THE BARRIERS OF VALUE MANAGEMENT IMPLEMENTATION

IN THE INDONESIAN CONSTRUCTION INDUSTRY

By

ANRY CARLOS INVOKAVIT HAREFA

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| Nama Pelajar | : | **Anry Carlos Invokavit Harefa** |
| (Name of Student) | | |

| Tajuk Tesis / Disertasi | : | **The Barriers of Value Management Implementation in the Indonesian Construction Industry** |
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| Nama Penyelia/Penyelia-penyelia | : | **Assoc. Prof. Dr. Wan Nadzri Osman** |
| (Name of Supervisor/Supervisors) | | |

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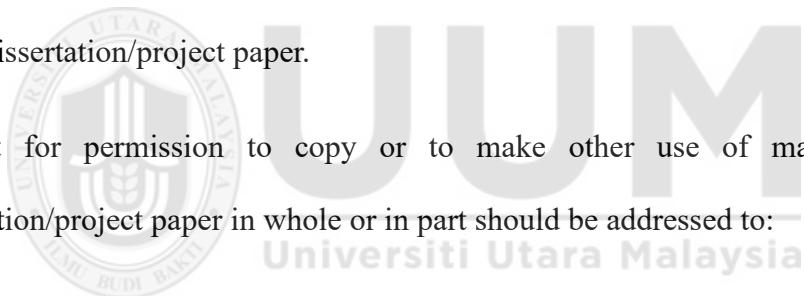
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ABSTRACT

There is an indication of value management implementation in Indonesia is not optimally used in the construction industry. Value management may help reduce project costs and increase productivity, but it is still not widely used in Indonesia. This study examines the barriers that engineer feel stand in the way of implementing value management in Indonesia's construction industry. Through qualitative method using interviews with construction engineers, this study revealed that inadequate legislation frameworks, poor communication channels, and resource limitations such a lack of funds, time, and qualified staff are some of the main obstacles that makes value management hard to be fully implemented in the construction industry. According to the findings, there is an urgent need for government assistance, including the creation of comprehensive policy and educational programs meant to raise practitioners' knowledge and proficiency levels. Some recommendations for enhancing value management practices include giving value management training, encouraging cooperation between governmental organizations and academic institutions, and improving administrative flexibility. In the end, this study contributes to the body of knowledge on value management by identifying particular challenges in the Indonesian context and providing practical contribution in form of policy for successful implementation in the future.

Keywords: Value Management, Value Engineering, Construction Industry, Barriers, Indonesia

ABSTRAK

Terdapat petunjuk pelaksanaan pengurusan nilai di Indonesia tidak digunakan secara optimum dalam industri pembinaan. Pengurusan nilai boleh membantu mengurangkan kos projek dan meningkatkan produktiviti, tetapi ia masih tidak digunakan secara meluas di Indonesia. Kajian ini mengkaji halangan yang dirasakan oleh jurutera menghalang pelaksanaan pengurusan nilai dalam industri pembinaan Indonesia. Melalui kaedah kualitatif menggunakan temu bual dengan jurutera pembinaan, kajian ini mendedahkan bahawa rangka kerja perundangan yang tidak mencukupi, saluran komunikasi yang lemah, dan batasan sumber seperti kekurangan dana, masa dan kakitangan yang berkelayakan adalah beberapa halangan utama yang menjadikan pengurusan nilai sukar untuk dilaksanakan sepenuhnya dalam industri pembinaan. Menurut penemuan itu, terdapat keperluan mendesak untuk bantuan kerajaan, termasuk penciptaan dasar komprehensif dan program pendidikan yang bertujuan untuk meningkatkan tahap pengetahuan dan kecekapan pengamal. Beberapa cadangan untuk meningkatkan amalan pengurusan nilai termasuk memberi latihan pengurusan nilai, menggalakkan kerjasama antara organisasi kerajaan dan institusi akademik, dan meningkatkan fleksibiliti pentadbiran. Akhirnya, kajian ini menyumbang kepada badan pengetahuan mengenai pengurusan nilai dengan mengenal pasti cabaran tertentu dalam konteks Indonesia dan memberikan sumbangan praktikal dalam bentuk dasar untuk pelaksanaan yang berjaya pada masa hadapan.

Kata kunci: Pengurusan Nilai, Kejuruteraan Nilai, Industri Pembinaan, Halangan, Indonesia

DECLARATION

I certify that except where due acknowledgement has been made, the work is that of the author alone; the work has not been submitted previously, in whole or in part, to qualify for any other academic award; the content of the thesis is the result of work which has been carried out since the official commencement date of the approved research program; and any editorial work, paid or unpaid, carried out by a third party is acknowledged.

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To my dearest family my pillars of strength your love, prayers, and sacrifices have carried me through the most challenging moments in this journey. I owe so much of my motivation to each of you.

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CHAPTER 1

INTRODUCTION

1.1 Background of Study

In the current construction industry, the idea of "value" has progressed from simple cost-efficiency to a more comprehensive emphasis on achieving optimal results that integrate quality, functionality, sustainability, and economic efficiency. As project expectations escalate to achieve greater outcomes within limited budgets and demanding timelines, value has emerged as a critical concern for stakeholders seeking to optimize project advantages while reducing waste. Value management goes beyond typical cost-benefit analysis, embracing a comprehensive approach to corporate success. A method for finding the project that maximizes the use of scarce resources and offers the most value for the money can be described as value management, its focus is on determining and fulfilling project requirements within financial and schedule limitations, and it is essentially project-wide (Kelly & Male, 1991).

The brief history of value management started in 1947 when value analysis was developed by Larry Miles, and then from 1954 until 1968 value engineering had many improvements in the United States, until in 1975 value engineering started to implement in Europe and afterward spread to Asia continent from Saudi Arabia. The used of value management on projects has been widely practiced in various countries both developed and developing countries, for example United States, United Kingdom, Australia, Canada, Germany, Malaysia, South Africa, and many more.

The development of value engineering in Indonesia itself began in the 1980s with the implementation of infrastructure projects. In 2006, the value engineering community began to take shape with the establishment of the association of value engineering

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experts in Indonesia, although this community is not yet fully active at that time. The implementation of value engineering continued to grow, and in 2007, the ministry of public works and housing issued a regulation requiring the use of it in the design of government buildings of more than 8 floors. However, the shortage of trained value engineering facilitators and unsystematic processes delayed its effective implementation at that time and in the following years. In the recent year of 2018 until now, the development of the methodology has begun to be implemented more with trainings held in several government agencies (Tehmono, 2024).

