji selidik soal selidik telah dijalankan dan di kalangan 33 anggota dari 3 syarikat pembinaan dan daripada 18 jenis projek normalisasi sungai. Mereka melibatkan secara langsung dalam menguruskan projek-projek normalisasi sungai di Indonesia dan telah diberi sambutan yang sangat menggalakkan. Selain daripada kajian soal selidik, temu bual dengan tingkat atas pengurus dan kakitangan projek telah dilakukan. Berdasarkan hasil yang dianalisis, ia adalah didapati bahawa faktor-faktor seperti "kaedah pembinaan yang betul yang dikenakan", "cek, kawalan dan pemantauan ketat ke atas kemajuan projek itu", dan "kemahiran pengurus projek ini, pengetahuan, keupayaan, kepimpinan dan pengalaman" yang ditentukan sebagai faktor-faktor yang paling penting bagi projek kepada kejayaan.

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LIST OF ABBREVIATIONS

CSF	=	Critical Success Factor
CSFs	=	Critical Success Factors
RNP	=	River Normalization Project
RI	=	Relative Index
CEO	=	Chief Executive Manager
SPC	=	Sheet Pile Corrugated
RC	=	Reinforced Concretepile
Eng. Mgr.	=	Engineer Manager
Const. Mgr	=	Construction Manager
Proj. Mgr.	=	Project Manager
Prod. Mgr.	=	Production Manager
Chief Prod. Mgr.	=	Chief Production Manager
PT. BA	=	PT. Brantas Abipraya
PT. PP	=	PT. Pembangunan Perumahan
PT. Adhi	=	PT. Adhikarya

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CHAPTER 1

INTRODUCTION

1.0 Introduction

Project management is the application of knowledge, skills, tools, and techniques to project activities in order to meet or exceed stakeholder needs and expectations from a project. Successful project management requires the management of quality, cost and time, underpinned by safety. Due to project demands such as budgets, schedules and quality issues, long-term objectives and corporate issues receive far less attention. All these demands are contributing to the aim of the study which is to identify the critical success factors (CSFs) related to the contractor in the river normalization project in term of managing the project success. This research is to investigate the critical success factors which would improve the quality of the project management in the construction of river normalization projects to be more successful in the future. In this chapter, introduction is made on the general information regarding critical factors related to the contractor in the river normalization project in term of managing the project success, problem statement, objectives of the research, scope of the research, important of the research, brief methodology, research in the same discipline by others and organization of the thesis.

1.1 Background of the Studies

Project management is a generic terms. Project management is the process of planning, organizing, staffing, directing and controlling the production of a project. According to Kerzner (2003), project management has been traditionally described as managing or controlling company resources on a given activity, within time, within cost and within performance. These three factors are the major constraints for the project management and usually there exist tradeoffs among them. Bizopt Limited (2008) define project management as the ability to define, schedule and assign project activities, record project issues, monitor progress and report changes in activity accomplishment and issue resolution, and maintain and control changes to designs, plans and issue lists. A Guide to the Project Management Body of Knowledge (PMBOK® Guide, 2008) concludes that the definition of project management as the application of knowledge, skills, tools and techniques to project activities to meet project requirements.

In the construction industry, emphasis on project success often leaves little time for construction management to look to their future. Constantly changing needs at the project sites require immediate attention from all components of the construction management. Due to project demands such as budgets, schedules and quality issues, long-term objectives and corporate issues receive far less attention. In developing the project management in the terms of managing project success, it is need to investigate the critical success factors that could influence the performance of the project which would improve the quality of the project management in the future project.

Some of the researches related to success factors showed that the most important factors contributing to success are company's management systems and practices. According to Fergusen and Dickinson (1982), success factor is a situation where it needs a special attention in term of management because of the importance that it brings to the organization. It conveys the important characteristics such as the need to special attention or observation to prevent from a great shock which is not desirable or missed the opportunity or objectives. This success factor is identified by assessing the strategy, environment, sources and corporate operation.

According to Mobey and Parker (2002) in order to significantly increase the chances of successfully managed building construction projects, it is necessary to have an understanding of what are the critical success factors, to systematically and quantitatively assess these critical factors, anticipating possible effects, and then choose appropriate ways to either promote or mitigate their effects.

Martin (1976), concluded the following factors as critical for success of a project include; define goals, select project organizational philosophy, general management support, organize and delegate authority, select project team, allocate sufficient resources, provide for control and information mechanics, require planning and review. Hughes (1986) identified that the projects fail because of improper basic managerial principles such as the improper focus of the management system, by rewarding the wrong actions and the lack of communication of goals.

