

CONSEQUENCES OF NON-VALUE ADDING ACTIVITIES
ON CONSTRUCTION PROJECT PERFORMANCE

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DEDICATION

This project report is dedicated to my father **Abdul Rahim Bin Ahmad**, who taught me that the best kind of knowledge to have is that which is learned for its own sake. It is also dedicated to my mother **Normah Binti Ahmari**, who taught me that even the largest task can be accomplished if it is done one step at a time.

And to my lovely wife
Norshahida Binti Azili

As well as our children
Amierah Hawa, Amierul Adam, Aiesyah Sofea & Khaleef Luth Edwan

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ABSTRACT

Non-value adding activities (NVAAs) are considered as problematic in project management. If the NVAAs are not determined, the performance of the contractor during the construction process will be affected. Most of the construction practitioner does not realize that most of the activities performed during the construction process does not add value to their project. Therefore, the aim of this study is to investigate the consequences of NVAAs on the project performance in the construction industry. This study focus on the construction activities in Iskandar Malaysia, Johor, due to the significant investment in the mixed development received by Iskandar Malaysia each year. The research was conducted to study the causes of non-value adding activities during construction works, to study the effects of non-value adding activities towards construction process and to propose solutions to improve project performances by minimizing the causes of non-value adding activities. In order to achieve the research objectives, data collection was gathered through questionnaire survey by random parties who involved in the construction industry consisting of clients, consultants and contractors. There are two methods of data analysis used in this study; frequency analysis method and average index method. According to results analysis, it's clearly show that waste is not only waste materials on-site, but also includes other activities that do not add value to the construction projects. Thus, it lead increased awareness of the NVAAs among professionals directly and indirectly involved in the construction projects. In addition, results of the study may be used as reference to the construction participants to help improve the performance of the construction project.

ABSTRAK

Aktiviti tiada tambahan nilai (NVAA) dianggap bermasalah dalam pengurusan projek. Jika NVAA tidak ditentukan, prestasi kontraktor semasa proses pembinaan akan terjejas. Kebanyakan pengamal pembinaan tidak menyedari bahawa kebanyakan aktiviti yang dilakukan semasa proses pembinaan tidak menambah nilai kepada projek mereka. Oleh itu, tujuan kajian ini adalah untuk mengkaji kesan NVAA terhadap prestasi projek dalam industri pembinaan. Tumpuan kajian ini terhadap aktiviti pembinaan di Iskandar Malaysia, Johor, disebabkan oleh pelaburan yang ketara dalam pembangunan campuran yang diterima oleh Iskandar Malaysia setiap tahun. Kajian ini dilakukan untuk mengkaji punca aktiviti tiada tambahan nilai semasa kerja-kerja pembinaan, mengkaji kesan aktiviti tiada tambahan nilai terhadap proses pembinaan dan mencadangkan penyelesaian untuk meningkatkan prestasi projek dengan meminimumkan punca aktiviti tiada tambahan nilai. Bagi mencapai matlamat penyelidikan, pengumpulan data telah dikumpulkan melalui kajian soal selidik yang dilakukan secara rawak ke atas pihak yang terlibat dalam industri pembinaan yang terdiri daripada pihak pelanggan, perunding dan kontraktor. Terdapat dua kaedah analisis data yang digunakan dalam kajian ini; kaedah analisis kekerapan dan kaedah indeks purata. Menurut hasil analisis, jelas menunjukkan bahawa sisa bukan hanya bahan buangan di tapak, tetapi juga termasuk aktiviti lain yang tidak menambah nilai kepada projek-projek pembinaan. Oleh itu, perkara ini dapat meningkatkan kesedaran terhadap NVAA di kalangan profesional yang secara langsung dan tidak langsung terlibat dalam projek pembinaan. Di samping itu juga, keputusan kajian NVAA ini boleh digunakan sebagai rujukan kepada pengamal pembinaan agar dapat bantu meningkatkan prestasi projek pembinaan.

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LIST OF ABBREVIATIONS

NVAAs	-	Non-Value Adding Activities
VAA	-	Value Adding Activities
VSAs	-	Value Supporting Activities
C & S	-	Civil & Structural
M & E	-	Mechanical & Electrical
QS	-	Quantity Surveyor
CIDB	-	Construction Industry Development Board
G7	-	Grade 7
H & S	-	Health & Safety
RFI	-	Request For Information

LIST OF SYMBOLS

X_i	-	Weighting Given on Each factor by Respondents
n	-	Frequency of Response
N	-	Total Number of Response

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CHAPTER 1

INTRODUCTION

1.1 Background of the Study

The term construction is used to interpret the activity of creating physical infrastructure, including residential, non-residential, civil engineering and specialized projects. According to Ismail, F. et al., (2012), the construction industry plays an important role in the country's economic growth, social and national growth. Construction as an industry comprises six to nine percent of gross domestic product of developed countries. Construction activities can improve the quality of life in the community and provide huge job opportunities. Construction begins with planning, design and financing and will resume until the project is constructed and ready for use. Besides, it involves a complicated procedure due to various levels of management, complex design, a lot of processes and intensive workforce (Ismail, H., and Yusof, Z. M., 2016).