The majority of the publications claimed that, regardless of the size or kind of the project, the application of value management will save construction projects between 5 and 15% on costs. Additionally, it was clarified that value management may save a residential project between 15 and 40 percent of its cost. In addition, for example the application of value management led to a 30–40% cost decrease in a dam project. Value management is important because it can save time, optimize functions, improve quality and performance, increase productivity and efficiency, save energy, reduce uncertainty, promote project feasibility, improve interpersonal relationships, resolve conflicts, satisfy clients, and minimize waste and environmental damage (Lin et al., 2022).

Meanwhile, on the other side the value construction growth rate in Indonesia in the past 8 years is not stable, that can be seen in the table below. It can be seen that the growth is not increased that significant in the past 8 years.

Year	Value of Construction Completed Growth Rate
2022	8.44 %
2021	7.10%
2020	-
2019	17.52%
2018	-
2017	14.16%
2016	10.42%
2015	11.48%

Table 1.1

Indonesia Value of Construction Completed Growth Rate

Source: Badan Pusat Statistik (2016 - 2024)

The circular letter in 2022 from the Directorate General of Highways also strengthens this assumption where the letter emphasizes the need for value engineering studies for all complex feasibility studies and detailed engineering design projects.

As we know today expansive urban development projects are transforming cities throughout the world, boosting economic growth and modernization, one of the countries is Indonesia, a developing country in South East Asia with a very large area that has a total of 279.6 million people in it. The acceleration and equalization of construction in Indonesia are currently very fast. In the scope of the economy, construction industry in Indonesia is one of the very important parts that boost the gross domestic product (GDP), where in 2023, the construction industry made up around 9.92 percent of the nation's GDP (Badan Pusat Statistik, 2024). It makes construction industry became economy's fifth-largest industry in Indonesia. Thus, the use of value management in the construction industry in Indonesia needs to be improved in the future to increase the value of projects in the construction industry.

1.2 Problem Statement

Value management consists of three components that are value planning, value engineering, and value analysis. It is highly unfortunate if the implementation of knowledge is not fully applied as it should be. Based on the research by Miraj et al.

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(2019) despite showing potential long-term advantages, value engineering is still not widely implemented in Indonesia. In Indonesia researchers and academics from Indonesia publish a competitive amount of research. However, compared to proceedings, the number of articles published in journals is still very small. This need could have to do with the government, business, and association participation being limited. When value engineering is adopted for a case study, the government may start a project that goes beyond a certain point. The value engineering team will be put to the test to demonstrate their capacity to offer a greater value than the one that was proposed previously. The majority of research projects are often classified as conceptual designs as opposed to practical ones.

Given that everything has a function and that value management methodology applies to function analysis, it is an incredibly powerful tool that can be used in any business sector. It shows that the use of value engineering itself has many advantages such as optimized resource allocation, improved effectiveness, more effective risk management, increased creativity and innovation, enhanced project outcomes, and many more.

Furthermore, past research gives the results on what makes value engineering hard to adopt in Indonesia, according to Rozanova and Syarifudin (2022) non-committed stakeholders and the absence of a legal basis governing the practice of value management legal basis that regulates the practice of implementing value management and the absence of clauses on value management in the General Conditions of Contract, Special Conditions of Contract, and General Specifications in the field of roads and bridges (Highways), Contract and General Specifications in the field of roads and bridges construction is also an obstacle to the implementation of value management in Indonesia. Therefore, this study aims to identify the barriers of

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value management implementation in the Indonesian construction industry based on engineer perspectives considering that engineers in the construction industry as the key role on implementing the value management as the direct involvement both in technical and managerial roles.

1.3 Research Questions

This study addresses three main research questions based on related literature:

1. What are the barriers of value management implementation in the Indonesian construction industry?

2. What are the potential strategies to overcome the value management implementation barriers in the Indonesian construction industry?

3. How can the government initiatives in value management implementation in the Indonesian construction industry?

1.4 Research Objectives

The implementation of the new knowledge depends on the institution that developed it. Institutional impacts, such as legal frameworks, cultural norms, and established practices, shape organizations and communities. This study aims to meet the following objectives and answer the research questions posed in the previous part.

1. To determine the barriers of value management implementation in the Indonesian construction industry.

2. To identify the potential strategies to overcome the value management implementation barriers in the Indonesian construction industry.

3. To analyze the government initiatives in value management implementation in the Indonesian construction industry.

1.5 Significant of Study

From the theoretical scope, this study is expected to contributes the improvements in the value management implementation in Indonesia and also highlights gaps in the current theoretical understanding, and suggests new areas for further study about value management in Indonesia. This study also can improve the theoretical understanding of the interplay between policy environments and value management implementation.

From a practical perspective, this study encourages value management implementation in Indonesia. With this study in the future, the implementation of value management in the construction industry can be increased, especially in this era where the infrastructure is highly improved all across Indonesia. With the high implementation of value management in the construction industry, construction value growth in Indonesia can be increased in the future.

This study also emphasizes that government policies on value management in Indonesia should be improved. The increased number of regulations and policies regarding value management implementation in the construction industry will give long-term benefits to the country. From a broad view, this study also emphasizes the educational institutions, research institutions, and governments' role in providing knowledge on value management.

Even though there are several studies available on the difficulties of value engineering or value management implementation in Indonesia, according to the researcher's most current understanding, there is only a few research on this topic on Indonesia. Therefore, this study aims to provide new theoretical and practical insights into this research topic especially in Indonesia.

1.6 Scope of Study

The introduction of value management with the terms value engineering in the 1980s in Indonesia has given new knowledge on the construction industry in developing infrastructure in Indonesia. Right now, the demand for construction projects is growing to boost the national economy to reach areas with limited infrastructure or to improve the facilities in various cities in Indonesia. Also because of many corruptions happened in the construction industry, especially in the government sector, value management started to be implemented again although, in the recent years the implementation has been intermittent.

The study will analyze the barriers of value management implementation in the Indonesian construction industry by identifying the barriers, hopefully, the role of institutions to improve the use of value management in the Indonesian construction industry will be increased. The study will be conducted in Indonesia with the main respondents on this study would be the engineer that work in the construction industry in Indonesia.

Through this study, respondents were asked to give their opinions and knowledge of the value management implementation, the barriers in implementing value management, potential strategies to overcome the value management implementation barriers, and also the government initiatives in value management implementation in the Indonesian construction industry through in-depth interviews.