There are still many areas that facing with the floods problem in Indonesia. This has prompted the government of Indonesia to promote the program for flood control such as construction of water development project. Most of the water construction project has been delay by various factors, therefore an appropriate project management system necessary.

River normalization project is one of main program for flood control from the government of Indonesia. Meanwhile, many of work's items of these projects have been delay by several factors, as stated by Jakarta's Governor Fauzi Bowo (2010). There is a necessary for the research that aims to find the critical success factors that can be used as references for the development of project management on the construction of river normalization project to be more successful in the future. In this research, the author will analyze what are the critical factors that could affect the success of project management on the river normalization project to avoid delay in the future. So it can be used by project manager and other project's personnel as a reference to the same or similar projects in the future to be able to manage projects better.

The major work of river normalization projects are optimization of widening the river, river banks protection and dredging of the riverbed to comply with river design discharge. Example works of the project as in Figure below:



Figure 1.1: Riverbank protection work on the Normalization of Mookervart River Project, Jakarta

Figure 1.1 shows one of the methods of work of river banks protection, namely the erection to the right and left banks of the river. This method is currently use in Indonesia. This figure was obtained from the author's experience working directly in the normalization of the river project Mookervart, Jakarta (2009). This cliff reinforcement method using concrete sheetpile materials erection that at stake by using pile driver machine to a depth that is specified. This method of reinforcing is suitable to hard ground and for main river that need large of river discharge.



Figure 1.2: Riverbank protection with Wellguard pre-cast retaining wall (Yii Hing, 2007)

Figure 1.2 show one of the technology use of river normalization project using WELLGUARD pre-cast retaining wall. WELLGUARD pre-cast retaining wall is one of alternative retaining structure that currently used in Malaysia. Previously, several types of the retaining structures for slope protection have been introduced e.g. steel sheet pile and concrete reinforcement retaining structures etc.



Figure 1.3: Dredging of the Riverbed by Pontoon Excavator

Figure 1.3 is show the works of dredging of the riverbed with pontoon excavator to comply with river design discharge. Dredging operations involve the removal of bed material and associated vegetation from a river channel. The purpose for undertaking dredging works is to reach particular elevation of a river for flood alleviation purposes. The objective is to increase the river channel capacity and its ability to convey water. The result of dredging soil transported by dump trucks to the waste to a disposal area or stored for embankment material in accordance with soil type and specifications.



Figure 1.4: Finished work on the Normalization of Mookervart River Project, Jakarta (2009)

Figure 1.4 is show the condition after finished work on the river normalization project i.e. Normalization of Mookervart River Project, Jakarta, 2009. The river has been widened, the river banks has been reinforced, and the riverbed has been dredged, so that comply with design discharge also the river channel capacity and its ability to convey water has been increase for flood alleviation purposes.

In general terms, the quantitative analysis of the performance indicators would enable managers, especially in the river normalization project to: (i) Determine the actions that should or could be made in the short term to improve performance, (ii) Identify the strong and weak areas within the project, and (iii) help the construction industry to learn as a whole. The anticipated outcome of this study which is to increase the understanding and explicit knowledge of these critical factors so that corrective measure can be deployed by contractors or organizations themselves in trying to effectively promote or mitigate their effects on project management success.

From the traditionalized concept and variables found, the main questionnaire would be designed to solicit the data for statistical analysis. All analysis contained

within this survey would be performed on responses that would be received from river normalization project managers surveyed based on their experience on completed the projects.

1.2 Problem Statement

There are still many areas that facing with the floods problem in Indonesia. River normalization project is one of main program for flood control from the government of Indonesia. Meanwhile, Fauzi Bowo (2010), a governor of Jakarta, has state that many of work's items of these projects have been delay by several factors as stated. There is necessary research to improve the quality of the project management in the construction of river normalization projects to avoid delay and to be more successful in the future.

There is a growing need for a management model that helps project managers to deal with large and complexity of the river normalization projects. Currently most tools developed in the field of project management in this project seem insufficient to fullfil this role. In addition several authors state that a possible way to develop an overall framework for the management of projects is to link the research on project success criteria to the research on critical success factors.

According to Mobey and Parker (2002), to increase the chances of a project succeeding it is necessary for the organization to have an understanding of what are the critical success factors, to systematically and quantitatively assess these critical factors, anticipating possible effects, and then choose appropriate methods of dealing with them. Once identified, the success of the project can be achieved. The terms critical success factor in the context of management of project was first used by Rockart in 1982 and is defined as those factor predicting success project.

