

THE IMPLEMENTATION OF VALUE MANAGEMENT IN MALAYSIAN CONSTRUCTION INDUSTRY: PRIVATE SECTORS' PERCEPTIONS

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ABSTRACT

Value Management (VM) is widely recognized as an important tool in construction project management. However, the application of VM in the Malaysian construction industry has been relatively low because construction professionals are vaguely familiar with VM and often has the wrong perception towards VM. There are issues on receptiveness among clients to implement VM in their construction projects, as they do not realize the benefits of this practice and value-adding service to the clients. Therefore, this paper aims to understand the perception toward VM in private projects in Malaysian construction industry. This paper presents the studies of value methodologies, the advantages of applying VM to construction projects, the challenges that hinder the implementation of VM in private sector projects and proposed strategies to encourage the implementation of VM in Malaysian construction industry to improve the overall growth of the economic sector. This study was limited to the views expressed by employees working with developers in Klang Valley only. The outcome of this study showed that Malaysia is moving steadily towards the implementation of VM among developers in order to increase the value of their projects. The findings on beneficial impacts on VM implementation showed that by practicing VM in construction projects provides the value for money, eliminates unnecessary costs, recognizes good quality end product, allows early identification of problems and the exploration of alternative solutions. Besides, the lack of support from authorities, lack of knowledge and practice on VM, resistance to change from consultant and time constraint remains the most impeding challenges in the implementation of VM. Ultimately, the significant findings from this research allow the raise of awareness of developers on the application of VM to increase the uptake of VM to a larger scale in the Malaysian construction industry.

Key words: Value Management, Malaysian construction industry, challenges, advantages, strategies

1. INTRODUCTION

VM defined by Institute of Value Management, U.K (IVM) as a structured, systematic, value and function orientated approach that identify the project requirement to attain maximum function for minimum cost. VM is a combination of planning tools and method for determine and sustaining desirable balance between project costs and risk (IVM, 2020).

VM was a technique developed by Lawrence Miles back in the 1940s, since then this technique has been widely perceived from many sectors of the construction industry across the world (Fong & Shen 2000). VM is an organized, systematic, multidisciplinary approach in decision-making process directed towards analysing the function of a project for the purpose of providing better value for money in project to clients' investment (Saifulnizam et al., 2011). It can be applied to any type of project, irrespective of size

or timeframe and at all stages of the project's life cycle from beginning to completion (OCG, 2007). In addition, VM has been adopted to deal with challenges such as budget constraints, safety issues and environmental impact. More importantly, VM is used to achieve value for money, as VM can reduce unnecessary costs while maintaining or even improving a project's performance concurrently (Lin & Shen, 2006).

VM was introduced in Malaysia over 3 decades ago. Jaapar (2006) stated that VM is still in the early stages of its evolution since it had only begun to be adopted in 1986 and was without the government support. Consequently, the Malaysian government has recognized the importance of VM to the construction industry in order to keep up with international practice and long-term sustainable growth. In 2009, Value Management Circular 3/2009 has been authorized by Economic Planning Unit (EPU), all government projects that exceed RM50 million has been made mandatory to implement VM studies (Jaapar et al., 2012). With the establishment of the Institute of Value Management in Malaysia (IVMM) on 9 October 2001, VM was also highlighted with the support and encouragement of government agencies such the Professional Service and Development Corporation (PSDC) (Saifulnizam & Vaughan, 2010). Since then, the usage of this technique has increased among public projects after the initiative taken by the government to urge the implementation of VM. Ahmad (2011) stated that 71 public projects that applied VM had shown 23.53% in cost-saving over the total construction cost.

However, the development of VM in private projects is still passive. In Jaapar et al. (2009) research, the majority (51%) of the respondents did not practise VM in their work environment and most of the organizations had no experience in any VM workshops despite 99% of them agreed that VM is significant to the construction industry. Their research further reported that the lack of knowledge among the respondents are the primary reason in limiting the application of VM in private projects. Fong and Shen (2000) also stated that the development of VM is slow due to the lack of understanding and utilization towards VM studies, along with false perceptions of VM which persist in the client's mind and construction professionals. Therefore, this research will focus towards the perceptions of private sector developers on the implementation of VM, potential benefits, challenges faced in implementing VM and the strategies to address these challenges.