1.7 Definition of Key Terms

This section will explain the key concepts used in this study.

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1.7.1 Government

In this point, the government is the party that gives the policies and regulations to help the implementation of knowledge in the country. Policies that encourage cooperation, offer funds and resources for knowledge transfer and exchange activities, and help to integrate research into practice are critical for effective knowledge implementation (Mitton et al., 2007).

1.7.2 Educational Institution

In this point, the university is the party that gives the awareness and knowledge of value management to the students. According to Argyris and Schön (1978) the importance of information that can be implemented is the knowledge that can be used to solve real-world issues. For educational institutions, this entails developing learning environments and courses that not only give information but also promote the capacity to apply knowledge in real situations.

1.7.3 Value Management

Value management is an organized and methodical strategy to increasing the value of goods, services, initiatives, or processes while reducing costs (L. D. Miles, 1961). In this study the term value engineering will be used interchangeably as value management for better understanding in the context of the Indonesian construction industry.

1.8 Organization of the Study

This thesis is presented in five chapters. Chapter one consists of research introduction, background of study, followed by problem statements, research questions and research objectives of this study. In addition, this chapter explains the study's

limitations and scope in order to define its primary focus. There are some definitions of terms of the study clarified within.

Chapter two explains the literature review to support the study with the previous research that had been done before to understand the concept of this study. Chapter three presents the research framework and methodology that used to collect the data and analyze it. In the end, chapter four and five described the results, discussion, suggestion and recommendation of this study in the future. And closed by conclusion in the end the chapter.

CHAPTER 2

LITERATURE REVIEW

2.1 Background of Study

This chapter analyzes current information, identifies gaps, and develops a theoretical model for the research. This chapter is divided into two sections: the first focuses on the dependent variables and the second is about the independent variable. The next part will be about the underpinning theory of the research topic and the gap in the literature. The study's theoretical framework will be developed in the next chapter, based on the stated overall result.

2.2 Value Management

The value management method promotes a value culture inside the organization, facilitating desired transformation. The goal-setting process seeks to meet the client's project needs while also strengthening the value-client connection. Value management is a crucial element of project management that facilitates the optimization of building project value while reducing costs and maintaining quality (Jiya et al., 2023). According to Ravinder (2024) value management in construction projects offers two advantages: reduced costs and enhanced functionality or quality. The management of value requires teamwork. It may be utilized during the planning and design phases to achieve optimal return on investment. Its three subdivisions are value analysis, value planning, and value management.

The concepts of value are described as the correlation between fulfilling an organization's unique and competing requirements and the resources necessary to address those requirements. The lesser the resource use or the better satisfaction, the higher the value. Simultaneously, many stakeholders, encompassing both internal and

external clients, may possess opposing viewpoints of what defines value. The objective of value management is to resolve these differences and facilitate an industry in attaining optimal advancement towards its articulated objectives with minimal resource utilization (Venkataraman & Pinto, 2023).

$$Value = \frac{Needs\ Satisfaction \rightarrow \text{What are the requirements of the user?}}{Usage\ of\ Resources \rightarrow \text{Everything that is required to meet those needs}}$$

Figure 2.1

Project Value

Source: Venkataraman & Pinto, 2023

Value may be enhanced in projects through many methods. This includes enhancing customer satisfaction, sustaining acceptable satisfaction levels while reducing resource expenditures, or a mix of both. Value may be enhanced by concurrently augmenting satisfaction and resources, as long as the increase in satisfaction surpasses the resources spent to get it.

According to Lin et al. (2022) the implementation of value management can reduce building project expenses by 5 to 15%. Furthermore, it was shown that value management might reduce the costs of a residential project by 15 to 40 percent. Furthermore, the use of value management resulted in a 30–40% reduction in costs for a dam project. Value management is crucial as it conserves time, enhances functionality, elevates quality and performance, boosts productivity and efficiency, conserves energy, mitigates uncertainty, fosters project viability, improves interpersonal relations, resolves conflicts, satisfies clients, and reduces waste and environmental harm. Despite of the benefits of value management, there are also several challenges or obstacles in implementing this methodology.

As mentioned in Mishra (2019) three main barriers to value management adoption in the construction industry are a lack of rules, a lack of knowledge and experience, and a lack of people with value management training. Barriers to the implementation of value management include teammates, culture, knowledge and information resources, clients, and workshops (Kineber et al., 2022). As stated in Lin et al. (2022) significant challenges to adopting value management were primarily associated with a lack of knowledge, advice, and environment for distributing the method in small construction projects. Academics' distribution and socialization play a crucial role in increasing the value engineering knowledge and acceptance (Miraj et al., 2019).

According to Othman et al. (2021) insufficient facilitation and preparation, limited coordination, and working relationships amongst stakeholders were identified as the most significant barriers to the value management implementation. The four key implementation challenges for value management are in the areas of information, technology, environmental protection, and stakeholder management (Li, X et al., 2022). As stated in Alhumaid et al. (2024) the main obstacles in implementing value management are practitioners' ignorance of value management, the absence of national guidelines and standards for value management, project stakeholders' lack of understanding of value management benefits, construction professionals limited capacity to precisely estimate value management alternatives' costs, and the challenge of evaluating value management alternatives.

2.3 Challenges in Implementing Value Management

2.3.1 Government

In this study, the government's role is the party that gives the policies and regulations to help the implementation of knowledge in the country. The government is responsible for creating and carrying out rules, policies, and recommendations across

numerous industries where one of which is the construction industry. the environmental implications of the external aspect of value management implementation in small construction projects are explicitly linked to the absence of assistance from the government or top management. Because of this, there may not be enough government or upper management backing, laws, or incentives to encourage value management in small enterprises (Lin, et al., 2022).

Based on Kineber et al. (2022) the government can support the use of value management in construction by creating supportive regulations, standards, and laws. The government must also encourage the development of public projects and the creation and continuous enforcement of laws and regulations relevant to the nation's construction sectors. Therefore, the government might be able to help. Promoting the use of value management through the creation of laws, rules, and regulations that support the use of value management in construction projects.

According to Rozanova and Syarifudin (2022) at the project design stage, stakeholders, in this case, the government, have a major impact in making the proper design decisions about resource usage during the development phase. The utilization of resources throughout the development phase, which involves making the proper design decisions, has a good influence on resource efficiency.

According to Alhumaid, et al. (2024) standards will show what is expected of practitioners, which will have a beneficial effect on their experience and understanding of value management, and guidelines will make it easier to apply the procedures.