Kuen (2004) concluded that projects often possess a specialized set of critical success factors in which if addressed and attention given to them, will improve the likelihood of a successful implementation. Hence this research study tried to identify

those critical factors related to contractors influencing project management success and establish the strength of their influence.

A research to investigate the critical success factors which would improve the quality of the project management in the construction of river normalization projects is needed to avoid delay and to be more successful in the future. Then, the problem statement of this study is what are the critical factors that influencing the performance of project management in managing the river normalization project? These factors are called critical success factors (CSFs). These results could then be used in effecting successful projects on the future (Saqib, Rizwan and Sarosh, 2008) by projects personnels especially project managers in effecting successful projects on the future.

1.3 Objective of the Research

The aim of this study is to produce a guideline to assist the project managers and other project's personnel for effectively managing the river normalization project in the future. According to the problem statement, the study must be undertaken to address the issues. This has lead to the formulation of the objective of study as follows:

- 1) To analyze the critical factors related to the contractor in the river normalization project in terms of managing the project success.

1.4 Scope of the Research

The scope of this study is narrowed down to simplify the process of information gathering, so it can be analyzed within an appropriate time suit. In addition, project success factors were chosen from different project management

aspects as the main focus of the study. Regarding this area the scope of the research is limited to identification of the most important factors for river normalization project success. The aspects being considered are:

- 1) This study is focusing to the construction of river normalization project in Indonesia.
- 2) This study is focusing on contractor's companies with grade scale 7 (seven), which are work on the river normalization project in Indonesia.
- 3) The respondents are personnel of the river normalization projects who involve in the management.

1.5 Important of the Research

To identify the problem is not the important of the research. Therefore, the important of this research are:

- 1) Why the research is been done?
- 2) Who is going to be benefited from the research?

1.6 Brief Methodology

Generally the research methodology is a step-by-step or series of activities starting from the beginning of the study until the final report of a study. The research method is indispensable in providing guidelines for researchers to achieve the goals and objectives of the study. The research method is closely related to procedures, tools and research designs used. Research design, procedures and equipment used in research must comply with the research method used.

Research methodology can be seen in Figure 1.5 below:

