

# A Cross-Sectional Analysis of the Application Sustainability and Current Practices of Value Management at the Briefing Stage

Ibrahim I. Falqi, Abdullah M. Alshehri

**Abstract:** *The value management concept is becoming increasingly relevant to the construction industry in Saudi Arabia. The aim of this study to analyse the technical knowledge of value management practitioners concerning the sustainability aspects and its implementation all over the country. A quantitative research design used to analyse the application of value management among stakeholders associated with construction projects. The results shown that 10% of consultants and 8% of the contractors were having a useful application of value management; while, 4% consultants and 6% contractors have full maturity of the value management application. The findings have shown that unqualified individuals (24%), lack of client's experience (24%) and not part of the project (17%) are the main reasons behind the restriction of value management implementation. Despite the implications of value management is extensive in developed and developing countries, the Saudi construction industry needs to increase the level of application of value management.*

**Keywords:** *Application Sustainability; Briefing Stage; Cross-Sectional Analysis; Practices; Value Management.*

## I. INTRODUCTION

A significant imbalance within the existing natural resources has been resulted due to excessive economic development in gulf countries. The robust prices of oil and ongoing reforms within the state have caused construction affluent in Saudi Arabia. However, some of the significant government activities and various construction projects have encouraged this affluent. The construction industry is among the most significant and important sectors that serve a country's economic growth [1]. The construction industry is the engine of a country's development and generates a flow of services and goods with other sectors [2]. The rapid economic development and ignorance of sustainable construction have resulted in increased consumption of energy, water, and other resources [3]. The principles and techniques associated with value management tend to provide the best value concerning an entire life perspective. Recently, the majority of the developing countries have been experiencing fast uptake of urbanization and accelerated the development of infrastructure. The issues, concerning economic progression, conservation of natural resources and promotion of social

equity, tend to minimize the negative impacts [4]. These effects are likely to improve the environment to guarantee a better quality of life.

According to Al-Yami and Price [5], value management can be defined as a structured method to eliminate waste from the brief before making up of the binding commitments. The briefing stage is considered as a significant step within the process of designing, where the needs of clients are identified and fulfilled. The stakeholders demand sustainability within the construction projects in terms of three aspects, including economic, social, and environmental needs. The negative impacts on the environment are likely to be minimized after considering sustainable construction during the briefing stage [5]. It results in the satisfaction of user's need along with minimized project costing. The integration of sustainability principles upgrades the competitiveness of value management in terms of realizing the value of money [6].

Previously, few studies have been conducted to explore value management during the briefing stage of construction projects. For instance, Al-Yami et al., [3] and Al-Yami and Price [5] have implemented sustainable construction project in the briefing stage and argued that dearth of concentration given to the sustainable values costed into higher materials consumption during the briefing stage. Yu et al., [7] argued that it lacks a formal assessment of needs and requirements of a client during the briefing stage of construction projects. Alalshikh and Male [8] asserted that value management practices should be implemented in different stages of construction projects, but it should be intervened in earlier phases to pose a significant advantage on the project's outcome.

This study allows exploring application sustainability and practices of value management since limited evidence is accessible regarding value management implementation during the briefing stage in the context of Saudi Arabia. In particular, the implementation of value management reveals cost reduction opportunities, if implemented in the earlier phases of construction projects. The requirements of the client can be refined with the involvement of all stakeholders during the briefing phase. Thereby, the application of value management practices will provide maximum potential in

achieving forecasted outcomes based on clients' requirements. The study aims to analyse the technical knowledge of value management practitioners in regard to the sustainability aspects and implementing it all over the country.

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There for research question of this study, what is the current situation of value management in terms of its application within the Saudi construction industry?

### II. LITERATURE REVIEW

Suhaimi [9] has focused on the improvement of construction processes in the identification, evaluation, and briefing stage of projects. Multiple case studies approach has been used including 25 interviews to fulfil the objective. The data was analyzed using statistical and content analysis from the fieldwork exercises. The findings have shown the minimal influence of value management during the design process and briefing process in the construction industry. Similarly, the findings have shown that the implementation of value management practices in the briefing stage maximizes the diversity of visualization aids, specific cultural dimensions, system thinking approach, and variation of interaction. Thereby, the study recommends an effective implementation of value management practices in the briefing process of construction projects. Similar to this, another study conducted by Olawumi et al., [10] explored the application sustainability of value management in different phases of construction projects. The study has signified the importance of application sustainability of value management in the construction projects specifically in the briefing stage. However, the study has reported few barriers; such as lack of regulatory frameworks, insufficient training and education, and the unwillingness to entertain new ideas. These barriers restrict to achieve sustainable outcomes of value management in the briefing stage. The study has recommended the establishment of a support system, the client's awareness, and the establishment of a regulatory framework to obtain significant outcomes of value management in the briefing stage.