2.3.2 Educational Institution

In this study, the university is the party in the educational institution that gives the awareness and knowledge of value management. As stated by Rozanova and Syarifudin (2022) value engineering knowledge was gained through project experience and other sources such as textbooks, journals, and seminars when in the university, one of the biggest barriers to using value engineering on road and bridge projects is a lack of awareness about the technique, which leads to improper and unapplied application of value engineering.

According to research by Kineber, et al. (2022) understanding relevant knowledge and expertise is essential to accelerating the value management implementation. Therefore, it is important that construction workers get education on the many aspects of value management. The more they know about value management the better to implement the knowledge. having appropriate information and experience is crucial for a successful value management strategy. Workers in construction should be educated on many aspects of value management.

According to Miraj et al. (2019) academics play an important role in bringing value engineering theory into reality. Promoting value engineering in public and private construction projects requires collaboration among stakeholders, but lecturers' theories and innovative research may have a significant influence. The knowledge acquired from the research analysis is meant to be helpful in practice and academics. Practitioners in the construction sector show limited knowledge and display a lack of awareness regarding the significance of value engineering. This barrier was identified as a significant obstacle associated with the background and understanding of practitioners in the construction sector. A possible reason is that the project stakeholders require a deeper understanding of the advantages of value engineering,

which accounts for their lack of demand for its application in their projects. If stakeholders do not require this technique, practitioners will have no motivation to increase their expertise in value engineering (Alhumaid, et al., 2024).

Based on study by Othman, et al. (2021) indicated that the highest rank barrier went to knowledge and stakeholder-related difficulties and barriers to the implementation of value management. Value management's existence and use would unavoidably be impacted by a lack of facilitation expertise and reluctance to change. The analysis is meant to generate knowledge that will be helpful in practice and academics. In order to proactively adopt the necessary standard corrective actions based on value management qualities, the research results could help in the identification of possible areas of weakness in practice. Insights into current ideas and knowledge, such as obstacles to value management in the academic and applied business fields, have been obtained from the research. Professionals with limited facilitation abilities and knowledge are unlikely to ask customers to use value management in their projects, when it came to knowledge and stakeholders, there were the most barriers and challenges to the implementation of value management.

2.3.3 Challenges in Indonesia

Based on research by Miraj et al. (2019) in Indonesia researchers and academics from Indonesia publish a competitive amount of research. However, compared to proceedings, the number of articles published in journals is still very small. This need could have to do with the government, business, and association participation being limited. When value engineering is adopted for a case study, the government may start a project that goes beyond a certain point. The value engineering team will be put to the test to demonstrate their capacity to offer a greater value than the one that was proposed previously. The majority of research projects are often classified as

conceptual designs as opposed to practical ones. Through design contests or modest projects provided as implementation samples, the business sector may help to boost the use of value engineering. It is important to carry out certification and education to advance value engineering practitioners in both the local and global markets.

Non-committed stakeholders and the absence of a legal basis governing the practice of value management legal basis that regulates the practice of implementing value management and the absence of clauses on value management in the General Conditions of Contract, Special Conditions of Contract, and General Specifications in the field of roads and bridges (Highways), Contract and General Specifications in the field of roads and bridges construction is also an obstacle to the implementation of value management in Indonesia (Rozanova & Syarifudin, 2022).

2.4 Underpinning Theory

W. Richard Scott institutional theory mentioned that institutions consist of regulative, normative, and cultural-cognitive components that, along with related activities and resources, confer stability and significance to life in society. Institutions are complex, enduring social constructs composed of symbolic components, social practices, and tangible resources. Institutions demonstrate stabilizing and meaning-making characteristics due to the processes initiated by regulative, normative, and cultural-cognitive components. These constituents are the fundamental components of institutional structures, supplying the flexible fibers that direct behavior and withstand change (Scott, 2013).

The regulative pillar emphasizes written regulations, laws, and policies that oversee organizational operations. These restrictions are enforced by governing authorities, with non-compliance frequently leading to penalties or punishments. Organizations

address these challenges by aligning their processes with the regulatory framework to achieve compliance and preserve credibility. In the construction sector, firms must comply with building requirements, safety laws, and environmental norms. The lack or inconsistency of such restrictions might impede the adoption of methods such as value management.

The normative pillar emphasizes the influence of social norms, values, and professional standards on organizational behavior. These standards delineate what is deemed acceptable or proper within a certain business or profession. In the construction sector, social expectations on sustainability and ethical standards may prompt companies to implement innovative approaches such as value management. Resistance to change stemming from entrenched professional standards and conventional practices might obstruct innovation and the implementation of these ideas.

The cultural-cognitive pillar embodies the collective ideas, assumptions, and cultural frameworks that shape the perceptions and interpretations of individuals and organizations about the world. These convictions are frequently entrenched and assumed, subtly yet profoundly influencing behavior. Cultural concerns in the Indonesian construction sector, such as hierarchical decision-making and risk aversion, may impede the adoption of new approaches like value management. Organizations adhere to these cultural standards to preserve credibility within their social and institutional frameworks.

2.5   Gap in The Literature

After a comprehensive literature review in the field of government, educational institutions, and Indonesia implementation barriers on value management the

following research gaps were identified specifically in the context of the value management, and particularly in the context of Indonesia. There are many related kinds of research on value management barriers that lead to the lack of participation of the institution in the regulations/laws, guidelines, knowledge, and value management expertise (Kineber et al., 2022; Lin, X et al., 2022; Miraj et al., 2019; Othman et al., 2021; Rozanova & Syarifudin, 2022; Alhumaid, et al., 2024).

The lack of support from the government or upper management is directly related to the environmental effects of implementing value management's exterior component in small building projects (Lin, X et al., 2022). Hence, they suggest future research on the variables influencing the use of value management in small projects in different countries or areas. The government is influencing the implementation of value management, Encouraging the application of value management by establishing laws, guidelines, and policies that facilitate its application in construction projects (Kineber et al., 2022).

Research by Rozanova and Syarifudin (2022) also mentioned where one of the main obstacles to using value engineering on road and bridge projects in Indonesia is a lack of knowledge about the methodology, which results in value engineering being implemented incorrectly or not at all. Thus, it is suggested that future research on the knowledge and awareness of value management in Indonesia.

Based on the reviews of the literature gaps in the barriers to value management implementation, most of the research is not about the institutions part that gives the laws, knowledge, and awareness on value management. Based on the researcher's most current understanding, it may be said that there is a gap in the body of literature examining the barriers of value management implementation in Indonesia.