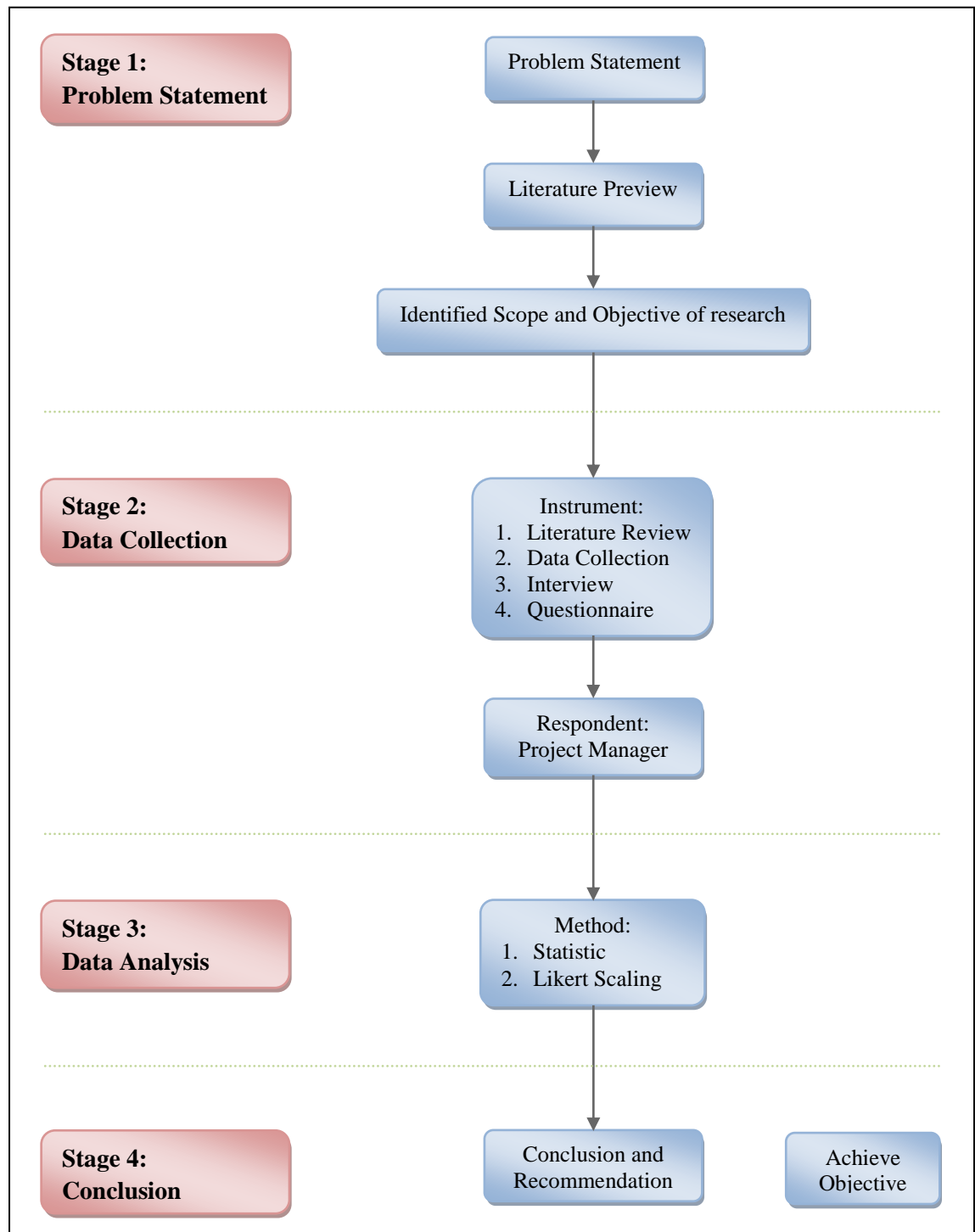


Figure 1.5: Research Methodology Flow Chart

Research methodology is briefly shown in the following process :

1.6.1 Stage 1 : Problem Statement

Understanding the topics that are going to investigate i.e. literature review is more appropriate term. In the study of theories the literature related to research topics collected. Studies on the research literature discuss several topics related to the critical success factors that can influence of project management performance.

1.6.2 Stage 2 : Data Collection

Data collection is a procurement process of gathering primary data and secondary data. The secondary data are obtained from study literature to gain a deeper understanding on the aspects studied. Studies on the research literature discuss several topics related to the critical success factor that can influence of project management performance in the term of managing project success.

Interviews are one of the data collection techniques in the research process. Interviews with experts committed with intent to obtain or confirm a fact as well as to increase confidence about the state of facts. Through interviews with experts, secondary data in the form of the critical factors that can influence of project management obtained from literature will be reduced or even be increasing in number. This is done to identify the variables may not be found in the literature but significant happens in practice

In this research, the primary data collection technique is by distributing a list of frequently called a questionnaire. The questionnaire contains questions based on variables obtained through literature studies and inputs from experts who have done previously, which contains are the critical success factors that effect on the project

management performance. In the survey questionnaire design, the variables are arranged in a list of questions about how the factors that affect on the project management performance to managing project success that occurred in the project. The answer of the question is made in the form of options that have been prepared on a likert scale with 5 (five) options.

1.6.3 Stage 3 : Data Analysis

From the data obtained, the analysis used should be a proper analysis of existing data to manage, so the results are consistent with the objectives to be achieved.

For the data analysis phase, the data were analyzed to use the software help *Microsoft Excel* and by using Frequency Analysis and Relative Index technique. This analysis was conducted to process data that has been distributed questionnaires to the respondents. RI is a formula to determine the degree of important of each factor. This analysis is done to see how much influence the critical factor on the project management to success.

1.6.4 Stage 4 : Conclusion

The summaries finding of the research are must appropriate to the research objectives. The suggestions that if can be used and further recommendations can be used in the development of subsequent research provided in this section.

1.7 Research in the Same Discipline by Others

1.7.1 Critical Success Factors for The Construction Organization

Irma Azreen bt Mazri (2005) had done a research about the “Critical Success Factors for The Construction Organization”. Her research embarks on the following objectives:

- 1) To identify the factors that influences the success of construction organization. The conclusion of her research is a good management system is among the most influential factors for successful of the construction organization. However, those factors are fall in the range of ‘Moderate’ and ‘High Influence’. This shows that in construction organization, there involves many factors that influence the success such as personnel attitude, cooperative team, sufficient of specialist expertise / key personnel, strong track record, effective communication lines and so on. Therefore, each factor needs to be identified clearly.
- 2) To establish the critical success factor for construction organization. The conclusion of her research is a indicated that among those six categories, Organizational Factor has become the critical factor to bring about the successful outcome for construction organization. Therefore, it needs a special attention in term of management because of the importance that it brings to the organization.
- 3) To identify the strategies that is undertaken by the construction organization in order to be more successful. The conclusion of her research is a implementation of quality control procedures and management system is the most frequent strategies used by construction organization in order to be more successful. Also, from the result of analysis, most of the factors fall in the range of ‘Moderate’ and ‘High Contribution’. It is concluded that there are a lot of strategies that can be adopted or formulated in order to succeed. One company can adopt any strategy, but inevitably under the constraint of

influence of internal and external factors that can affect the effectiveness of the strategies adopted.

