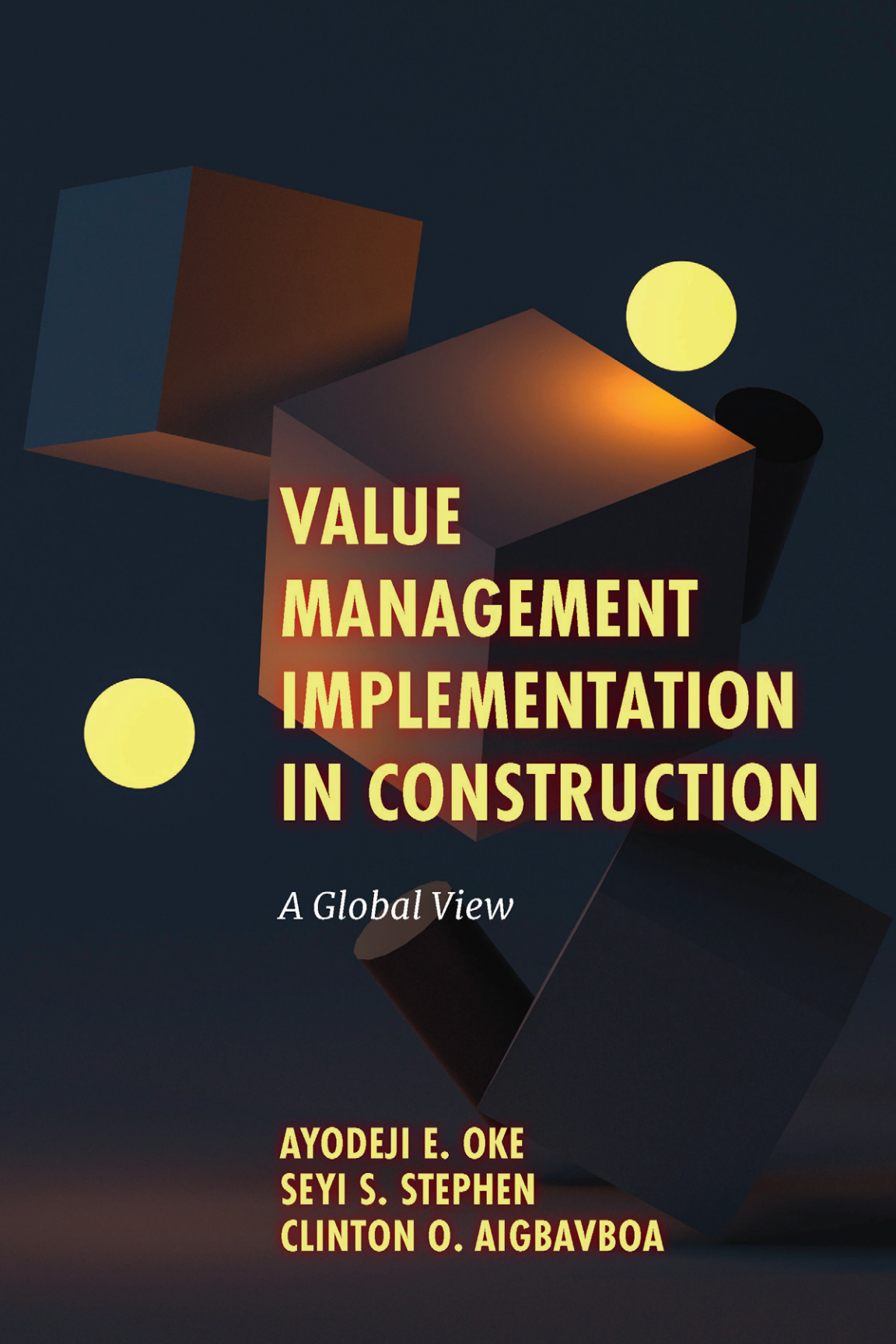
VALUE
MANAGEMENT
IMPLEMENTATION
IN CONSTRUCTION
A Global View
AYODEJI E. OKE
SEYI S. STEPHEN
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Value Management Implementation in Construction

