

THE FRAMEWORK FOR MINIMIZING CONSTRUCTION
TIME AND COST OVERRUNS IN PADANG AND PEKANBARU,
INDONESIA

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**Specially Dedicated to My Lovely:
Husband (Ardiyansyah B. Syahrom, S.T),
Daughter (Naaila Salwa Ardiyansyah).**

**My Beloved Parent:
Papa (H. M Nasir), and Mama (Dra. Hj. Hernita Rais),
Parent-in-law: Papa (Syahrom), and Mamak (Rosni).**

**Also My Sweet Sister and Brother:
(Hersi Oliva, S.Si), (M. Fadli Arif),
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ABSTRACT

It has been said that Indonesian constructions often suffer serious cost and time overrun. Kaming et.al., (1997a) and Trigunarsyah (2004) have studied the causes of these problems. However, their studies focused only on the high rise buildings in Jakarta and Yogyakarta. Since Indonesia is a large country with more than 3000 islands, it pertinent to ask whether their findings are also applicable to low-rise constructions in other major cities in the country. It appeared that the low-rise constructions in Padang and Pekanbaru, the two major cities in Sumatera, are also facing the problems of time and cost overrun. The issues bring about some related questions – what are the causes of these problems? Are they similar to the findings made by Kaming and Trigunarsyah? How do contractors and managers in Padang and Pekanbaru manage construction cost and time? Are they adhering to the good practice of project cost and time management? What is considered as the best time and cost management practice? What is good time and cost management framework or model like? Generally, the aim of this study is to answer all these questions. But more specifically, the main objectives are threefold; firstly, to identify the major causes of project time and cost overrun in low - rise projects in Padang and Pekanbaru; secondly, to develop and establish the theoretical framework of a good construction time and cost management practice, and thirdly, to compare the time and cost management as currently practiced by contractors and consultants in Padang and Pekanbaru against the “theoretical” framework of the good time and cost management. The study focused on low-rise projects in Padang and Pekanbaru, Sumatera which are managed by contractors and consultants in class B and M respectively. The study looked at both from contractors’ and consultants’ perspectives. Data and information for the study are collected using a combination of documentary analysis and structured interview techniques. The data were systematically compiled and analysed using descriptive statistic techniques. The study shows that the major causes of project time and cost overrun in Padang and Pekanbaru ranges from lack of labour, lack of equipment to material delivery problems and frequent design changes. The study also highlighted that there are several approaches to efficient and effective project time and cost management. They can be summarized in the form of a framework or model that form the basis for the study. It is found that, generally contractors and consultants in Padang and Pekanbaru have adhered to the good time and cost management framework. However, the main area of concern is their lack of emphasis on the control aspects of the management. They are found to be lacking in monitoring the difference between planned and actual time and cost performance and identifying or establishing the deviation or problems associated with it. The study also pointed out that contractors and consultants in Padang and Pekanbaru need a clear and systematic project time and cost management framework that they can use as guidelines or reference for more efficient management.

ABSTRAK

Kaming *et.al.*, (1997a) dan B. Trigunarsyah (2004) masing-masing telah melakukan kajian berkenaan kepada permasalahan kelebihan masa dan kos pada projek pembinaan di Indonesia. Kajian mereka hanya terfokus kepada bangunan bertingkat-tingkat banyak di kota-kota besar di Jawa seperti Jakarta dan Yogyakarta. Tetapi, persoalan sekarang adalah apakah temuan kajian mereka dapat digunakan untuk bangunan bertingkat rendah di kota-kota lain di Indonesia, khususnya Padang dan Pekanbaru di Sumatera. Berkaitan dengan isu tersebut, objektif kajian ini adalah untuk mengenal pasti penyebab-penyebab penting dari kelebihan masa dan kos pada projek binaan bertingkat rendah di Padang dan Pekanbaru, untuk menubuhkan prosedur kerja berdasarkan teori untuk sebuah pengurusan masa dan kos konstruksi yang baik, dan untuk membandingkan pengurusan masa dan kos yang diamalkan oleh perusahaan konstruksi di Padang dan Pekanbaru terhadap prosedur kerja secara teori dalam pengurusan masa dan kos. Kajian ini terfokus kepada projek bangunan bertingkat rendah dan terbatas hanya untuk mengkaji amalan yang digunakan oleh kontraktor dan konsultan golongan B dan M di dua kota besar di Sumatera – Padang dan Pekanbaru. Kajian dilakukan berdasarkan survey temu muka langsung dengan menggunakan set questionnaire yang telah dipersiapkan. Data dikumpulkan dan dianalisa menggunakan metoda penghitungan purata. Kajian menemukan bahwa projek pembinaan di Padang dan Pekanbaru memerlukan sebuah metoda atau amalan untuk mengurus projek selama proses pembinaan sampai dengan sasaran akhir projek dicapai untuk mengurangi kelebihan masa dan kos. Itu dikarenakan permasalahan kelebihan masa dan kos terjadi selama proses tersebut yang disebabkan oleh aktivitas lingkungan sekitar projek, aktivitas peralatan dan pengurusan, aktivitas-aktivitas perubahan, aktivitas material atau bahan dan aktivitas tenaga kerja atau buruh. Setelah penyebab dari kelebihan masa dan kos dikenal pasti, sebagai sebuah metoda untuk membantu dalam pengurusan masa dan waktu di sebuah projek binaan, peneliti telah mencadangkan dan mengembangkan sebuah prosedur kerja. Prosedur kerja ini akan membantu dalam mengurus masa dan kos untuk mengurangi permasalahan kelebihan masa dan kos di lokasi projek binaan karena prosedur kerja tersebut akan memperlihatkan kepada team kerja projek tahapan prosedur kerja yang mereka harus beri perhatian lebih.