The construction industry has many challenges that need immediate attention by all parties in this industry. Construction practitioners regularly face challenges such as low productivity, lack of safety, poor documentation, unfriendly working environments, inefficient costs and low quality of production. In addition, the high level of waste, such as undesirable, the product has no added value to the time and cost of the construction process are others challenges that always occur in the construction industry.

According to Formoso et al., (1999), construction waste is defined as activities involving overproduction, waiting time, material handling, processing, inventories and the movement of employees, not limited to the quantity of material waste at the site. In addition, the main waste categories during the construction process include various activities such as reworks, poor material allocation, defects,

waiting time, delays, unnecessary material handling and waste materials (Alarcon 1995; Alwi 1995; L. Koskela 1993; Robinson 1991; Lee et al., 1999).

Rahman et al., (2012), described waste disposal as one of the main objectives of lean construction in their researches. Meanwhile, Skoyles & Skoyles (1987) argued that waste is one of construction industry's weaknesses. In 2002, Alwi et al., suggested that waste should be understood correctly. Hence, based on previous research, Viana et al., (2012) divided waste into three (3) types, which are waste from construction materials (physical waste), non-value adding activities (non-physical waste), and specific waste (such as accidents and rework). This study will discuss in detail the type of waste that does not add value during the construction project.

1.2 Problem Statement

In recent years, the term “non-value adding activity” has been widely used by researchers. In 2002, Sugiharto et al., described the non-value adding activities are used to differentiate between physical waste on-site during construction and other waste during construction works. The incidences of non-physical waste in construction projects must be specified. This is due to most participants in the construction think that the waste in the construction process is limited to only physical form.

The issue of project performance in the construction process was discussed among professionals who are involved in the construction industry for decades. In order to evaluate and measure project performance, various models and procedures have been proposed. The construction industry is predominantly project-based and the construction project has various level of complexities. It primarily involves addressing the interest of various stakeholders and the resulting changes (Ralph, A. O., and Iyagba, R., 2012).

Measuring performance for construction projects is not straightforward. Each project is unique when it comes to location, design specifications, delivery methods, administration and participants (Alwi et al., 2002). The project performance depends on the activities involved from the beginning until the works have been completed. The non-value adding activities are wasteful activities which still take place during construction process. Therefore, this study has been conducted to examine the extent to which the problem of non-value adding activities has continued and corrective actions must be taken immediately.

1.3 Aim and Objectives of Study

The aim of the study is to investigate the consequences of non-value adding activities on the performance of construction projects in the construction industry, especially in Iskandar Malaysia, Johor. In order to achieve the objective of this study, the following objectives are pursued:

- a) To identify the causes of non-value adding activities during construction works.
- b) To analyze the effects of non-value adding activities towards construction project.
- c) To propose solutions on how to improve construction performance through effective strategies which minimizes the causes of non-value adding activities in construction process.

1.4 Scope and Limitation of Study

In order to achieve the objectives of the study, the study focused only on the level of awareness of non-value adding activities in Iskandar Malaysia in Johor, Malaysia, among professional circles. This is because the professionals are believed to be directly and indirectly involved in the construction industry from the conceptual stage up to handing over the project.

Furthermore, data collection for this study is obtained from the questionnaire respondents from both the government and the private sectors. This is intended to provide a holistic view of clients in the public and private sectors, consulting engineers and contractors, where they are the key drivers for the development of the Iskandar Malaysia construction project. These three categories respondents are the main players in the construction industry in Malaysia (Yong, Y.C. & Mustaffa, N. E., 2011).

The analysis and conclusion of the questionnaire overview of the respondent was only intended for this research. The results of the analysis probably do not represent the overview of the construction industry in Malaysia. However, it is expected that it will help to provide insight and views as well as knowledge of the current scenario in the entire Malaysia construction project.

1.5 Significance of Study

This study is important in order to find the factors / causes, the effects and to obtain solutions on how to reduce and minimize the impact of non-value adding activities during construction process. This is to enable the key players in construction industry to enhance strategy on how to induce good productivity during construction process in order to deliver the end product as per client / owner requirements.

1.6 Research Methodology

The research methodology of this study will be divided into several steps involving the identification of the research problem, literature review, data collection, research analysis and conclusion and recommendation. These approaches are designed to ensure that information collection and data analysis can be accurately implemented.

1.6.1 Initial Study and identifying the research problem

The concept overview for the study was obtained through secondary sources such as journals, previous research, articles and books that can easily be obtained from the internet and UTM's library. Information related to the non-value adding activities scenario in the construction industry and to the project performance problem has been provided. The research objectives are formulated on the basis of the research problems.

1.6.2 Literature Review

A preliminary examination procedure is expected in order to understand the study needs. The process focuses on composing materials, including course books, magazines and journals, working papers, news sections, reports, workshops, past proposals, and related journals. This is imperative sources in building up the system for executing the study. In addition, references are also made through the use of the internet facility which is the latest technology in searching the latest information on the subject of the study. Any information or materials relating to non-value adding activities will be collected and the contents will be reviewed to achieve the desired objectives.