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Value Management Implementation in Construction: A Global View

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INVESTOR IN PEOPLE

To God, the Almighty
And
Our Family Members

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Preface

The construction industry plays a vital role in the economic development of a country. The roles performed by this industry can be diversified and classified into several functions to bring enhancements to activities in improving human's lives. The client's satisfaction is the priority as methods and techniques, both old and new, inculcated into construction works are to provide quality service to the owner of the construction project in terms of satisfaction and achieving the best value. For construction, it is very cogent to have structures well within a stipulated program of work, clinically delivered and the utility maximized to an acceptable standard.

There have been implementations of several tools and techniques to meet the standard required in project delivery over the years, and policies engaged in enhancing the quality and quantity of projects. These enhanced policies include the frequent involvement of information and communication technology (ICT) in buildings, implementation of knowledge management approach (KM), building information modelling (BIM), robotics in construction and other modern methods of construction. Since the inception of value management (VM) in the United States, the practice has grown tremendously and spread to other countries. Value management envelops a broad scope of putting together teams that could infer best practices from an adequate analysis of elements to achieve the best value for the all-round management of an identified project that is in line with the policy and terms of the standard expected by the organization. The implementation of this practice into construction in every facet will enhance productivity. It is unfortunate that this practice has not been fully implemented in most countries, especially developed countries, even when they are aware of the benefits involved in its adoption. Some of the problems associated with the low level of implementation are discussed in this book, along with exclusive benefits, methodologies, concepts, phases, workshop practices, amongst others.

The book is categorized into four parts for ease of navigation. The first part of the book details the general introduction of the subject coupled with the value system in construction and the book's objective regarding its problem-solving approach in the countries selected. The second part of the book explained value management practice in selected developed countries such as Australia, Canada, England, France, Hong Kong, Northern Cyprus, Scotland and the United States. The third part discussed the discipline of value management in developing countries such as China, Ghana, Malaysia, Nigeria, Saudi Arabia, South Africa, Sri Lanka and the United Arab Emirates. The fourth part is the general summary

of other aspects of value management fused into expanding knowledge and understanding of the subject. Each chapter begins with an introduction to the research topic and concludes with the salient points in the literature reviewed and the observations made. At the same time, the references provide an avenue for further reading into the research work.

The target audience for this book include: scholars in the built industry, sections of the government ministries that are saddled with infrastructural development and building maintenance regulations, corporate agencies (private and public) that consider policies in infrastructures from the inception to the post-completion of the project, interested individuals working towards achieving best value for their projects (big or small), policy makers who are saddled with the responsibilities of achieving the best value for construction projects in organizations with regulatory bodies working in the line of achieving standard new building protocols within a set locality and interested construction professionals in charge of estimations and cost-related fields of the construction industry. This book also offers enhanced learning to professionals, scholars, researchers, stakeholders and education-related institutions in architecture, building technology, cost estimating, estate management, project management, land surveying, urban and regional surveying and other disciplines in the built industry

The book can be adopted as a research guide and framework to assist and provide better and more relatable topics to value in construction. We hope the readers of this book will be intrigued by the insights detailed in each country's construction industry in terms of value management and thus increase the perception about the practice for better implementation across sections in construction.

Ayodeji E. Oke
Seyi S. Stephen
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Part 1
Background Information of the Book