2. PROBLEM STATEMENT

VM has been acknowledged as an evolving concept that focuses on continuously increasing the value of money and universally accepted as an effective tool in the recent construction project management (Ellis et al., 2005). Many countries such as the United States of America, United Kingdom, Australia, Japan, and Singapore have successfully adopted VM in the construction industry. However, the concepts and applications of VM do not appear to be well embraced in the majority of developing countries' construction sector (Kim et al., 2016). In Malaysia, Jaapar (2009) and Che Mat (1999) stated that the application of VM is still in the infancy stage and has not been well accepted. According to Maznan et al. (2012), one of the challenges in implementing VM was the perception towards VM among private sector's projects. Many people had the wrong interpretation of VM as a cost-cutting tool, hence it does not take quality into consideration. Some of the people even confuse that VM is a cost reduction exercise even though the purpose of both concepts is entirely different.

Besides, the attitude of the design team towards the involvement of VM workshops has been one of the challenges that hinder the implementation of VM. Architects and designers often get the wrong idea that VM is an unprofessional effort and tends to pass judgment on the designer's integrity and capability (Dell' Isolla, 1975 as cited by Ng, 2006). Cheah and Ting (2005) have also identified that time constraint is a key challenge that hinder the application of VM. Key parties that are involved in projects often face time constraints to attend VM workshops as they are always occupied with their work with a tight schedule. Moreover, the government has only enforced mandatory implementation of VM to all public projects but not to all construction projects. Therefore, the private sector is facing the lack of support towards the VM and the project team may find that it is not necessary to implement VM in private projects (Thien & Sam, 2016).

Various studies have been carried out to determine the implementation of VM in Malaysian construction industry. However, there is a lack of focus on the challenges and strategic measures towards the application of VM among private sectors from developer's perception. Hence, this paper serves the purpose to fill up the literature gaps and the research objectives are (1) identifying the advantages towards VM concept; (2) determining the challenges faced in implementing VM; and (3) suggesting practical approaches to raise the awareness on the application of VM in order to increase the uptake of VM in private construction projects.

3. LITERATURE REVIEW

VM has been recognized as a beneficial and effective management tool that leads to significant savings leading to achieve better value and functionality towards the completed construction projects (Jaapar, 2008). Below are some of the significant benefits being highlighted by past researchers.

3.1.1 Achieving the value for money

One of the most evident benefits of VM is achieving the value for money in a project to clients' investment. VM has also been listed at one of the ten "key success factors" by the Royal Institution of Chartered Surveyors (RICS) which is to improve value for money (Kissi et al., 2015). Value for money can be defined as the client's satisfaction in achieving their project's objective (Olatunji et al., 2017). According to Pinto and Venkataraman (2013), VM allows stakeholders to achieve value for their money by striking the optimum balance between cost and functional performance. Thus, offers an optimal solution for project stakeholders. VM ensures that project requirements are always verified and supported with data and the goals of the project are clearly defined.

Saifulnizam and Coffery (2010) noted that VM application can be considered as one of the problem-solving tools in achieving the 'best value' for money through decision-making process which was conducted by the project team. In addition, Yu (2007) mentioned that project cost savings are one of the matters in achieving the value for money. She further explained that a relatively well-administered VM program can be expected to obtain cost savings in the range of 5-10 % of the total project cost.

