The Theory-Practice Gap in Value Management – A Case Study in Sri Lankan Construction Industry

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Abstract. Construction industry is a leading contributor to the economic, social and environmental sustainability of the country. However, it heavily consumes resources. Hence, it is vital to utilise resources efficiently and effectively. In this context, ensuring sustainability and value for money are crucial constructs in successful construction project delivery. Value management (VM) is widely accepted as a proactive concept for managing value. Although, VM concept is extensively accepted internationally, its applications do not seem to be well embraced in the construction sector of the majority of developing countries including Sri Lanka. The concept has not been practiced effectively by the industry practitioners due to lack of understanding of VM concept. Hence, this study aims to investigate the theory-practice gap in VM in Sri Lankan construction industry. A literature review followed by seven case studies were carried out and gathered data were analysed using code-based content analysis. Findings revealed that there is a theory-practice gap in VM resulting in ad-hoc informal implementation of VM job plan. Although theory states that VM can apply at any stage of a project, the case study projects have applied VM concept mainly during post contract stage as a cost cutting strategy. The study recommended strategies to bridge the VM theory-practice gap in order to deliver best value for client’s money and ultimately achieve sustainability in Sri Lankan construction industry.

1. Introduction
The construction industry has significant economic, socio-cultural and environmental impact on the country [1]. Hence, providing maximum benefits to clients by increasing the value of a project is the foremost objective in the construction industry. Although several value achieving concepts being utilised in construction industry, Ekanayake and Sandanayake [2] highlighted that Value Management (VM) supersedes all the other concepts as it addresses the concept of Value in a greater extent. VM is a systematic approach, which seeks to achieve value for money by providing all necessary functions at the lowest total cost [3]. Further, VM is not only about cost, but also concerns about the relationship between function, value, quality and cost with functional analysis as its principal components. Through conducting VM in a successful manner, it helps to define and achieve the client’s objectives. Savings in 10–15% of project costs can achieve with the proper implementation of VM [4]. Although, many researchers have addressed VM concept theoretically, there is a lack of VM implementation in construction industry. Further, lack of understanding of VM among industry practitioners have identified as a common reason for less practice of VM concept. Hence, there is a need to enhance VM implementation in construction industry in order to deliver maximum value to all the stakeholders.
VM theoretical concepts have been in the Sri Lankan construction industry for many years even though it has not been in practice effectively. VM as a methodology, can make a precious contribution towards a better solution to the problems facing in Sri Lankan construction industry. The practice of VM applications in the Sri Lankan context is still not popular among the industry practitioners. There seems to be a skill gap in VM resulting in non-formal use of VM as well as limited use of formal methods of VM [5]. Any implementation of VM within a particular country would locally customised. Thus, to promote the application of VM in the industry, it is crucial to understand the current practices of VM established in the industry compared to the theory of VM concept. Researchers have focused on the application of VM techniques and the common critical success factors of VM performance [6]. Most VM research findings are not in practice because researchers in academic institutions have little contact with those who are working with VM in industry [7]. Although, researches have explored the VM in different perspectives, there is a lack of evidences in research on identifying and bridging gap of theory and practice of VM concept in Sri Lankan construction industry. Finding out strategies to overcome from the barriers will pave the way for bridging theory and practice gap. Therefore, it is clear that bridging this gap would provide a great synergy in performing VM in Sri Lankan construction industry.

2. Literature Findings

Literature findings can be addressed according to following sections.

2.1. Importance of VM concept to achieve value for money

Value is a theory, which was discovered in the 19th century and researchers have defined it as a subjective term, as it is not identified in monetary terms [8]. Value concept is the ratio of functional performance to the cost of resources [5]. Construction industry as one of the producers of national wealth, and due to large number of stakeholder involvement and heavy consumption of natural resources, it is a major contributor for sustainable development of both developed and developing countries. In such situation, the managing value of a construction project is very essential. In an effort to achieve value maximisation, many innovative control strategies are termed as best practices, value improving practices and VM which have shown successful results in achieving better performance.

As a systematic, multi-disciplinary and structured methodology, VM aims to improve the value and optimise the life cycle cost of a facility through identifying opportunities to remove unnecessary costs while ensuring the quality, reliability, performance, and other critical factors to meet or exceed the customer’s expectations. VM concept was developed about 50 years ago in manufacturing industry, and those techniques are now extensively used in many disciplines to increase the effectiveness of projects and optimise the through-life costs of products. “The concept of value VM was introduced to compare alternative materials in order to arrive at the one that provides the best function at the lowest possible overall cost” [9]. The differing needs of VM are likely to include aspects such as high quality, good indoor environment, durability, cheaper to maintain, user friendly to name a few. These needs are all part of sustainability objectives [10].