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Chapter 1

General Introduction

Introduction to Value Management

The construction industry is saddled with the responsibility of providing good, affordable and standard buildings with the client satisfaction a priority. Construction over the years has grown from the materials used to better and sufficient contemporary materials to satisfy the client's ever-growing needs and wants. To strike a balance between meeting the utility of what is expected now and the demands before, the concept of understanding an upgrade came to being in the manner of value management (VM) and other concepts that could be channelled to enhance proficiency and quality delivered now and overtime. The VM concept came into consideration due to shortages in materials and the very need to replicate them with better ones. After World War II, constructional professionals came together to discuss the implementation of VM practice into the construction industry with the hope of extending to other related industries if success was to be recorded in the construction when implemented. The need to involve cost estimators or cost consultants into construction relates well with the knowledge expected from integrating value into construction. Meanwhile, several challenges faced before the World War and the resultant consequences forced the building industry stakeholders to seek functional practices. The functional practices aimed to cater to the necessities required in delivering quality construction projects within the set contract duration, at a cost-effective price with the new goals in achieving value and working towards that which is systematically orchestrated to the understanding of every person involved.

In a bid to meet the standard required in project delivery, the construction industry has over the years engaged other management policies to enhance the quality and quantity of projects over the years. These enhanced policies include the frequent involvement of information and communication technology (ICT) in building, implementation of knowledge management approach (KM), robotics in construction and other modern construction methods. Since the inception of VM in the United States by Lawrence Miles, the practice has grown tremendously in other countries. VM envelops a broad scope of putting together teams that could infer best practices from an adequate analysis of elements to achieve the best value for the all-round management of an identified project that is in line with the policy and in terms of the standard expected by the organization. VM in construction projects may be defined as a systematic approach by a qualified group in

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making decisions towards bringing relevance to the value of the project following the requirements of a client. VM has been introduced in several countries construction industries, but the level of implementation varies from country to country. In many developed countries, it has been widely used, while the majority of the developing countries still find it difficult to implement it into their construction projects.

The construction industry is already making measures towards sustainability through techniques. Green buildings, smart houses, lean construction, amongst others, are implementations focussing on having constructions that are cost cautious and cost-effective. These practices and more are channelled to enhance the service rendered in construction projects and meet up with every form of expectation from either the clients or the stakeholders governing construction policies. The book is divided into two parts. The first part expatiates on the general background of the book. This touches on the generality in VM and the construction industry as a whole. The second part of the book focusses on the various round aspect of the subject in respect to adoption, benefits, challenges, techniques or procedures and other areas related to VM in the 16 countries selected.

The chapters of the book explain VM in selected countries such as Australia, Britain, Canada, China, Ghana, Malaysia, Nigeria, Northern Cyprus, Saudi Arabia, Scotland, South Africa, Sri Lanka, United Arab Emirates, United States of America, Hong Kong and France, respectively. It also points to other sections of VM in histories related to each country by bringing out the level of adoption in these countries. The book chapters explained the systematic phases in VM via value methodology in value planning, value control, value analysis (VA), value engineering and other methodologies. These phases come in the pre-study phase, information stage, creative phase, evaluation phase, development phase, presentation phase and post-study phase. The VM study is grouped into analysis, evaluation and shortlisting, creative thinking, development, information gathering and presentation. Chapter 17 of the book summarizes VM in most of the countries from the previous chapters. This gave a complete view to the general VM in these countries and benefits, approaches and other parts of the subject to bring a more comprehension to the importance of the practice in construction.

General History of Value Management

VM became a practice in the late 1940s, but its history dates back to centuries before then. This is similar to the concept of value, function and utility. The studies of various economists and philosophers such as Aristotle, Plato, Jevons, Bernoulli, Smith, Bentham and others were relevant to saving cost and maintaining function. In the year 1947, a man called Lawrence Mile, who was working with the General Electric Company (GEC) of Chicago, designed a systematic and logical process of reducing cost, with a major determination of maintaining or improving functions which he termed 'VA'. This system was based on using alternative materials that perform the same function at a lower cost to improve the overall life span and value of a product due to scarcity of materials. The

purpose of designing this system is to cut unnecessary costs, thereby relating the ratio of cost to function and the worth of a commodity to its function. This principle brought about the present-day 'VM'.

The basic idea behind VM is the potential to minimize the overall cost of a commodity or project by considering alternative inputs, principles or processes to attain the desired function but at an overall lower cost. The history of VM regarding research from various authors on the said topic is not related to historical proof or backing from a past economist. Its major principle is the inherent behaviour of man to find a way to reduce cost and still maintain standard or quality or function through the use of substitute materials and new or improved techniques.