1.1.2 Elimination of unnecessary cost

The most obvious benefits resulting from the implementation of VM are the reduction of unnecessary costs which may be conducted during the project design and execution stage. VM offers a method of evaluating value, considering monetary and non-monetary benefits and shows that value for money can be achieved. VM identifies the elements that are redundant in a project and provide alternative solutions that perform the same function at lowest possible cost, without compromising quality, image, safety and functional performance (Flanagan & Jewell, 2005; Olawumi et al., 2016). Che Mat (2010) stated an appropriate timing to take up VM study should be at the early start of the project. With this approach, it will increase the potential of cost reduction to the maximum level and remove unnecessary costs that are not beneficial to the project design. It also minimizes the possibility of technical and operational deficiencies of the building project. Thus, prolonging the building life and reducing the maintenance cost can be achieved.

3.1.3 Early Identification of Problem in Project

The VM concept provides an authoritative review of the total process and project activities. It allows the identification of the possibility of problems occurring in the early stage of projects' development. This is because the stakeholders can critically analyse the issue during VM workshop and to ensure that the appropriate solutions are made; subsequently increasing value gained for the project. This is particularly evident when applied during the initial design stage where the ability to influence the final project outcome which can be performed before the project progresses toward the design development stage (Olawumi et al., 2016). Thus, proper implementation of VM during the early stages is therefore strongly recommended, as the possibility of the problems can be identified and resolved (Khodeir & El Ghandour, 2019). By adopting a VM approach, project teams are able to plan the design at every construction phase. This approach would allow project teams to anticipate risks and changes beforehand. As a result, the early planning of work will provide the opportunity to address the problem with appropriate solutions and reduce the chances of encountering problems such as cost overrun and delay during the post contract stage.

3.1.4 Enhancement of quality

Fong (2012) indicated that one of VM hallmarks is to constantly focus on quality of the project delivery. According to Davis (2004), quality is an essential component in the value equation and quality must be delivered to the owner in order to appreciate the potential project values. VM provides the platform for evaluation and analysis of ideas, stakeholders evaluate the idea obtained from the creativity phase by proposing pros and cons approach to ensure that the best quality is chosen according to the client's requirement.

3.1.5 Better teamwork throughout the project

VM is a continuous process that involves the whole project team to regularly review and evaluate throughout the project against the client needs. One of the benefits of the VM approach is to set up better teamwork throughout the project. According to Che Mat (2010), conventionally, clients, project managers, architects, engineers, and quantity surveyors appear to produce fragmented efforts in the proposed projects. Oftentimes, the parties tend to work in 'silos' when involved in project planning and design development. VM offers a very effective tool for integrating this diversity discipline and directing them towards a common goal. VM practice also promotes the involvement and contribution among the team members. Cross-functional discussions and suggestions contributed by team members during the creative phase will enhance communication among the project team with better understanding of the project's objective. This also allows the establishment of a bond between team members to enhance communication by developing multidisciplinary teamwork. The conventional approach vs VM approach is illustrated in Figure 1.

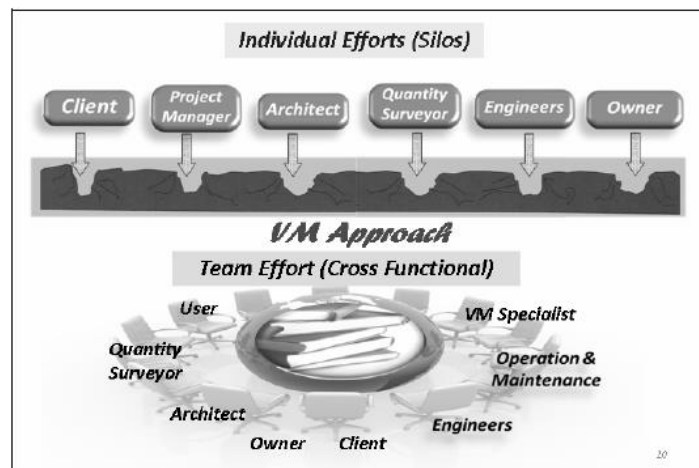


Figure 1. Conventional approach vs VM approach (Source: Che Mat, 2010)

3.2 Challenges in Implementing Value Management

VM has been frequently used to tackle the problems arising from the construction industry. However, it has also encountered resistance within the private sector, this has led to the challenges that limit the implementation of VM in the construction industry especially for private projects. Many researchers have identified the challenges based on their study; the following shows the influential factors which will affect the practice and implementation of the VM in the construction industry.