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GLOSSARY

BAPEKIN	: Badan Pengawas Konstruksi dan Investasi Nasional
DPU	: Dinas Pekerjaan Umum
GAPEKSINDO	: Gabungan Pengusaha Konstruksi Indonesia
INKINDO	: Ikatan Konsultan Indonesia
Keppres	: Keputusan Presiden
LPJK	: Lembaga Pengembangan Jasa Konstruksi
LPJKN	: Lembaga Pengembangan Jasa Konstruksi Nasional
PP	: Peraturan Pemerintah
PPMK	: Pusat Penilaian Mutu Konstruksi
REI	: Real Estate Indonesia
BPS	: Biro Pusat Statistik

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CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Indonesia is a nation of 13,500 islands scattered between Asia and Australia. It has total land area of 1,904,569 km², with total population in 2004 was around 217.9 millions and become the fourth most populous nation in the world after China, India and the United States (BPS, 2004).

The growth rate of Indonesian economic showed a better performance. It can show from the increasing of the annual gross domestic product (GDP) of the Indonesian for year to year. The annual gross domestic product (GDP) growth of the Indonesian in 2001 was around 3.83% and it increased sharply became 5.13% in the year 2004, (BPS, 2004). The rapid economic development and a steady growth of population have led to a significant increase in demand for housing, commercial and office buildings, and infrastructure such as roads and highways, airports, seaports, etc in the country.

Indonesian construction industry experiences rapid changes and development since the 1950s. It grew rapidly until the economic crisis in 1997 and since that year until 2004, the construction sector has not shown positive signal to get out of the crisis. Since 1997, performance decreasing for each quarter of steeper than its increasing, and also has sharp fluctuation among quarters. It can be prove based on the annual gross domestic product (GDP) growth based on the industrial origin data.

The construction sector growth rate had decreased sharply since 1997, from 6.94% per-annum during the period of 1997 to 2000 to 5.52% per-annum during 2000 to 2004, (BPS, 2000).

The country's rapid economic growth can also be seen in two major cities in the island of Sumatera, namely Padang and Pekanbaru. Padang and Pekanbaru as the central of West Sumatera and Riau province for the last ten years become the main choice of the investor to invest especially for construction projects for the Sumatera areas (Luthfi, 2006). It causes of their location benefit to have a cooperation link with neighbouring countries Malaysia and Singapore.

Apart from their strategic location, the rapid growth of Padang and Pekanbaru was also induced by the government's policy of spreading the country's economic and physical growth to other parts of the country. The government realized in the last 25 years the economic development has been concentrated in Java (particularly in Jakarta) because most of the Indonesia's population is concentrated in Java (BPS, 2004).

The economic growth of Pekanbaru and Padang itself, from 1998 to 2002 increased to 3.86 % and 2.94% where it was better than other cities in Sumatera where the average of their economic growth was only 0, 57 %. For the GDP value, Pekanbaru city had increased around 46.35% from 1999 to 2000, (www. Pekanbaru. go. id, 2005) and Padang also had increased 35.63% from 1999 to 2002, (www. Padang. go. id, 2005).