Lawrence Miles developed the cost reduction and function maintenance system while working for the GEC of Chicago, USA. The manner at which Dell'Isola (1982) described how Mile was asked to provide a solution to material shortages specified for production of commodities at the company where he worked briefly. The aftermath of World War II was understandable enough. It was noted that when they needed to purchase alternative materials, it cost lower than what was specified, and the performance was the same and sometimes better. Furthermore, the company decided to enquire if this process could yield a better and more desirable outcome by substituting materials and techniques to achieve the same function at the lowest possible cost. Miles was delegated to head this activity of a process he called VA. Dell Isola (1982) opined that it is an efficient way to meet clients' needs and satisfaction. It is also the ratio of function and quality to cost. As engineering and building challenges increase due to technological and political changes, construction companies have since developed a method to adjust competitively (Qiping, 2004). VM was lengthily discussed and adopted at the commonwealth of Australia in 1977, where participants agree to the creation of the Institute of Value Management (IVMA) (Spaulding, 2005). Since that creation, VM has increased Australia construction industry competitiveness and rapid growth through justified and achievable decisions (Daddow & Skitmore, 2005).

According to Miles (1989), VA is that organized and properly strategized procedure to meeting up with a customer or clients' need or want in terms of function at the lowest cost, due to proper understanding of the customers' need and elimination of unnecessary cost by using similar materials of better life span and functional potential. VA comprises major ways for reducing cost with the sole purpose of achieving a set standard.

The success of the VM process gained recognition throughout the industrial world, most especially in the manufacturing industry. It has also been practised in other industries but at a much lesser magnitude. The terms VM, VA and value engineering in Australia and New Zealand standards are seen as synonymous. But contrary to this, other authors seem to have a different opinion. According to Miles (1989), value engineering says that when a qualified engineer concerning an engineering project carries out the process, the process is termed value engineering.

From conception, VM has been a teamwork process that involves members from multidisciplinary backgrounds coming together to discuss, deliberate and proffer solutions to problems. These solutions aim to save cost and attain a certain level of functionality by using a proactive, creative, logical and systematic method to decide the best/preferable materials and techniques. The team members of VM consist of both professionals and non-professionals having a scheduled work hour of 40 hours per week workshop.

The History of Value Management in Some Countries

The examination of value evolved during the Second World War when the shortage of labour and materials forced business organizations to look for other alternatives. Mr Lawrence Miles first submitted VM in the United States. Miles intended this procedure for the GEC in the 1940s based on VA. All US sectors worked at their maximum capacity in those days, contributing considerably to the decrease of raw materials. GEC, for this reason, had to concentrate on using other options that required not so much energy from raw materials. Miles discovered new, less cost-effective options while maintaining the quality of outcomes and products. It develops extensively in building projects after implementing VM in the construction industry. Navy's Ships Bureau adopted a formal VM method in 1954 to enhance stage design costs (Whyte & Cammarano, 2012). VM has been involved in related construction practices in North America since post-war. VM was implemented in many US local government agencies in 1959, and the American Society of Value Engineers was later founded in 1964 to demonstrate its value to the building industry.

Using VM techniques by building industry has been quickly expanded and has become a needed choice in many US government building projects (Abidin & Pasquire, 2006). Value engineering first arrived in the United Kingdom in 1960 and was adopted by multinationals companies. Then in 1966, VM became a predominantly underground practice in manufacturing sectors. Still, some businesses attempted to concentrate on VM teams as the organizational practice that could improve the project. Government agencies in the UK's construction industry did not acknowledge all of VM's advantages, so they brought VM by connecting their projects in proximity to North American building firms (Qiping, 2004). Private organizations like BNFL, BAA, Rail Track, BA and water businesses such as Yorkshire Water and Southern Water began using VM in the United Kingdom. The UK transport sector also actively used VM processes (Whyte & Cammarano, 2012).