3.2.1 Lack of knowledge and practice on VM

In Jaapar et al. (2009) research, they highlighted one of the important challenges faced in implementing VM which is lack of knowledge and practice on VM in the construction industry. This statement was reinforced by Maznan et al. (2012). In their research, they mentioned that the lack of knowledge and disclosure on VM play a part in implementation of VM in the construction industry. The lack of closure on VM has bought up false perception towards VM among private sector's consultants. There is a wrong interpretation of VM as a cost-cutting tool in reducing the construction cost by professional parties on behalf of the clients. Jaapar and Abdul Karim (2005) mentioned that construction professionals might be confused about VM as a cost reduction exercise. In previous research done by M. Zainuddin (2002) found that only less than 10 percent of Malaysia's construction firms had applied VM study due to the lack of knowledge.

Besides, the lack of knowledge on VM has caused hindrance to the application of VM in Vietnam. Kim et al. (2016) stated that minimal knowledge on VM has caused disregard for the existence of VM by practitioners. Without the requisite knowledge and recognition on the advantages of VM, practitioners tend to pursue conventional methodologies. Thus, it is more unlikely for clients to request their consultants to adopt VM practices in their projects.

3.2.2 Lack of qualified professionals

Li and Ma (2012) and Sabiu and Agarwal (2016) identified the lack of VM experts as one of the major obstacles in promoting the application of VM. In fact, according to Jaapar et al. (2009), the percentage of professionals who undertake formal training on VM was as low as 14% and most of them only completed an introductory course but not Module 2 in VM training. This statement was aligned with Kim et al. (2016) findings. Their study found that the lack of VM experts has the primary hindrance in the Vietnam construction industry. The lack of qualified professionals in VM such as VM experts, a professional VM team and adequate human resources are the key obstacles that hinder the application of VM in the construction sector. The absence of an incompetent VM team implies that the construction personnel must be appropriately trained with requisite knowledge and necessary skills if VM was to be successfully implemented. Without the extensive knowledge of a qualified professional, VM workshops will not be conducted accurately and according to the guideline. This will eventually cause problems to the whole construction industry which involves more cost in rectifying mistakes.

3.2.3 Defensive attitude of design team

According to Che Mat (1999), the attitude of the designing team is one of the issues that need to be overcome to ensure the acceptance of the VM approach in the construction industry. This statement was agreed by Ng (2006) and Liu and Shen (2005), both of their studies have identified the attitude of the design team as an obstacle in the application of VM. Maznan et al. (2012) mentioned that the resistance to change from the design team has caused reluctance to join VM workshop. For instance, architects often have the wrong mindset that VM studies are to criticism towards their capability, seeking faults and flaws in their design instead of enhancement towards their design. Ma and Tam (2013) reported that the designer's unwillingness to change his / her design to carry out additional work often leads to failure of cost savings. Moreover, if VM study is initiated late in the design

process, the costs of redesign would be greater than the cost of savings. Fong and Shen (2000) stated that strict disparities between design and construction have caused confrontational attitudes between design and construction teams. Hence, it leads to a lack of cooperation and professional barriers which contributes to hinder the adoption of VM.

3.2.4 Time constraint in implementing VM

Cheah and Ting (2005) have listed “lack of time for VM implementation” as a serious impediment to the application of VM. Abidin and Jaapar (2010) have also identified ‘insufficient time to carry out the workshop’ as the most crucial factor affecting VM application. Kelly and Male (2001) mentioned that insufficient allocation of time to attend VM workshops has undermined the effectiveness of this methodology. In the construction industry, construction professionals are constantly occupied with a heavy workload. It is difficult to set the work aside to join for training and workshop in order to enhance their knowledge and experience. Thus, time constraint to implement VM shall remain as one of the challenges in implementing VM.