2.6   Summary

The review of the literature on the barriers on value management implementation enhances the conceptual framework of the current study, offers important information on the historical perspective of the variables, and ideas related to them, and highlights knowledge gaps. The aim of this study is to investigate the barriers of value management implementation in the Indonesian construction industry. Even though, there were some studies conducted regarding the barriers of value management implementation in Indonesia, to the best of the researcher's understanding, no study is being done to evaluate the institutions that are in charge of making the barriers on value management implementation in Indonesia happened. Therefore, in the next chapter, hypotheses will be established based on these academic evaluations to examine the barriers of value management implementation in the Indonesian construction industry.
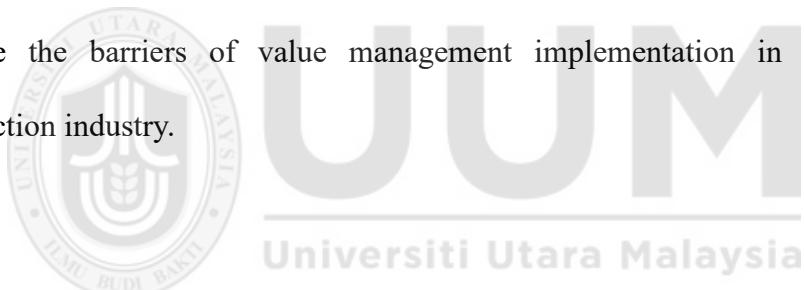
CHAPTER 3

METHODOLOGY

3.1 Introduction

The literature review and an identification of research gaps were included in the previous chapter. This chapter will thoroughly describe the research's technique and establish the research design. This chapter's first section includes the research framework, and hypotheses development. The research instruments for this research, including research design, sampling, and data analysis procedures, will be covered in in this chapter also.

3.2 Research Design

Research design is an outline for gathering, measuring, and analyzing data based on the study's research questions. The research scheme for this research will be a qualitative method. Through the examination and analysis of individual, group, interaction, and document experiences, qualitative research seeks to comprehend, describe, and explain social interactions from the insiders' point of view (Gibbs, 2007).

The time horizon on this study will be a cross-sectional study where the data collection process will be do once, and upon the data collections is completed, the data analysis processes will be delivered and the findings will be showed in chapter four.

3.3 Population of Study

According to Statista (2024) in Indonesia, about 9.25 million persons were employed in the construction sector. The number of people employed in the construction sector mostly came from Java and Sumatra Island where in these islands most of the construction is more developed than other islands in Indonesia.

The target population of this study will be taken on West Java and North Sumatra where most of the construction workers come from that area. And the population target are workers in the construction field from engineer with an experience more than 5 years in the construction industry and understanding in value management.

3.4 Sample and Sample Size

The primary advantage of qualitative research is its ability to generate a greater depth of information by utilizing a variety of approaches and procedures. Sample size is the total number of subjects or observations included in a study. This is an essential step in guaranteeing the dependability and correctness of research findings (Creswell & Creswell, 2017).

In determining the sample size for this research based on the number of samples that can be found by the researcher, according to Bekele and Ago (2022) there is no set standard that specifies how many interviews should be conducted in a single qualitative study. Consequently, different academics use different methods and procedures to determine how many interviews to do. A researcher needs to plan ahead for the greatest number of persons they can interview for logistical reasons, time limits, and the ability to pay honoraria (Cobern & Adams, 2020). The sample size is conditional upon the qualitative design used (e.g., ethnography, case study). Narrative includes one or two persons; phenomenology covers a spectrum of 3–10; grounded

theory comprises 20–30; ethnography investigates a singular culture-sharing community through various artifacts, interviews, and observations; and case studies often consist of around four to five examples. This study comprises case studies aimed at investigating the barriers to value management implementation within the real-life environment of the Indonesian construction sector (Creswell, 2014). Thus, the sample size in this study would be four to five samples would be sufficient to conduct the study.

3.5   Sampling Techniques

Sampling techniques are approaches or procedures used to choose a selection of people from a population to represent the population as a whole (Creswell & Creswell, 2017). As for this study, the target population is selected from engineers from West Java and North Sumatra, and the samples were selected from a variety of private, locally owned, and government link companies using a convenient sampling technique. In this study, convenient sampling technique were used due to the convenience of the researcher in time and the number of samples that were found in the data collecting field.

3.6   Unit of Analysis

The objective of this research is to look into the engineer in the construction industry in their workers' knowledge, and awareness about value management implementation and barriers, since the working experiences and knowledge of every worker are different from each other, the unit of analysis of this study is individual which is engineer. Engineers in the construction sector play a crucial part in implementing value management through their direct engagement in both technical and management roles. Therefore, the chosen construction industry engineer was interviewed and answered the questions based on their knowledge and experiences.

3.7   Instrumentation of Variable

The main focus of this study is the barriers of value management implementation. In accordance with the research framework, barriers of value management implementation in the scope of government and educational institution. Table 3.1 in this section presents the operational description of this study, and the paragraph that follows will go over the instruments and measurements of these variables.

Concept	Operational Definition
Government	The government is responsible for establishing the laws and policies that facilitate the application of knowledge across the nation. Policies that promote collaboration, provide funding and resources for knowledge transfer and exchange initiatives, and facilitate the application of research findings to practice are essential for the efficient application of knowledge.
Educational Institution	The university is the entity within an educational institution that provides value management awareness and knowledge. it means creating educational settings and programs that promote the ability to apply knowledge in practical situations in addition to providing information.

Barriers of Value Management Implementation	The difficulties or challenges when implementing value management on the construction industry.

Table 3.1

Operational Definition of Variables

3.8   Data Collection Strategy

According to Vanderstoep and Johnston (2008) the techniques used for collecting information for qualitative research are numerous and diverse. Text analysis, focus groups, interviews, and observations are a few of the often-used techniques. As for this study, the method will be an in-depth interview to collect the primary data from the informants. As the researcher wants to know the information deeply from the informants based on their knowledge and experience, an in-depth interview is one of the best methods to use.

Interviews can be conducted via in-person meetings or digital platforms, including the internet and phone. This study will use the digital platform as a medium to conduct the interviews and to have a flexible time and place with the informants that will be interviewed. In the data collection process, the interview will involve three stages:

•   The pre-interview stage consists of the selection of informants and making the interview questions.