1.6.3 Data Collection

The project case study is referred via electronic databases based on journals, papers and reports relating to non-value adding activities. The primary data is a database whereas the secondary information is books, articles, seminar papers, etc. The data is collected through questionnaires distributed to respondents in the vicinity of Iskandar Malaysia, Johor comprises three parties involved in the construction industry, who are clients, consultants and contractors. Then, the data will be analyzed in detail in order to achieve the research objectives.

1.6.4 Data Analysis and Discussion

The research analysis is the data process which collects and converts the data to the information that is useful for research. In conclusion, it is expected that the research objectives can be achieved by analyzing the data. The performance of the construction project will be improved by reducing the non-value adding activities during construction works.

1.6.5 Finding, Conclusion and Recommendation

The research summary will be formed according to the analysis previously conducted. Based on the analysis, the research objectives will be achieved. Then, recommendations will be suggested for the future study.

The flow chart of the overall procedures of research methodology in conducting this study is shown in Figure 1.1.

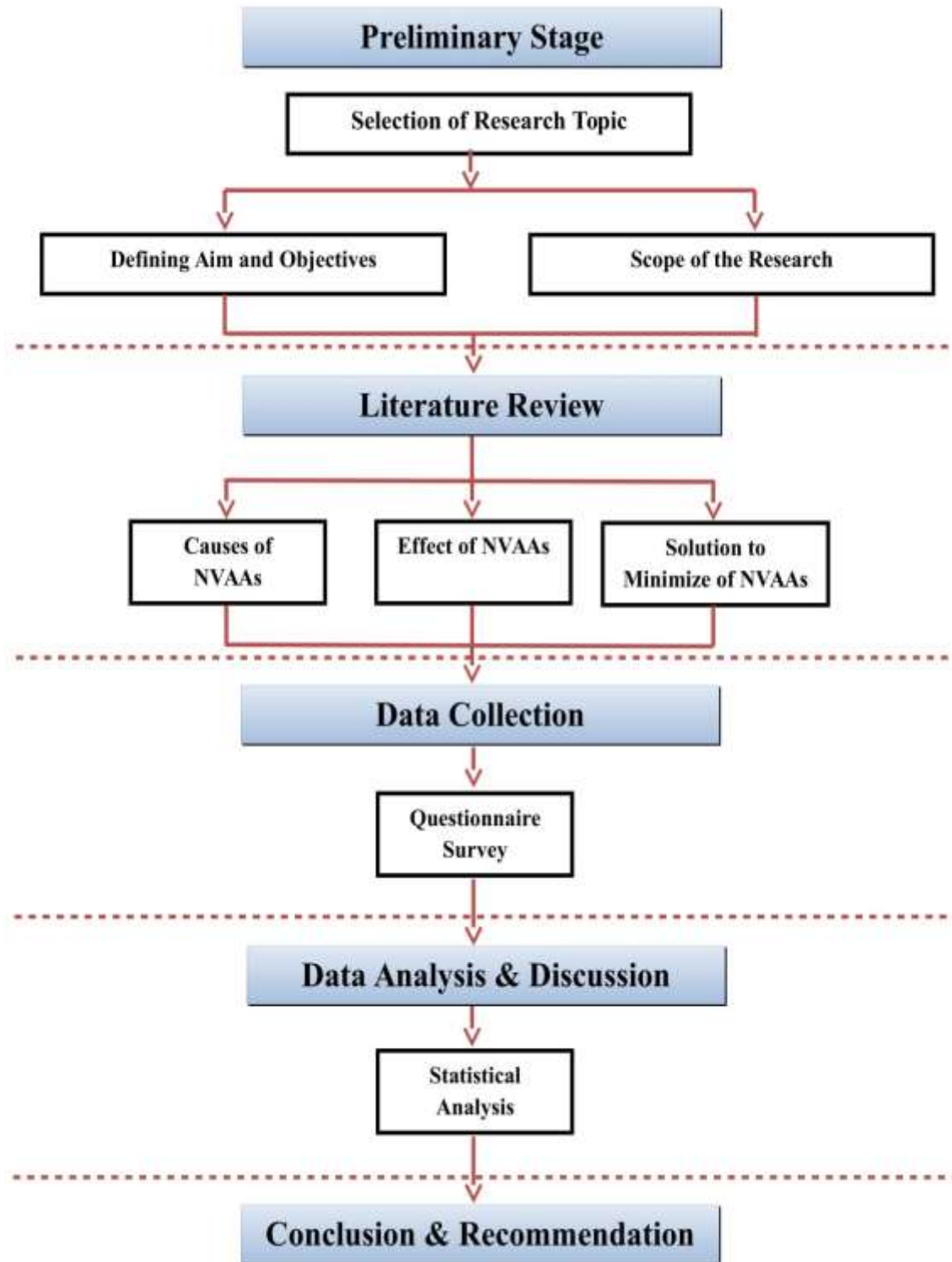


Figure 1.1 Flow Chart of Research Methodology

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