3.2.5 Lack of support from parties such as authorities and project owners

A finding obtained from Ng (2006) research showed that the lack of support from parties such as authorities and project owners is one of the critical factors that hinder its implementation. He stated that the government did not take the first step in performing and promoting the new method. Although the release of “Value Management Guidelines Guideline Circular 3/2009” by EPU has increased the adoption of VM in the construction sector, however, private sector’s project owners do not seem to have interest and may find it unnecessary in carrying out VM for their project (Thien & Sam, 2016). Moreover, most of the information related to VM workshops is highly classified and thus the benefits offered by the practice have not been made to the public (Abidin & Jaapar, 2010). Hence, clients and other stakeholders have no way of knowing VM approach which can be favourable to their projects.

Lin and Shen (2006) also declared that VM is rarely practised due to the lack of rigorous models and frameworks in performance measurements. Clients have no way of verifying whether their investments in VM studies produced adequate returns. It is also difficult to determine what improvements can be made to obtain more advantages from VM studies. Consequently, some organizations could hesitate to continue the practice of VM whereas many others are reluctant to adopt it in the future.

3.3 Strategies to improve the implementation of Value Management

It is important to investigate the strategies to address the issues and challenges faced by the construction industry. This will increase the chances of adopting VM technique by construction professionals. Below are some of the practical approaches discovered by various researchers to improve VM practice.

3.3.1 Clarifying the client’s perceptions of VM

Kim et al. (2016) argued that the only way to encourage the acceptance of VM and to resolve the resistance to its application is to obtain the client’s support and active participation. Kissi et al. (2015) stated that clarity is an effective tool for breaking the existing perception of VM. It can be used to persuade stakeholders to adopt enhancement and developed problem-solving techniques such as VM. Nonetheless, the misconceptions such as VM is just a cost-cutting tool, VM is a judgement to designer’s integrity and high implementation cost should all be repulsed. Al-Yami (2008) suggests that, by considering both internal and external requirements, VM should be a medium for addressing the most difficult features associated with achieving the best value for money in a project. Essentially this would provide all stakeholders with the efficient use of resources to achieve their goals.

3.3.2 Synchronizing client’s expectation with VM’s outcome

One of the critical success factors for VM as identified by Shen and Liu (2003) is the uncluttered objectives by the client. The objective of VM study is often set by the client, which makes the client a key influence in the decision-making process. Woodhead and Downs (2001) as cited in Abidin (2005) stated that some clients were dissatisfied with VM because the result did not meet their expectation. They also notice that clients often overestimate the potential of VM due to the minimal knowledge on the VM concept. Oftentimes, clients tend to assume that VM will offer a reduction in project cost but that is not always the case. It is therefore important to rationalize client expectations on the outcome of VM in order to prevent disappointment that would influence the client’s decision for adopting VM in the future project. Moreover, the client’s demands and requirements should be clear and precise in order to produce a VM proposal for the study so that it corresponds with the client’s expectations.

3.3.3 Conduct conference and seminar

The publicity on the accomplishments and benefits of VM study would be a very significant way to promote and encourage amongst people and organizations in the construction industry (Al-Yami, 2008). Abidin and Jaapar (2010) proposed that organizing more conferences, seminars, courses, and training are the best ways to educate key players in the construction industry. Ramly and Shen (2012) stated that conference and seminar are the common approaches for sharing knowledge. More seminars or workshops on VM topic should be conducted by government bodies and professional bodies such as RISM, BQSM and IVMM to engage with all professionals in the construction industry in order to understand on how this concept contributes to projects and the advantages of VM (Thien & Sam, 2016). Thus, it resolves misconceptions of VM meanwhile create and raise awareness among professional bodies in the construction industry.