1.7.2 Critical Contractor-Related Factors Influencing Project Management Success In Malawi's Building Construction

Chimwemwe Bright Nyirongo (2010) had done a research about the Critical Contractor-Related Factors Influencing Project Management Success In Malawi's Building Construction. His research embarks on the following objectives:

- 1) The first research objective was to identify the most critical contractor-related factors influencing project management success. Based on the criticality analysis on the RII and mean score range ($> 4.25 - 5$ considered "most significant") the following were found to be most critical contractor-related factors; (1st) Contractor's cash flow management; (2nd) main contractor's experience; (3rd) contractor's site management; (4th) coordination with consultants; (5th) contractor's quality control management (6th) coordination with fellow contractors
- 2) The second objective was to establish the strength of influence of those critical factors on three project management success criteria of cost, time and quality. Based on the analysis of structural coefficient (γ) and direct effects, the research findings indicate that contractor's overall management skills have a very strong direct influence on time and quality outcomes of the building construction project.

The findings are consistent with the views and opinions of a lot of respondents as they indicated proper management as the reason why they think their building construction projects were successfully managed. This indicates how important management skills are on the part of building contractors in relation to the successful implementation of a building construction projects in Malawi.

1.7.3 Critical Success Factors of Project Management For Brunei Construction Project: Improving Project Performance

Rohaniyati Salleh (2009) had done a research about the Critical Success Factors of Project Management For Brunei Construction Project: Improving Project Performance. The aim of her research is to improve project management performance in the construction industry in Brunei. The objectives of her research are:

- 1) To identify the delay factor that currently exist in the construction industry in Brunei Darussalam by exposing the most common and fundamental problems affecting project delivery performance.

The research identified the critical delay factors in the construction process for building construction project in Brunei Darussalam. Critical delay factor which were identified are:

- i) Lack communication between parties.
 - ii) Slow decision making.
 - iii) Change order.
 - iv) Contractor's inadequate planning.
 - v) Finance and payment of completed work.
 - vi) Subcontractor performance.
 - vii) Inadequate contractor experience.
- 2) To identify the critical success factor which most influential in project management performance in avoiding or preventing critical factors delay.

The overall importance factor for each tested group, and the study's overall success factor were evaluated. The groups overall importance of success factor on project management in avoiding or preventing critical factors delay as final ranking list is as follows:

- i) Project manager's capability and experience.
- ii) Clarity of project scope and definition.
- iii) Organizational planning.

- iv) Use control system.
- v) Project manager's goal commitment.
- vi) Project team motivation and goal orientation.
- vii) Safety precautions and applied procedure.

1.8 Organization of the Thesis

The thesis format follows the logical steps of establishing the research question, developing the methodology, gathering and analyzing data and drawing conclusions. The thesis is organized into five chapters as follows:

1.8.1 Chapter 1 – Introduction

Introduction is made on the general information regarding critical factors related to the contractor in the river normalization project in term of managing the project success. Discuss the backgrounds of the research by highlighting the problem statement of the research, research objectives, scope of the research, research methodology, research in the same discipline by others and organization of the thesis.

1.8.2 Chapter 2 – Literature Review

This chapter will briefly discuss the basic theory of project management, the definition of success, success factor, and critical success factor of project management. The sources of literature drawn from several references in the form of books or journals that have published research.

1.8.3 Chapter 3 – Research Methodology

Discuss the methods and procedures used in this research. Systematic research is illustrated by the flow chart that explains each step that passed from this research. This section also describe the basis of the steps in quantitative research and data collection system.

1.8.4 Chapter 4 – Data Collection and Analysis Data

All collected information, secondary data, ideas, opinions and data questioner were arranged, analyzed and interpreted. Every step analysis used and the discussion related to the findings generated are described to obtain a clear picture of the results obtained from this research.

1.8.5 Chapter 5 – Conclusions and Recommendations

This section will discuss the summaries finding of the research according to the research objectives. The suggestions that if can be used and further recommendations can be used in the development of subsequent research provided in this section.

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