Both cities enjoyed many favourable and physical. This can be seen by the development of many new buildings and infrastructure projects to support the increasing commercial and manufacturing activities. In fact, these two cities have been ranked on number 1 until 4 among other cities in Sumatera in term of total value of new construction completed and the number of construction companies. It also has a tendency to increase for year to year (BPS, 2004).

The increase in construction activities in both Padang and Pekanbaru has contributed towards the growth of the two cities but it has also brought to light some

of inherent problems that have been mentioned by Kaming *et, al.*, (1997a) and Trigunarsyah (2004). They pointed out that many construction projects in Indonesia suffer the problem of time and cost overrun.

Time and cost are the two major elements in project management, apart from quality and scope. One of the biggest challenges in the management of construction project or to one of the project manager is to ensure that the project is completed on time and within estimated cost. Time and cost are the two elements, which are become the major concern to most clients/ owners and subject of continuous discussion and research. As pointed out by many, one of the interesting aspects of construction that makes it more challenging and sometimes full of surprises is that it is a very fragmented industry. It involves myriads of interrelated activities that are carried out by many separate individuals and organisations with different sizes and expertise that may come from different parts of the country.

Due to the fragmented and complex nature of construction, many problems could arises everyday during the process of construction cause by factors such as weather, material delivery delay, labour dispute, equipment breakdowns, job accidents, change orders, and numerous other conditions. Many things could go wrong during the whole process of construction. All these problems will have serious impact on the performance of the projects, particularly on time and cost.

To the clients, may they be the government or property developer, any delay, cost overrun or both will significantly affect their profit and the viability of the projects. Therefore it is important to properly manage a project time and cost.

1.2 Statement of Issues

Like other developing countries, the Indonesian construction industry is also faced with serious time and cost overruns problems and it is become a matter of great concern to the government, private clients and the Indonesian construction community themselves.

Ir. Trisno Ario Sutanto, (2002) said that many construction projects in Indonesia suffer delays because many contractors are lacking in managerial knowledge and skills to manage the projects activities. The Indonesian Country Procurement Assessment Report (2001) on the other hand pointed out that, the main problems facing the Indonesian construction projects is time and cost overrun. It suggested that many firms and companies particular small and medium, lacks managerial competencies and skilled workers and resources. Then, according to Ir. Panggardjito (2001), there has not been enough market pressure to make them improve their capability, capacity and efficiency. These are some of the reasons why many construction projects in Indonesia cannot achieve an efficient time and cost in projects performance or have time and cost overrun problems.

According to Kaming *et.al.*, (1997a) delays and cost overrun are common problem on projects in large project in Indonesia. He identified that 54. 5 % of project managers completed more than 90% of their projects that they handled on time, 15. 2% of completed only between 70 – 90% of their projects and 30. 3% completed less than 70%. It also identifies only 20. 7 % project managers claimed that 90% of their projects that they handled were completed within budget, 51. 7% completed between 70 – 90% of their project and 27. 6% completed less than 70%.

Trigunarsyah (2004) identified that only 30% of the projects were completed within the budget, 34% were less than the budget, and the remaining 36% exceeded the budget. The study also shows that only 47% of the projects were completed within the schedule, 15% ahead of schedule, and 38% were behind schedule. Both of the previous study above shows that, time and cost overrun problems in construction projects in Indonesia need to be overcome. However, their studies were limited to project in Java Island only.

A construction project had the time and cost overrun if it was completed exceeding the time and cost estimated as written in the approval contract (Ali, 1992 and Saldjana, 1998). In the two of previous research above, time and cost overrun were defined as the extension of time beyond planned completion dates traceable to the contractors and it means it have use the same concept with Ali, (1992) and Saldjana, (1998) about when the time and cost overrun occurs.

As said above Padang and Pekanbaru as the central of West Sumatera and Riau province for the last ten years become the main choice of the investor to invest for the Sumatera areas specifically for construction projects (Luthfi, 2006). Based on statement above about the time and cost overrun problems that faced of by Indonesian construction industry, it means include in it were Padang and Pekanbaru cities. No previous research has been found about the time and cost overrun problem in Padang and Pekanbaru cities because the two of previous research above concentrated in Java; Kaming *et.al.*, (1997a) concentrated their research in big cities Jakarta and Yogyakarta and B. Trigunarsyah (2004) concentrated the research in all big cities in Java.

Several methods in managing project time and cost have been suggested or developed by experts; practitioners, and researchers. These methods can be considered to be the framework for the management of construction time and cost. Many construction companies, project management firms as well as individual project managers have adopted these methods in managing their projects.