3.3.4 Inclusion of VM clauses in the procurement contracts

Ramly and Shen (2012) stated that flexibility in contract provision during the initial selection of procurement approaches is an important factor. Cheah and Ting (2005) added that the more flexible the contractual agreement, the greater the chance of participating in VM. The local authorities should consider the possibility of including incentive clauses into standard condition of contract. Thus, it can motivate stakeholders to practise VM in their projects. Che Mat (2010) declared that Value Management Incentive Clause (VMIC) is the incentive clause that can be included in Malaysia procurement contracts, such as PAM, FIDIC, PWD 203A/203 etc. For example, VMIC had been included in Clause 13.2 (Value Engineering) in the FIDIC Form of Contract (2002). Furthermore, in the survey conducted by Fong and Shen (2000), found that 41% of the respondents agreed and showed support to include incentive clauses into their contract. Among these respondents, contractors and developers show a supportive attitude towards the inclusion of value incentive clauses in contract provision to promote and encourage the application of VM.

3.3.5 Application of effective techniques and tools in VM

Kissi et al. (2015) suggested the implementing effective techniques and tools as one of the strategies to increase the uptake of VM. They mentioned that Function Analysis System Technique (FAST) has been frequently applied internationally to the function analysis phase of VM study. According to Abidin (2005), FAST is a tool that is functional to understand what is supposed to achieve that step away from preconceived ideas. FAST diagram (Figure 2) provides a graphical representation showing the functional structure of a project based on the question 'how' and 'why' to determine the suitable solution to address the issue. The second effective technique adopted in VM is Simple Multi Attribute Rating Technique (SMART). SMART (Figure 3) is a technique, which is the process of part matrix analysis and part value tree diagram. It is used to identify the best option in order to meet client's expectations. Similar to FAST, the methodology relies on the construction of a hierarchical value tree to represent the project's objectives.

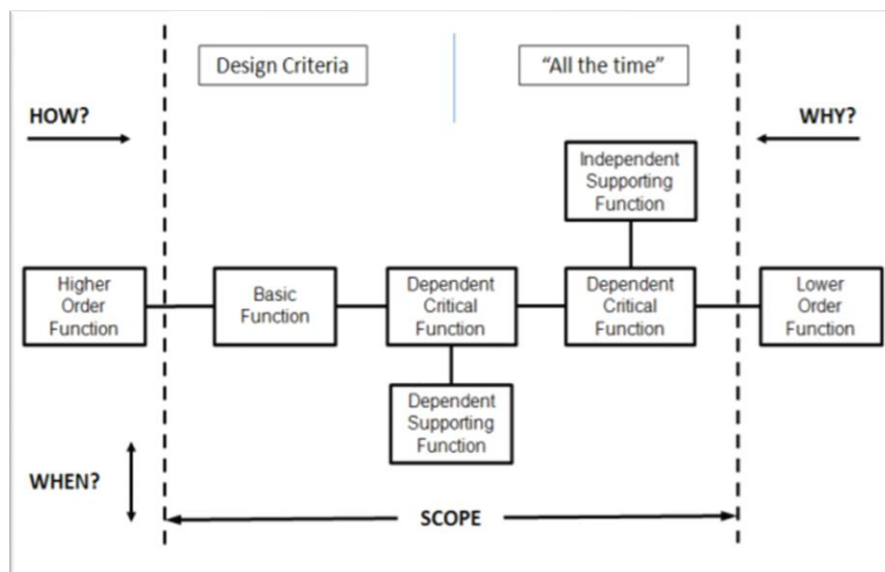


Figure 2. Example of FAST Diagram (Source: Borza, 2011)