2.2. VM applications in construction industry

VM is becoming quite pervasive in construction industry. This concept was proposed as an appropriate way to enhance the value of projects. According to the findings, application of VM can result cost savings on the project and therefore it is cost effective to apply VM to high cost projects [11]. Further to the author, VM can be applied for projects, which are complex, repetitive, with very restricted budgets and with compressed design programmes.

In construction sector, use of VM at the design stage depends heavily on the initiative of the design team. However, as an advantage of implementing VM in initial stage of a project, the purpose of VM to develop a common understanding of the design problem and to identify explicitly an agreed statement of design objectives by the project stakeholders is become easy.

Australia, UK and USA also used to implement VM concept for construction projects. In Hong Kong, the applications of VM have increasingly been recognised over past 20 years [7]. However, VM
concepts and its applications not seem to be well established in the South-East Asian construction industry [12]. By investigating VM as a means to uplift sustainability issues at the early construction stages, it shall shed light to its possibility and current practices and thus stimulating wider attention to this field in the future [10].

2.3. Theory-practice gap of VM in Sri Lankan construction industry

The VM approach often faces many barriers when applied in many other developing countries. Therefore, further mentioned that in order to facilitate the application of VM, identifying the distinguish factors that hinder the adoption of VMs will help practitioners to assess the barriers that obstruct their application, acceptance and implementation of VM strategies. According to the summary of identified barriers by various authors, the most significant barrier is less awareness of VM and its applications in the construction industry. A resistance to change by the involved parties is the second most significant reason to having barrier of implementing VM in the industry. In addition, barriers such as lack of time to implement VM, lack of experienced VM team members, lack of leadership/less commitment from top management and non-availability of government legislation and policy for VM were highly identified.

There are three major ways in which the “theory-practice gap” framed in the field of management as (a) knowledge transfer gap; (b) philosophical gap; and (c) knowledge production gap [13]. This study used it as a basis for empirical investigation. Bridging theory-practice gap of VM provide new insights to enhance understanding of VM implementation in construction industry. By following up and getting, the knowledge from other developing countries as to how they are successful in application of VM, Sri Lankan construction industry also can successfully implement VM.

3. Research Methodology

This research seeks to address the research problem of "how to bridge VM theory-practice gap in Sri Lankan construction industry". Hence, it was required to identify and determine what the current practices were and what stated in the theory. Due to the lack of availability of VM implemented building construction projects Sri Lanka, drawing a large sample of respondents for the data collection was constrained for the study. Hence, seven case studies under qualitative approach were administered. As data collection techniques, observations, document reviewing and semi-structured interviews were used to collect in-depth information and innovative solutions. The collected data were analysed using code based content analysis technique.

4. Research Findings

The seven cases consisted of two apartment complexes, two hotel projects, one mixed development, laundry complex and viewing gallery. In each case, four VM team members were interviewed and they were Clients, Architects, Engineers, Quantity Surveyors and Project Managers. VM reports of completed projects, VM workshop agendas and important e-mail copies were considered as documents to review. Further, VM applied projects were observed to get further knowledge on its applications. Following sections presents the research findings.

4.1. Knowledge on the concept of value for money

The most frequently highlighted explanation for the term ‘value for money’ in construction industry by the respondents are summarised below.

- Value of the output facility project against its input cost
- Creating value of input resources to the project which contribute for the whole life cycle of the project
- Completing a project at reduced cost without sacrificing any project component
- Getting the best output for client’s money
Hence, it is evident that, most of the respondents have broader idea on what meant by value for money in a construction project.

4.2. Initiator for VM implementation
The initiator to implement VM, depends on the nature of the project and the VM knowledge of each persons or professionals who involve in VM activities of the project. According to findings, VM implementation initiated as employer’s opinion is very low. It was evident that the traditional employers (clients) in Sri Lankan construction industry are not initiating ideas for VM implementation for the projects. Sri Lanka has the culture of implementing VM through contractors change proposals and professionals aware of it. At the situations where VM implementation ideas initiated by the Engineer, it consists of foreign Engineers in many occasions.