However, despite having these methods, the Indonesian construction is still faced with the problems of time and cost overrun, (Ir. Panggardjito, 2001), The Indonesian Country Procurement Assessment Report and Ir. Trisno Ario Sutanto (2002).

The description of the issues and the previous research on the subject of time and cost overrun in Indonesian construction projects highlight some of major issues which can be summarized as:

1. Many books, journals and dissertation also pointed out the common causes of projects delays and cost overruns. What about in Indonesia? It becomes imperative to know what are the major causes that cause the time and cost overrun occurrence in Indonesia particularly in construction projects in Padang and Pekanbaru?
2. What is considered as the method for construction time and cost management as describe by many time and cost management framework?
3. How do the project managers in Padang and Pekanbaru manage the project time and cost? Do they have or follow or adopt any of the methods

management in framework model? If so, to what extent do they adhere to such a framework model in managing projects? A number of contractors and project managers claimed that some elements in the management framework were not carried out or given much attention.

1.3 Previous Research

Based on several previous researches, it is known that time and cost overruns create a bad image for the construction industry in many countries including Indonesia. In several previous researches in several developing countries, we can identify the causes of construction project overrun in terms of time and cost.

The studies relating to project problems that concerns the causes of time delays/ or cost overruns have been conducted worldwide from developed countries such USA and UK (Xiao and Proverbs, 2002a and 2002b) to developing countries such as Kuwait (Kartam *et al.*, 2000), Nigeria (Okpala and Aniekwu, 1988; Mansfield *et al.*, 1994; Dlakwa and Culpin, 1990; Okpala, 1986), Saudi Arabia (Assaf *et al.*, 1995), Thailand (Ogunlana, 1996), Hongkong (Chan and Kumaraswamy, 1997), Malaysia (Wang, 1992) and Jordan (Al-Momani, 2000).

Based on the research results in Thailand construction projects, Ogunlana (1996) said that, construction industry problems in developing countries could be nested in three layers: problems of shortages or inadequacies in industry infrastructure, problems caused by clients and consultants, and problems caused by contractor's incompetence/ inadequacies. Adequate planning at early stages of project execution is an important factor in reducing delays (time) and cost overrun in developing countries (Chalabi and Camp 1984). The need for a clear intention and understanding of the technical specifications could also reduce bottlenecks in the execution of projects (Jackson, 1990).

Contractors on the other hand, do not honour contract deadlines and use shortages of materials as an excuse, and these problems can be averted if

professionals are more prudent in their design and more knowledgeable about the availability and usage of materials (Okpala and Aniekwu, 1988). The most important delay (time) and cost overrun factors according to contractors were preparation and approval of shop drawings, delays and cost overrun in contractors' progress, payment by owners and design changes by owner (Assaf, *et. al.*, 1995).

Poor site management and supervision, unforeseen ground conditions, low speed of decision making involving all project teams, client initiated variations and necessary variations of works indicated by Chan and Kumaraswamy (1997) as cause factors for time and cost overruns in Hongkong. Mansfield *et al.* (1994) investigated the important factors responsible for delays and cost overruns in highway construction projects in Nigeria such as poor contract management, material shortages, inaccurate estimating and overall price fluctuations.

On the other hand as said above, there was also previous research about time and cost overrun conducted in Indonesia by Kaming *et. al.*, (1997a). This research identifies the variables that influences construction time and cost overrun group these variables into factors and analyse the relationship of these factors and to further enhance understanding of construction delays and cost overruns.

Results of Kaming *et. al.* (1997a) research reflected the construction management problems on time and cost overrun factors which are limited to high-rise projects in Indonesian big cities: Jakarta and Yogyakarta only that are also common in developing countries.

On the other hand this research reflected the construction management problems on time and cost overrun in Sumatera particularly in Padang and Pekanbaru. This research studies the problem that were faced by B (big) and M (medium) companies classification where most of these companies concentrate on low-rise projects such as housing, road and others simple buildings because Padang and Pekanbaru still in developing the city areas concept.

Kaming *et. al.* (1997b) also investigated five productivity problems that cause time and cost overruns among seven regions in Indonesia, namely Jakarta,

Yogyakarta, West Java, Central Java, East Java, Western and Eastern Indonesia. Five specific productivity problems are identified, i. e, lack of materials, rework, absenteeism, lack of equipment and tools and gang interference. Trigunaryah (2004) survey results point to the fact that contractor involvement in pre-construction phases could reduce time and cost problems during site operation.