The potential risks between the design team and clients in the briefing stages have been investigated by Yurtsever [11]. The study has used a case study approach and conducted 30 interviews with the client and design team. The study has identified budget problems, insufficient qualifications, weak site study, unawareness of client about the construction project, inopportune variation, and misinterpretation of client's requirements as major risks in the briefing stage. An expert system shell is developed by the design team to control the impact of these risks in the briefing stage. Thereby, the study has recommended that the system developed can be beneficial in reducing the impact of potential risks. On the other hand, Bal et al., [12] systematically explored the significance of stakeholders' involvement with respect to high salience sustainability. Interviews were conducted from the practitioners based on different phases of briefing stage including identification, managing, putting targets into action, and measuring performance. The findings have indicated that key performance indicators are used to measure different sustainability agendas of stakeholders. Moreover, findings have indicated that sustainability-related goals are achieved through important phases of the briefing stage.

Khodeir and Ghandourb [13] examined VM's role in controlling overrun costs, with particular reference to Egypt's residential projects. The findings in this study demonstrated

the value-added from applying methodologies of VM, where it was observed that 15–40 per cent of the total cost of the project could be saved. The survey questionnaire findings also supported this result. Where the results of the survey showed that applying value management in residential construction projects has a high impact on residential projects in particular cost reduction.

Olatokun and Pathirage [14] examined the importance and potential barriers of knowledge during the briefing process. A systematic literature review has been included to examine the specific objective. The study examined that pre-design stage is an essential phase during the briefing stage, while time, quality, and cost are important for construction projects during the briefing process. Similarly, the study examined that insufficient concentration and focused on deterring the implementation of sustainable value management during the briefing stage. Isa et al., [15] identified the facilities management function, implemented in construction projects. A systematic literature review has been conducted to explore the advantages and constraints of facilities management in value management practices of construction projects. The findings have shown the importance of facilities management functions in a construction project by improving product, project and service value. Thereby, the study has recommended that a greater extent of accuracy should be established through appropriate data and information on facilities management in construction projects.

Karunasena et al., [16] have investigated the importance of sustainability concepts integrity in the value planning to attract client and mitigate the impact of unnecessary costs. The study conducted a thematic analysis by including 16 semi-structured interviews from expert stakeholders of the construction company. The findings have shown a better knowledge of value management practices in the construction industry during the briefing stage. Similarly, the study examined that experience and application of value management sustainability is not effective during the briefing stage. Thereby, the study has recommended that a framework should be developed based on sustainability concepts and practices in construction projects. Emmanuel et al., [17] evaluated the implementation of value management practices in delivering sustainability among construction projects. The study has included a case study approach to reveal the economic sustainability of construction based on value management practices. The findings have shown that the goal of value management and economic sustainability is to achieve value for money and to reduce the entire budget of the company. Similarly, the study has evaluated that economic sustainability removes unnecessary materials and maintains functions through value management practices. Thereby, the study has recommended that sustainable construction development can be improved through effective implementation of value management in construction projects.

A mixed-evidence is revealed from the studies discussed above regarding the sustainability and practices of value management in the construction projects.

Indeed, the application of value management in construction projects is supported at a higher level. However, several factors have been highlighted that restricts its implementation specifically during the briefing stage. Lack of awareness and information among clients and project managers are critical factors argued in the studies mentioned above. Thereby, this study attempts to explore the application sustainability and practices of value management in construction projects during the briefing stage.

### III. RESEARCH METHODOLOGY

#### A. Research Design

A quantitative research design is used to explore the application of sustainability and value management practices in the construction project during the briefing stage. A non-probabilistic sampling technique is used to target the study population.

#### B. Sample Size

A total of 500 construction organisations were approached in the industry and included in the data collection process of the study. These organisations were included due to their firm awareness and comprehensive values implemented in construction projects.

#### C. Data Collection

A postal questionnaire has been structured to perform the data collection process from 500 construction organisations. The selection of postal questionnaire is made due to difficulties in finding the right emails of the targeted people in the participated companies. This approach is beneficial in obtaining opinions, facts, and views from a wide cross-section of respondents in the study.