4.3. VM team and qualifications
According to respondents’ details, although nobody had formal VM qualification, most of them had previous VM experience. These findings indicated that in Sri Lankan construction industry context, VM is a concept which is new to the industry and no formal path to obtain VM qualification. The most prominent feature identified from all the cases, the VM team for each case were the design team or project team or combination of both team members of the project. But internationally accepted VM team is a separate well-experienced team of professionals who were outsourced to review the design and to generate the best VM solution in front of client and is design or project team. Also no qualified VM facilitators were there and person who had most overall knowledge in the project become in-house VM facilitator to the project.

4.4. Reasons for VM implementations
The reasons for implementing VM for most of the selected building projects were, as a cost cutting technique and to optimise project cost as per client’s budget. The next common reason was to accelerate the project due to delays happened as reasons of other impacts. However, it seems that although VM is a value improvement concept which confirms previous researchers, it has gone to the industry even nowadays as just a cost cutting technique rather than value adding technique.

4.5. Respondents’ VM definitions
When observing the respondents definitions of VM, it seems that most of the respondents have a general idea on VM as a cost management technique without compromising value of the project. However, many of them do not have thorough idea on how it improve sustainability, life cycle and functionality of elements.

4.6. VM application in building projects
The intended purposes of implementing VM for each project are tabulated in Table 1. According to the answers given by the respondents during the interviews, it can be identified that the objectives of VM implementation in each projects were different. However, the most common purpose of having VM in the selected cases was as a cost cutting strategy. Some projects have further identified VM as a strategy to achieve sustainability in construction projects.
Table 1. Objectives of VM implementation

| Case | Value Objectives |
|------|------------------|
| Case A | Controlling the budget overrun, Time saving from VM applied construction activities, Cost optimisation |
| Case B | High performance, Life cycle improvements, Unnecessary cost cutting, Client satisfaction, Functional improvement, Sustainability |
| Case C | Design optimisation as fit to the employer’s budget, Sustainability, Improving function |
| Case D | Quality, Complying with hotel chain standards, Unnecessary cost cutting, Saving huge labour cost, Not affecting to the overall function |
| Case E | Structural stability, Acceleration needed due to time constraints, Fewer issues to the MEP work and durability of material, Convenience of maintenance |
| Case F | To obtain constructability, Sustainability, Cost reduction, Time acceleration for the already delayed phase of work, Quality improvement for the project and could obtain additional spacing, Not disturbing to function of the element |
| Case G | To reduce excessive cost allocated for pile deck ponding, To accelerate the project to complete within allocated time period, To save unnecessary additional cost |

4.7. Theory-Practice gap
The identified practices of VM from case studies in comparing with the theoretical aspects have been summarised in Table 2.

Table 2. VM theory vs practice

| Systematic VM Applications (Theory) | Practice in Sri Lanka |
|-------------------------------------|-----------------------|
| VM team | Outsourced team consist of well experienced professional experts | VM team also the design team or project team |
| VM Facilitator | Highest experienced knowledgeable professional having VM certification, responsible for VM professional body | Person who has the overall idea of the project is in-house VM facilitator |
| VM Standards | Follow standards of conducting VM workshop | No standard follow |
| Documentation | Well planned, clear documentation throughout the process | Less documentation, need is to get in to a solution |
| Responsibility of Decisions | VM team, value specialist taken the responsibility decision but the design responsibility is for the design team | Proposer has responsibility and risk |
| VM benefits | Any benefit can be obtained documented at presentation stage and VM team take responsibility of it | Practically carrying out the proposal no monitoring of achieving benefits |
| Government Intervention | Worldwide, without VM proposal government not release fund to public projects | No such procedure even for government projects |

4.8. Strategies to bridge VM theory-practice gap
Apart from main three types of gaps identified from literature, the respondents suggested many other reasons for lack of VM implementation, which should be addressed properly. Hence, during the first round of the data collection, respondents were asked to identify VM theory-practice gaps and strategies
to bridge the gaps. During the second round, research findings were presented to same respondents and requested them to classify them under (a) knowledge transfer gap; (b) philosophical gap; (c) knowledge production gap and (d) knowledge implementation gaps. The research findings are presented in Table 3.