The studies in other countries also highlighted the appropriate practices or suggested solution to reduce the overrun problems such as in Japan, USA, UK and Malaysia construction projects. There are also studies about the process and procedures, which is provide a framework about time and cost management stages that can be adopted to reduce overrun problems.

It is good to refer to other practices because it will help in finding a better way to achieve the best results. It also could say that by adapting these other countries practices, processes or the procedures could help or assist Indonesian construction projects avoid being ambushed by unexpected overrun problems especially on time and cost during the construction process. However, through literature study that has been reviewed by researcher, there is no published previous research on this topic in Padang and Pekanbaru even in whole Indonesian construction projects.

1.4 Objectives of Research

Based upon the global notion of Indonesian construction projects condition in the issue statements above, in order to reduce time and cost overrun problems in Indonesian construction projects particularly in Padang and Pekanbaru cities, this research is undertaken to provide a means:

1. To identify the major causes of project time and cost overrun in low - rise projects in Padang and Pekanbaru
2. To establish theoretical framework for a good construction time and cost management

3. To compare the time and cost management as currently practiced by construction companies in Padang and Pekanbaru against the theoretical time and cost management framework

1.5 Scope of the Research

This research reviewed available literature to give a clear and precise understanding of the importance of time and cost management in construction projects performance. It also reviewed factors that cause time and cost overrun and the practices or suggested solution in order to reduce the time and cost overrun problems from the previous researches in other countries. Through literature study that has been reviewed by researcher, there is no published previous research on this topic in Padang and Pekanbaru construction industry. These findings will be used as references to support the research survey and the finding results.

The survey was done in Indonesian construction projects with study areas Padang and Pekanbaru with the reason as stated in the research issues and the previous research parts above. Although specific in this two cities area, the results could reflect and assist to other cities in Indonesia which has the same problems in the construction projects especially for time and cost overrun problems.

The objectives of study are to identify the major causes of time and cost overrun, to establish the theoretical framework for a good construction time and cost management that have been synthesized from several previous research and to compare time and cost management as currently practiced by construction companies in Padang and Pekanbaru against it. Then, the outcome of this survey that supported by the reviewed findings will become the basis to reduce the occurrence of the time and cost overrun problems which describe in framework for Indonesian construction projects, particularly Padang and Pekanbaru.

Ali, (1992) and Saldjana, (1998) had defined about time and cost overrun and also Kaming, et. al., (1997a) and Trigunaryah, (2004). They have same definition

about when the time and cost overrun occurs. This study also uses that definition as one of delimitation of this study.

The sources of data are the class B (big) and M (medium) contractors and consultants in these two cities (Padang and Pekanbaru) because they have more experience and active in project activities per-year. The companies that are included in this classification are companies with vast experiences in managing projects.

However, for Padang and Pekanbaru cities, kind of projects that are executed are many but most of them include in low-rise buildings such as housing, offices and others simple projects. Other limitation for this research is the companies selected for this research must be registered with INKINDO for consultants, GAPEKSINDO for contractors and LPJK for all companies that are not registered under any of them. Further limitation about the research sample will discuss in the methodology of the research.

1.6 Thesis Organization

Chapter 2 reviews Indonesian construction industry, which discusses about the Indonesian demography and economic, its construction industry as general and particularly in Padang and Pekanbaru, the structure and the performance of the construction industry; company qualifications, company organizations, project procurement system, and the problems and the current practices of project management in Indonesian construction projects.

Chapter 3 reviews project time and cost management which discusses about the definition of project time and cost, the definition of project time and cost management, project management objectives, problems associated with project time and cost, and the issues in project time and cost management and its implication to the project performance.

Chapter 4 reviews project time and cost management framework which discusses about what is the framework itself, the purpose of framework, the framework for project time and cost management, and the proposed framework for each the project management stages.

Chapter 5 describes the methodology that adopted to conduct this research.

Chapter 6 presents data analysis results on the major causes of project time and cost overrun based on the survey, discussions and the literature review findings as an achievement of the first objective of this research.

Chapter 7 presents data analysis results on comparison of the time and cost management as currently practiced by Indonesian construction projects particularly in Padang and Pekanbaru as areas of study against the theoretical framework for a good construction time and cost management which were described in literature review findings results. From these discussions a proposed framework would be developed that can be used to reduce time and cost overrun problems for construction projects in Padang and Pekanbaru. This chapter shows the achievement of the second and third objective of this research.

Chapter 8 presents the conclusions of this research and the recommendations for future research.