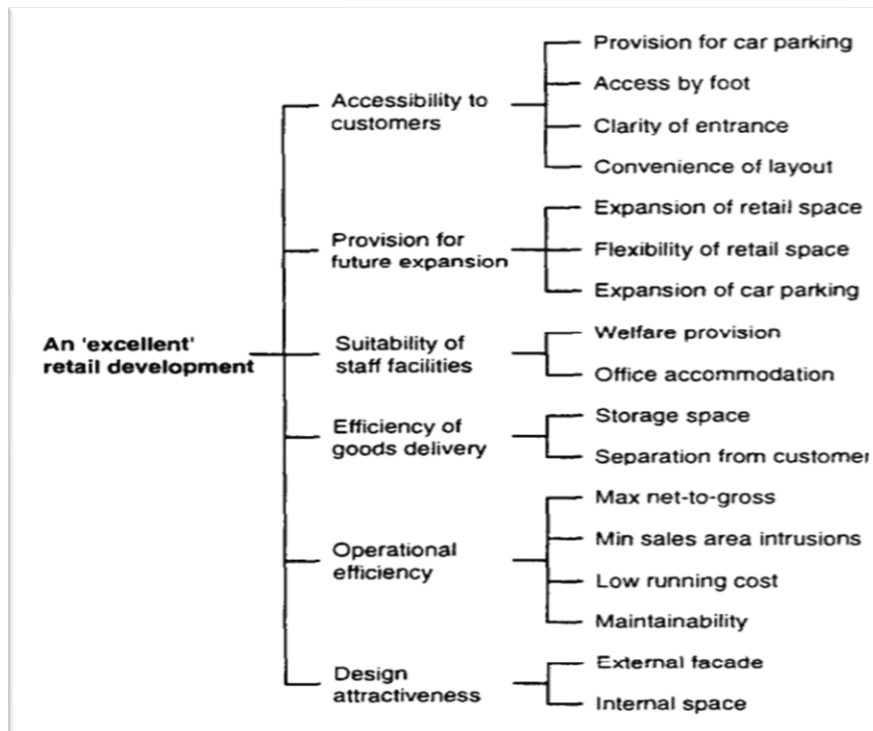


Figure 3. Example of SMART methodology value tree (Source: Green, 1994)

4. RESEARCH METHODOLOGY

4.1 Research Technique

This research study was approached using the qualitative research method. The research objective of this study seeks to obtain the expectations of the developer firms in order to raise the awareness on the application of VM to increase the uptake of VM to a larger scale in the Malaysian construction industry. The reason to adopt a qualitative approach is because the data obtained is in a form of language through open-ended and conversational communications to examine for in-depth meaning and insight. Indeed, it enables researchers to obtain detailed interpretations of the perceptions of the target population to have better understanding towards the research topic.

4.2 Target Population and Sampling Frame

The target population of this study is restricted to private sector developers which registered under REHDA in Klang Valley. It is crucial to understand the client's perception on the implementation of VM in order to improve the uptake of this application. As a financier and eventual owner of the building development, the active participation and support from the client is extremely important towards the implementation of VM in the construction industry. For this study, convenience sampling was chosen in this research due to time constraint and limited resources. The participants are selected based on proximity and convenient access for the researcher to approach the subject matter to draw a sample of convenience. According to Cresswell (1998), the suggested sample size for the qualitative research is range from 5 to 25 people. Hence, the targeted sample population for this research is 5 participants.

4.3 Conceptual Framework

A conceptual framework (Figure 4) was developed to allow the researcher to focus on the scope of the studies (Akanbi et al., 2015). The research framework is formed by reviewing the literature regarding implementation of VM in Malaysian construction industry.