#### D. Instruments and Measures

The questionnaire is structured according to the level of respondents' knowledge and practicing of value management on the briefing stage. The postal questionnaire is divided into two different sections; (1) level and application of value management, and (2) current practice of value management at the briefing stage. The questionnaire was structured in the close-ended format (Appendix A).

#### E. Data Analysis

A statistical package for social sciences (SPSS) is used to analyze the data through its frequency analysis function. Moreover, the graphical representation is also provided to illustrate the analysis comprehensively.

### IV. RESULTS

#### A. Level of Application of Value Management

The level of application of value management is moderate among contractors and consultants. The findings have indicated that participants were reluctant to implement value management due to lack of awareness (Table 1). The results have shown that 10% of consultants and 8% of contractors were having useful application of value management while 4% consultants and 6% contractors have full maturity of value management application (Figure 1).

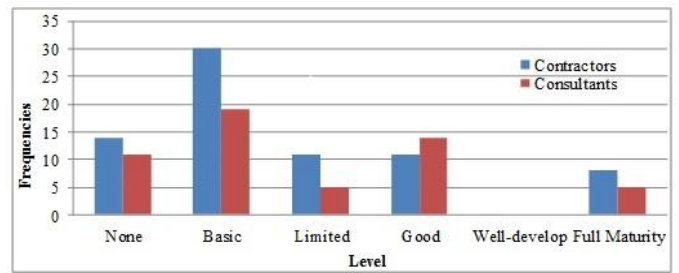


Figure 1: Level of Application of VM

Table 1: Level of Application (%)

	None	Basic	Limited	Good	Well-develop	Full Maturity
<b>Contractors</b>	14 (10%)	30 (22%)	11 (8%)	11 (8%)	0 (0%)	8 (6%)
<b>Consultants</b>	11 (8%)	19 (14%)	5 (4%)	14 (10%)	0 (0%)	5 (4%)
<b>Total</b>	25 (18%)	49 (36%)	16 (12%)	25 (18%)	0 (0%)	13 (10%)

Table 2: Reasons for not applying VM

	Unqualified individuals	Not Part of the project	Lack of clients' experience	Other reason/ No Answer
<b>Contractors</b>	20 (16%)	12 (9%)	15 (12%)	28 (22%)
<b>Consultants</b>	10 (8%)	10 (8%)	15 (12%)	17 (13%)
<b>Total</b>	30 (24%)	22 (17%)	30 (24%)	45 (35%)

Table 2 has shown the reasons for not applying value management. The findings have shown that unqualified individuals (24%), lack of client's experience (24%) and not part of the project (17%) are the main reasons behind the value management implementation. Furthermore, 35% have not answered the question, indicating a lack of awareness toward the value management.

Table 3: Application of VM at the Briefing Stage

Question	Factors	Frequency (%)	
		Yes	No
1	Time performing value management	70%	30%
2	Formal briefing procedure	37%	51%
3	Briefing procedure used clearly for client's requirements	30%	70%
4	Engage facilitator in VM workshops	49%	51%
5	Active involvement	53%	47%
6	Face problems in understanding the client requirements	40%	60%
7	Lack of comprehensive framework or lack of identification of the client	36%	64%
8	Lack of experience and knowledge	63%	37%
9	Good interaction in understanding the clients	36%	63%

Respondents were asked about the factors that allow the implementation of value management in the construction industry. Table 3 shows the factors that directly contribute to the implementation of value management.

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From the findings, it has been indicated that time performing value management (70%) is one of the most influencing factors for value management implementation. Similarly, active involvement (53%), engage facilitator in VM workshops (49%), and face problems in understanding the client requirements (40%) are other influential factors in the implementation of value management. In contrast, formal briefing procedure (37%), lack of comprehensive framework or lack of identification of the client (36%), and briefing procedure used clearly for client's requirements are other moderating factors.

### V. DISCUSSION

The results have clearly shown that the level of application of value management is moderate among contractors and consultants at the briefing stage. In addition, the findings have shown resistance in the implementation of value management practices in the construction industry as well as some influencing factors that allow the implementation of value management in the construction industry. The findings are in-line with the findings of Surlan et al., [18] who indicated the implications of value management workshops and critical success factors in instigating local experience on the international construction projects. The study has supported the findings of the current study that there is an immediate need for increasing the awareness of value management among stakeholders. In the context of factors that restrict the adoption of VM, the findings of Kim et al., [19] support the findings of current study, indicating that lack of qualified personnel, inherent difficulties, lack of VM application documents, and lack of awareness of VM are barriers to the application of value management. Thereby, the study recommends adopting effective techniques to overcome the problems concerning the application of VM in the construction industry.