In addition, in 1960, VM went to Australia through multinational organizations such as Hawker Siddley and the US advertising components, including Australia's value culture, which shows that the Australia Institute of Value Management (IVMA) was set up in those days. Shen and Yu (2012) stated that in 1980, Professor Barton, who worked in the University of Canberra's Construction Department, began a research trip of VM in the United States to create Australian specialists more familiar with VM research. Back then, Smith

Hinchman and Grylls undertook VM for Leighton Construction in the United States, resulting in two VM strands being released (Whyte & Cammarano, 2012).

Hong Kong is another location in active VM research for building projects. For the first time in 1988, Hong Kong's construction industry was acquainted with the VM idea. Recently, awareness of the facts and advantages of the VM study has been improved and used gradually in Hong Kong government building projects (Qiping, 2004). Most of the VM method has been initiated by the Department of Architectural Services, with major multidisciplinary government sector professional offices playing a significant part in publicizing VM practice in Hong Kong building projects. In addition, the Hong Kong Value Management Institute was created in 1995. As a result, several International VM Conferences for municipal initiatives have been arranged since then (Abidin & Pasquire, 2006). In 2001, the Hong Kong Construction Industry Review Committee suggested the broad use of VM for all kinds of building projects through compulsory legislation and legal guidelines (Shen & Yu, 2012).

The Value System of a Construction Project

The act of creating something unique out of a less permanent endeavour is referred to as a project (Project Management Institute, 2000). A project often comes with several areas to be catered for in terms of finance, technicality, regulations surrounding construction and other cogent aspects of a construction project. A project is defined by an identified scope peculiar to its uniqueness. This uniqueness aims to satisfy the client by utilizing possible methods and techniques to achieve the desired goal. The goal expected to be met is proportional to the value estimated from the project's inception to the different stages of the project post completion. Therefore, it is incumbent to involve every aspect of understanding to put in measures to manage the project to get the maximum value on such project. Characterizing construction project into features, Gould and Joyce (2002) and Walker (2002) summarized thus

- Precise concept;
- Constructed on the site;
- A systematic program of work;
- Highlighted goals;
- Interwoven activities;
- Reduced budget;
- Concerned stakeholders and
- Multidisciplinary engagement and resources.

Value Management Study

A VM study comprises a systematic work plan, adequate composition and dedication of team members, involvement and support of project stakeholders and effective facilitation. A VM study usually involves a workshop where

representatives can participate from different fields, e.g., clients, end-users, design team, project managers and contractors.

The following considerations may drive the intent to conduct a VM study:

- Inherent possibilities for saving cost or enhancing results
- Willingness to solve a complicated and multidimensional problem
- The need for thorough evaluation or audit
- The need to maximize the equilibrium between the initial and running cost
- The complexity, competitive cost and creative nature of a project.

VM study is classified into four stages of workshop according to the AS 4183-2007 Value Management:

(1) Pre-workshop
(2) Workshop
    - Information phase
    - Function analysis phase
    - Creative phase
    - Judgement phase
    - Development phase
(3) Post-workshop
(4) Post-study

Every VM study will pass through the phases highlighted above. However, the facilitator can select distinct instruments and methods present in each phase depending on the nature of the project, level of knowledge of the stakeholder, number of interested participants present or invited, when the workshop would elapse and other factors. Some of the operations of each phase are described below.

Pre-workshop Phase

- Determines the extent of the study: Involving appropriate individuals to address the right problem at the right moment is vital to the immediate or expected success of any VM study. It is very consequential that the clients or sponsors of the study meet to discuss the scope of the study.
- Identify stakeholders: The most delicate aspect of the workshop is engaging appropriate stakeholders for the study; their vast understanding of construction or the project market will determine the success of the study. An initial evaluation of the issues that are likely to happen will assist in determining the individuals that will make reliable contributions and possess the required technical skills as alterations made will affect them, the end-users and their community.