Table 3. Bridging VM theory-practice gap

| Identified VM gaps | Strategies to bridge VM gap |
|--------------------|-----------------------------|
| **PHILOSOPHICAL GAPS** | |
| VM workshops take time and additional cost | Do proper project planning |
| Difficulty of selecting suitable VM methodology for different construction projects | Develop VM implementation guideline, Improve attitude of the professionals to implement VM |
| VM findings complicated or abstracted to be in practical view | Motivate investors by conducting workshops and seminars on VM, Assist government to develop VM guideline |
| Highly systematic, long procedure and complex installation procedure | Learn how to apply VM theories practically, Do proper project planning |
| **KNOWLEDGE PRODUCTION GAPS** | |
| Lack of a practical guidance block | Conduct tailor made mock up VM workshops |
| Lack of government policy and less motivation to implement VM | Motivate investors by conducting workshops and seminars on VM, Supports implementation by funding selected projects |
| Lack of qualified VM facilitators | Introduce value certificate courses and higher studies on VM |
| Research-knowledge not being practical | Arrange meet up sessions to share research knowledge to industry and industry issues for researches |
| Prevailing condition of contract and procurement methods not support to VM application | Submit alternative bid with VM proposal, Obtain contractors knowledge in pre-contract stage, Select suitable procurement method to apply VM, Give opportunity for contractors to propose ideas in tendering |
| **KNOWLEDGE-TRANSFERRING GAPS** | |
| Client's negative perception due to unawareness of VM benefits | Advise clients on importance of implementing VM, Motivate investors by conducting workshops and seminars on VM, Supports VM implementation by funding selected projects |
| Wrong VM practices due to no experience in VM | Govern VM knowledge sharing and controlling, Collaborate with contracting and consulting organisations when implementing VM, Conduct tailor made mock up VM workshop, Develop VM implementation guideline |
| Less commitment from top management to implement VM | Motivate employees to learn VM, Adjust organisation structure to suit VM implementation |
| The awareness of VM and its application in the construction industry is low | Collaborate with contracting and consulting organisations when implementing, Conduct tailor made mock up VM workshops, Govern VM knowledge sharing and controlling, Develop VM implementation guideline |
| Lack of communication with overseas VM practitioners | Bring foreign experts to train Sri Lankan construction professionals |
| Poor knowledge transformation from researcher to industry | Arrange meet up sessions to share research knowledge to industry and industry issues for researches |
5. Discussion and conclusions

VM which has been globally implemented to gain a lot of savings and benefits. However, in Sri Lankan construction industry, it is evident that the application of VM is lacking. Bridging the theory-practice gap of VM derived as requirement based on these circumstances, which mainly contributes to economy of the country in order to achieve sustainable construction.

VM is a value enhancement strategy. The case study findings also revealed that they have used VM to achieve various VM objectives mainly contribute to the sustainability of building such as energy efficiency, minimise waste, visual effects, low running cost, user comfort, selecting sustainable materials, determining elements or theme of design and choice of construction whilst delivering accountability and excellence in social and environmental performance. However, the idea of VM had not gone to Sri Lankan construction industry because the respondent’s main idea on VM was to cut down the cost of an element which shows VM gap.

Almost all the projects had achieved sustainability because of VM implementation to achieve another objective. The respondents highlighted that, if systematic VM process carried out, the outcome of VM implementation would be better than current situation. The other most prominent finding was although most popular VM job plan in the construction industry is SAVE 40-hour workshop, Sri Lankan construction industry is more familiar with “contractors change proposal” than other methodologies. The main reason for behind it is FIDIC and Standard Bidding Document (SBD) provide a provision for contractors change proposals. However, findings revealed that there are number of theory-practice gaps in VM application in Sri Lankan construction industry, which de-motivate proper VM implementation. It was identified four categories of gaps such as philosophical gap, knowledge transfer gap, knowledge production gap and knowledge implementation gap. The study further identified tight work schedules and ego of professionals as key reasons behind knowledge implementation gap, which is the most significant factor that hamper the successful implementation of VM in construction projects. Hence, the
implementation of VM in Sri Lankan construction sector is far from theoretical and standard VM practices.

The strategies were proposed by respondents according to their VM experience. The key strategies to bridge the VM theory-practice gap are train in-house VM facilitators, proper project planning, motivate investors, train Sri Lankan professionals by foreign experts and govern VM knowledge sharing. Hence, the present study recommends that VM should be properly and systematically initiated in Sri Lankan construction industry by bridging existing gaps of theory-practice through the strategies in order to deliver value for client’s money and ultimately achieve the sustainability.

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