Hu et al., [20] have identified that selection of methods, use of derivational analogy, automated implementation and reuse of case outcomes are important issues that restrict applying the value management. Thereby, the study has suggested implementing a comprehensive awareness of the development of value management. Similarly, Morad and El-Sayegh [21] have asserted that the application of value management in the UAE construction industry is 53%. The implications of value management in the UAE construction industry is entirely based on dealing with cost control systems. Moreover, the study has shown the willingness of the UAE construction industry in implementing value management to increase the project outcomes. Keng and Shahdan [22] revealed low awareness of contractors for the value management adoption in the construction industry. The findings are in-line with the findings of the current study, emphasizing the need to increase the awareness level among stakeholders. Moreover, the study has recommended that efforts are required to improve the awareness and increase the level of application on value management among the stakeholders associated with the construction industry.

Aigbavboa et al., [23] have shown the implications of value management in enhancing the construction project performance. Moreover, the findings have indicated that team

structure, organized orientation meetings, and appropriate selection of team members are important to familiarize stakeholders with VM. Similarly, the study has shown that value management strives its full implementation and adoption for the construction industry to accomplish the best value for construction clients at the lowest complete life cycle project costs. Shahu [24] has shown that flexibility is modelled to increase the advantage of construction projects in future events. The additional cost of flexibility and discount in the initial design phase is achieved due to the flexible building structures, comprising assorted attributes of flexible building structures. Ncube and Rwelamila [25] have shown a lack of awareness to value management, and the application of value management is also minimal among stakeholders. Additionally, the study has shown that a critical role is being played by value management in the construction industry. The regulatory bodies have embraced value management and developed a professional environment in the construction industry.

### VI. CONCLUSIONS

The study aimed to analyze the technical knowledge of value management practitioners in regard to the sustainability aspects and its implementation all over the country. In addition, the study has aimed to determine the current situation of value management in terms of its application within the Saudi construction industry in the briefing stage. The study has concluded that the application of value management is moderate at the briefing stage. Furthermore, the study has found critical and influential factors restricting and allowing the adoption of value management in the construction industry. Despite the implications of value management is extensive in developed and developing countries, the Saudi construction industry needs to increase the level of application of value management. This study is valuable for practitioners and contractors to increase the awareness of value management among employees associated with construction projects to enhance their outcomes.

### APPENDIX A

#### Questionnaire

##### Section 1: Level and Application of Value Management

**Question 1:** Which of the following value management maturity levels best describes your organization? (Please indicate only one.)

##### None

No awareness of the benefits of value management for construction projects.

##### Basic

An awareness of the benefits of value management for construction projects.

##### Limited

- Developing value management strategy and a working definition of what needs to be established
- Appoint responsible persons for implementation

##### Well develop

- Value management integration with project management studies

- Greater emphasis on initiating value management in company

#### Full mature

- Sustaining performance of value management metrics
- Value management is part of organization policy and normal process.

**Question 2:** If your organization do not apply value management, what are the reasons you would give for this?

- There are no enough qualified persons
- It is not part of the projects procedure
- Lack of the client experience to express his needs
- Other reasons

#### Section 2: Current Practice at Briefing Stage

**Question 1:** Do you think that spending time performing value management studies during the project briefing stage is critically important to successful delivery of your projects?

Yes () No ()

**Question 2:** Do you have a formal briefing procedure to set out the briefing process in a structured way?

Yes () No ()

**Question 3:** If yes, what is the plan of the briefing process that you normally use?

- International SAVE
- RIBA plan of work
- BS 6079 Project Management
- None of the above
- Others (Please Specify)

**Question 4:** Did the briefing procedure used clearly to identify, clarify and represent the client requirements once completed?

Yes () No ()

**Question 5:** Do you engage a facilitator in your value management workshops and meetings?

Yes () No ()

**Question 6:** During value management workshops, is the briefing team actively involved in defining client requirements?

Yes () No ()

**Question 7:** Do you think there are major limitations with the briefing process such as lack of a comprehensive framework of a lack of identification of the client requirements?

Yes () No ()

**Question 8:** Do you agree that the clients' lack of experience and knowledge are reasons not to understand the client requirements?

Yes () No ()

**Question 9:** The clients and the designers need to have a good interaction in understanding the client needs to translate the brief into design. Do you often encounter problems in communication between the clients and the designs team?

Yes () No ()

#### Conflict of Interest

The author declares no conflict of interest.

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