•   During the interview stage consists of seating arrangement, opening the interview, interviewing the informants, opening the interview, and recording the data.

•   Post interview stage consists of transcribing the interview.

Based on Steward and Cash (2008) the level of information or competency, availability for the interview, willingness to participate, and ability to share

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information freely and accurately are the following variables that might help the researcher choose informants. For this study, because in terms of value management practitioners are the people who work in the engineering field, the targeted informants will be the experts that already worked in the engineering field for more than 5 years. If eligible the workers that have experience in the engineering field with 1 to 2 years of experience also will be concluded as the informants because the amount of time gap that the informants have between their worker and student status is still small.

After the interview is conducted the data of the informants will be stored and transcribed to be analyzed later on. As soon as the interview is over, the recorded material should be listened to and transcribed. According to Puvenesvary (2003) In terms of the amount of time needed to fully transcribe the interview material, a high-quality tape lasting one hour will often require six to ten hours to complete word for word.

3.9 Thematic Analysis

There are two ways to analyze interview data: deductively, where categories are predicted based on theories or literature reviews and applied to the collected data, or inductively, where categories, patterns, and themes arise from the data. In doing data analysis on the interview method, these steps can be used (Gibbs, 2007; Patton, 1987; Bernard & Ryan, 2010; Boyatzis, 1998):

• Compile all of the information obtained from the interview that relates to the issues under study.

• Go over the information multiple times, marking in the margins the key points that keep coming out.

• Divide the major concepts into subjects and subtopics.

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- Outline the topics.

- Choose the unit of coding and analysis.

- It's crucial to carry out intra- and inter-coder reliability checks when multiple people are performing the analysis.

- Organize the information.

- Cross-classifying different categories to create matrices.

3.10 Summary

This chapter has described the methodology used in this study, which includes the conceptual framework of the study, sampling, data collection strategies, and methods of data analysis to analyze the data that has been collected. It has also provided an explanation of the data collection strategy's procedure. Additionally, the population and sample details for this study also have been provided. The following chapter will be the presentation of the analysis's findings according to the method described above.

CHAPTER 4

RESULTS AND DISCUSSION

4.1 Introduction

The results of participant interviews who took part in responding to the research questions gathered for this study will be presented in this chapter. To introduce the participants who shared their experiences with this research, a descriptive background of the participants was created before moving on to the findings. Before being categorized and reported, the interview data for the study were collected, transcribed, arranged appropriately, and compacted into an understandable format.

4.2 Background of The Participants

For this study, the samples consist of 4 participants that were chosen such as head engineer, water engineer, and construction engineer. The purpose of the interview was to find out the participant's perspective on the barriers of value management implementation in the Indonesian construction industry. Table 4.1 provides information on the participant's background, including their position, variety of companies, and years of work experience.

Participant	Designation	Work Experience as Engineer	Experience in Value Management	Variety of Companies
1	Head Engineer	6 Years	4 Years	Private
2	Head Engineer	20 Years	-	Government & Private

3	Water Engineer	7 Years	2-3 Years	Government
4	Construction Engineer	5 Years	-	Government & Private

Table 4.1

Participant Background's

Source: Participant's background

4.3   Barriers of Value Management Implementation

By conducting this research, the researcher described the barriers of value management implementation in the Indonesian construction industry. The research questions are "what are the barriers of value management implementation in the Indonesian construction industry?", "what are the potential strategies to overcome the value management implementation barriers in the Indonesian construction industry?", and "how the government initiatives in value management implementation in the Indonesian construction industry?".
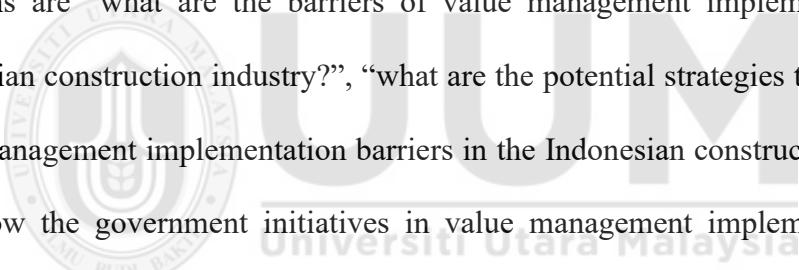
The interview data in this study were provided in accordance with the research objective. Through interviewing four participants, the researcher has identified several potential strategies, government help, and barriers of value management implementation in the Indonesian construction industry. As a result, the study discovered the following themes from the interviews such as legal, work environment, resources, potential strategies, and government initiatives.

4.3.1 Legal

All of the participants felt that the laws and regulations regarding value management implementation in construction industry needs to be strengthened and optimally used in the sector of government or private construction project.

…We have a new letter 2 years ago about value management implementation, but the circular letter that was just issued last time is not a strong circular letter because the letter is not mandatory, and it is at the lower level or directorate regulation level…

(Participant 1).

This participant shared his opinion regarding the last circular letter that issued by the ministry of public construction about value management implementation in the construction projects is not mandatory and that circular letter level is low. The role of government as an institution that make law and regulations have fully responsibility on this case. The law enforcement also in it needs to be improved, especially because in the new circular letter there is no sanctions if the projects did not conduct the value management.

…Oh, I don't know about the circular letter, sometimes information about the new regulations can be said to be not optimally communicated to all parties, especially those who are far from the capital city…

(Participant 3).

This participant said that the information regarding the new circular letter is not informed optimally especially in places that far from the capital city. The flow of information and the enforcement become barriers on this case. Government needs to encourage and distribute more in the regulations that made; the value management

implementation abroad mainly influenced by the regulations, where there are some targeted numbers on the cost that saved by the value management on the construction projects.

Governments, construction authorities, and regulators should all actively support value management. Additionally, they have to consider creating and putting into practice value management that is grounded in the law, as is now the case in developed countries around the world. With a greater law enforcement, the implementation of value management will be obligated to conduct in Indonesia. This result consistent with the previous studies (Lin et al., 2022; Kineber et al., 2022; Rozanova & Syarifudin, 2022; Alhumaid, et al., 2024; Mishra, 2019) that indicated the value management implementation hard to implement because of legal documents such as laws and regulation.

4.3.2 Work Environment

All of the participants were told that the barriers on value management implementation also from their working environment. The problems can be come from internal factors such as administration, coordination line, and working steps of the project. External factor such as stakeholders also become the barrier in the implementation. The role of work environment is new institution on this study, where in the beginning was not include as one of the institutions that responsible with the barriers of value management implementation.

From the study, it shows that the working environment became one of the factors of barriers, the system of the projects done are the one that makes everything become barriers from the work environment. Starting from the administration that most of the time difficult to proceed with when there are changes in the projects, especially if the

project scope is big and located far away from cities. It will take long time to do administration changes on the projects.

…The problem is that many stakeholders also do not know or do not understand this value management, for example the state-owned financial supervisory body that assigned to audit projects by the government, they do not know about the implementation of this value management, when in fact the project audit department should be able to use this to optimize the project budget… (Participant 1).

The participant informed that many stakeholders when in the project also did not know about the value management, even the government body that function as a supervise the cost of government projects.

…well, it is difficult to implement because this value management has an effect on the project budget, because usually administration related to the budget is difficult to make… (Participant 3).

Participant 3 told that the administration changes that affect to the projects budget is difficult to make. Sometimes it can be approved and mostly cannot. This happened because of the working steps that done in the project's nature, where the working steps can determine the value management can be implemented or not, where it can be implemented, and on what scope of the projects it can be used.

…The implementation of value management is difficult because one of the factors is our administrative channels, sometimes it takes a long time to manage project

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administration, especially if there are changes in the contract, in particular projects

that collaborate with the province, it can take a long time because we have to wait for

approval first from them… (Participant 2).

The participant shared that the administration line in the project is become the barriers
when implementing changes in the projects.

…The problem of communication lines in government projects as you know is

sometimes complicated, unlike in the private sector which is more coordinated. that

can also be a barrier… (Participant 4).

Interestingly, this participant compared the coordination line when working between
the government project and private sector projects. He said that the coordination line
in the private sector smoother and more coordinated rather in government projects.

…oh, problems in working steps can also be a barrier, because this year's project, for

example, made its budget from last year, well if the budget has been made it is difficult

if there are changes in the future… (Participant 3).

Based on this participant, the working steps when make a project can be a barrier,
because the working steps is difficult to be changed in the future if there are any
changes to the projects.

…maybe one of the problems is the way of working in the project, well if in

government projects the budget is difficult to change, if in the private sector you can

adjust the budget according to your project, so the implementation of value management is more possible in the private sector in my opinion… (Participant 4).

Participant 4 said that the way of working in the project can become a barrier, especially in the government projects. The way government and private sector works in the projects especially in construction is different.

…well, this is also a problem, the project work system creates barrier to this implementation, because the project budget in Indonesia is bottom-up system, some of countries that I know abroad that implement value management use a top-down system… (Participant 1)

This participant shared that the work system in Indonesia also become one of the barriers in implementing value management. These findings coherent with Lin et al. (2022) where one of the challenges on adaptation of value management is the environment for distributing the method in the construction field. With these findings the implementation of value management in construction industry really depends on the work environment.

4.3.3 Resources

All of the participants agree that the barriers of value management implementation mostly come from the resources consist of time, money, and the human resources that available in the workplace. The government and educational institution as the one that have responsibility on barrier of value management implementation. The time, money, and especially human resources are should be provided by them.

...Well, for the implementation, it takes a lot of meeting time, so that is also a barrier, especially if the project is in a distant area, it takes a lot of time...   (Participant 2).

This participant said that because the implementation of value management is take a lot of time, it becomes a barrier, especially in the area that is far from the city.

...Well, a project has its own timeline, and you know the implementation of value management takes time, so sometimes even projects can be late in completion, well that is also a barrier...   (Participant 3).

Participant 3 informed that because of the tight timeline, the implementation of value management hard to be done. These factors make value management hard to be conducted because the project manager must be rushed in finishing the project and the cost if in conducting value management is also high, even though the cost that can be saved can be more than that.

...Problems in costs are also sometimes a problem, especially because of differences in material prices in each region, the survey is long if you want to implement value management...   (Participant 4).

This participant said that the problem in cost is become the barrier, because it takes long time to make a survey in different region. In the scope of time and money, this is the problem with the timeline of the projects, and in Indonesia time to finish a project can be delayed because of the distance of every island. The materials and workers need to be distributed and mapped through every major island.

…There is also the cost of implementing value management, especially because sending experts from outside the city if the human resources in the office where the project is carried out are limited, most of the time, operational costs become a barrier… (Participant 3).

This participant shared that the problem in the operational costs in the project become one of the barriers on implementing the value management.

…There are a lot of people that have no knowledge about value management, some even know but only half, so the implementation cannot be maximized, those who have certification are also only a few, that's the biggest problem… (Participant 1).

Participant 1 said that people that work in the construction projects only a few that know about value management, and the implementation of this knowledge cannot be maximized on site.

…There are only a few people who know about value management, and sometimes it is misunderstood with other studies such as field engineering. that is also a problem… (Participant 2).

This participant described that only a few people that know about value management and sometimes misunderstood with other techniques that used in the construction. In Indonesia itself only a few people that have value management certifications, with the increasing number of people that have the certifications, it will be easy to conduct value management, it will save cost from requesting experts abroad or outside of the construction area.

...Look, our experts are still quite few, so limited human resources are also become a barrier, especially experts in multidisciplinary fields in the field of construction, this makes us sometimes have to request experts from outside... (Participant 3).

Participant 3 informed that the lack of human resources becomes one of the barriers in implementing value management. This result aligns with the previous researches (Rozanova & Syarifudin, 2022; Mishra, 2019; Miraj, et al., 2019; Alhumaid, et al., 2024; Othman, et al. 2021; Kineber, et al., 2022) that stated the implementation needs knowledge and expertise, or the lack of resources in the implementation will make it not optimal.

4.4 Potential Strategies

All participants proposed the potential strategies to tackle the barriers of value management implementation in the Indonesian construction industry in form of training, certification, and administration.

...in my opinion, I recommend in terms of administration to be more flexible in changes that may occur in the construction project... (Participant 2).

Participant 2 recommend the flexibility in construction projects administration so the changes can be applied, that will be help the value management implementation. The coordination line in the administration flow also might be clearer in the future, and increase the probability of value management implementation in the construction industry.

...I suggest providing training that enables certification in value management, and also that the quality of university graduates is improved in this area... (Participant 1).

This participant suggests to provide training on value management and the strengthen of university graduates about value management. The role of educational institution on training and certifications will be important on these strategies. The increase amount of training and certifications might help with the lack of resources on the construction projects. In terms of human resources, educational institution needs to be improved in terms of training and certifications on value management,

...I think improve the quality and number of human resources in the construction sector, and to have a better distribution of experts... (Participant 3).

Participant 3 said that potential strategies can be in improvement on the human resources in the construction sector. Especially that worked in the government institution will be beneficial for the institution and the individuals. In the changes of flexibility in the administration can be also one of the potential strategies, by changes in the working step it will affect the way administration works in the construction projects.

4.5   Government Initiatives

Two of the participants give their opinion on the government initiatives in the implementation in value management in construction sector, while the others choose to not give comments on it.

...I feel that there is a need for institutional strengthening from the government in the implementation of value management in the construction sector, even though they are already helping in the creation of regulation and law... (Participant 1).

This participant said that the government needs to strengthen in their institution that implement the value management in construction sector. The participants said that the governments can be more encourage and increase the regulation and laws enforcement on the value management, so it will be optimally conducted on site.

...in this case the government may have done some good things such as regulations even though the implementation in the field is still less effective... (Participant 3).

Participant 3 described that the government already do several things on the implementation even though the implementation or the regulation enforcement in the real world still not effective. Based on the participants opinion the governments already do several steps on it like the new regulation, and also starting to implementing it in several construction projects in 2023.

4.6 Summary

This chapter included the data analysis along with relevant conclusions from the study. Data presentation starts with the background of the participants and continue with the barriers of the value management implementation until the government initiatives. The analysis revealed the opinion of several participants about their experience and knowledge in construction sector regarding the value management implementation in the Indonesian construction sector and closed with the discussions on the findings. Conclusions on these discoveries, along with their theoretical and practical implications, will be covered in the next chapter.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter is to described the findings of this study where it will summarize the findings on this study, the contribution of the study separated into theoretical, practical, and also policy implication, and ends with the limitation and recommendation for the future research on this study.

5.2 Key Findings

The main objectives of this study are to analyze what are the barriers on value management implementation in the Indonesian construction industry. Secondly, this study also to analyze the potential strategies to overcome the value management implementation barriers in the Indonesian construction industry. And finally, to analyze the government initiatives in value management implementation in the Indonesian construction industry.

Based on the in-depth interview that conducted to 4 engineer that works in government and private sector, the main barriers of value management implementation in the Indonesian construction industry come from the legal, work environment, and resources in the construction industry. With the new factors of institution in this study that not include before that is the company itself where affect the work environment.

Furthermore, the potential strategies also compiled with the collaboration of government and company to tackle the value management implementation barriers with the increase of training and certification for value management also with the flexibility of administration coordination line. The government initiatives in the

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implementation also described by several participants, even though the government needs to increase the regulation enforcement in the value management implementation in the construction industry and also made a law that have a high-level regarding value management.

5.3 Contribution of The Study

This study has made several contributions to the body of knowledge regarding value management and the factors that would improve its application in the construction sector, especially in Indonesia, where it is a government or private sector project.

In the meantime, the study is expected to help the Indonesian construction industry and produce some recommendations that the organizations involved can take into consideration. This will ultimately lead to improved value management and an improvement in Indonesia's overall construction value performances. The study's theoretical and practical contributions are covered in the subsections that follow.

5.3.1 Theoretical Contribution

From the theoretical contribution perspectives, this research demonstrates the factors that become barriers in value management implementation, especially in the Indonesian construction industry. As already mention in the beginning of this study, there were only limited literature in this topic, specifically in Indonesia. Hence, this research would add more knowledge to the field of value management by examining the barriers on its implementation.

Another important contribution of this research is by providing the insight that the institutions are contributing on the barriers of the value management implementation, where they can become the main contributor that increase the implementation of value management.

5.3.2 Practical Contribution

On the practical contribution perspectives, this research offers contribution to the construction industry, especially on the government sector. The outcome of this study can help the government to understand the importance of value management implementation in the construction industry. Then it provides the information on the barriers of value management implementation in Indonesia. And lastly, the government can developed a new strategy from in scope of policy where the policies can have a sanction and objectives that needs to be fulfilled in value management implementation rates in Indonesia, or education in value management to tackle the barriers with the goals to increase the value growth of construction projects in Indonesia in the future.

5.4 Limitation and Future Research Recommendation

Even though this study produced several significant results and contributions, its conclusions should be considered as well with an awareness of its limits and in consideration of the recommendations for further research. Therefore, the limitations and recommendation of this study are presented below.

As the data of this research only consist of 4 participants in Indonesia particularly in West Java and North Sumatra, the findings might not be generalizable to all area in Indonesia. Besides that, this study also focused on the engineer perspectives, where in the construction industry many other divisions participated in value management implementation. Another limitation on this study is the literature about this topic in the Indonesian construction sector. The amount of literature that can be examined are limited, with the topic mostly about value engineering than value management.

As for the future study, it is recommended to consider this research across other part of Indonesia to gain the generalizations of this research. And in the scope of diverse categories of participants, future study can also focused on other job divisions in the construction industry or to the property owned. It is also recommended to expand the future research into fresh graduates or university students regarding their knowledge to know their understanding on value management and the contribution of educational institution on knowledge about value management.

5.5   Conclusion

This study analyzes the barriers of value management implementation, potential strategies, and the governments helps on the implementation in the Indonesian construction industry. The objectives of this research have been achieved and the findings shows that the barriers of value management implementation in the Indonesian construction industry come from the legal, work environment, and the resources. These factors came from the institutions on the industry from the governments, educational until the construction company itself. It also provides several potential strategies that can be used to deal with the barriers from education to law enforcement by the government. I believe that this study's findings and recommendations will help the implementation of value management in construction industry especially in Indonesia going forward in the future.

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APPENDICES

Scope of Questions	Questions
Background of Respondents	1) What is your name?
	2) What is your job now?
	3) How long have you been working as an engineer in construction industry?
	4) Do you know what is value management?
To analyze the barriers of value management implementation in the Indonesian construction industry	1) What do you believe are the main obstacles to implementing value management practices in the Indonesian construction industry?
To analyze the potential strategies to overcome the value management implementation barriers in the Indonesian construction industry.	1) What strategies have you found most effective in overcoming barriers to value management implementation within your organization or projects?
	2) Are there any innovative tools or methodologies that might address the specific barriers in the Indonesian construction industry?
To analyze the government initiatives in value management implementation in the Indonesian construction industry	1) In your opinion, how supportive has the Indonesian government been in promoting value management within the construction industry?
	2) How can the government further assist in overcoming the existing barriers to value management implementation in Indonesia?