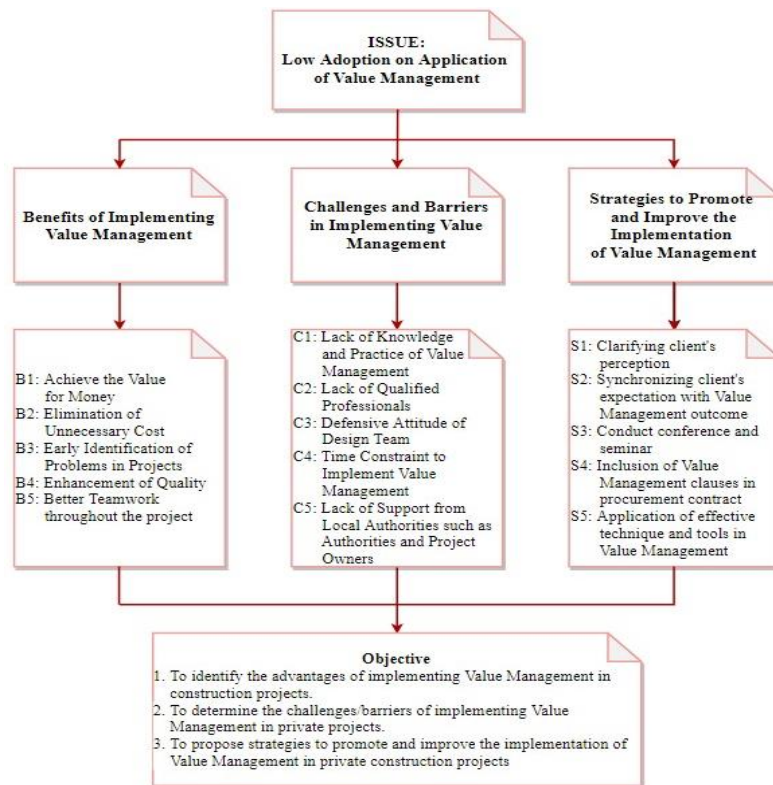


Figure 4. Conceptual Framework

5. FINDINGS

Content analysis and coding is used to analyse the data collected from the respondents. According to Medelyan (2019), content analysis identifies patterns, words, and phrases from a body of text are placed into categories and codes will be formed to label and organise qualitative data. In the process of coding, similar and different data are identified and assigned with different labels to categorise into each theme.

5.1 Key findings in relation to Objective 1: Potential Benefits of Value Management

Table 1 summarises the coding used to classify the dominant theme related to the potential benefits of VM. There are a total four (4) potential benefits gained from the implementation of VM which are divided into theme B1 to B4, and significant benefits obtained from VM practice based on the interviewees' opinion in Theme B5 as illustrated in Table 1.

Table 1: Coding in Relation to Objective 1

Category	Theme	Sub-theme	Code
B. Potential benefits of implementing Value Management	1. Financial benefits of value management	a. Clear focus on project's objective	B1a
		b. Value for money	B1b
		c. Explore more alternative and options	B1c
		d. Effective design approach	B1d
		e. Eliminating unnecessary cost	B1e
	2. Early identification of problems in projects	a. Discovery of projects issues	B2a
		b. Early implementation of VM	B2b
		c. Early supervision	B2c
		d. Appropriate solutions can be made	B2d
	3. Enhancement of quality	a. Cost effective approach	B3a
		b. Establish project benchmark	B3b
		c. Cost control and design optimization	B3c
		d. Reduces construction cost	B3d
		e. Eliminate over design issues	B3e
	4. Better teamwork among consultants	a. Communication and understanding among consultants	B4a
		b. Disrupt teamwork and work spirit	B4b
		c. Involvement of all parties	B4c
		d. Require additional time	B4d
	5. Significant benefits after adopting value management	a. Controllable budget	B5a
		b. Value for money	B5b
c. Good quality end product		B5c	
d. Explore detailed project specification		B5d	
e. Explore alternative materials		B5e	

From the data obtained, the findings show that all five (5) interviewees agreed that the implementation of VM does introduce potential benefits in construction projects. In fact, each interviewee has identified financial benefits of VM which are able to focus on project's objective, value for money, exploration of alternatives, effective design approach and eliminating unnecessary costs. Among two (2) of the interviewees have mentioned that VM creates the value for money with good quality product that satisfy the end users which are aligned with the study conducted by Ma and Tam (2013). Moreover, the interviewees also shared the same opinion with Olawumi et al. (2016) that VM eliminates unnecessary cost by providing alternative solution at lowest cost without compromising quality.

Furthermore, secondary benefits of VM which highlighted by all the interviewee are the early identification of the problems in projects, enhancement of quality and improving teamwork among consultants respectively. The interviewees emphasized that VM allows the identification of issues in a project due to early implementation of VM practice from the initial stage. Thus, allowing the anticipation of problems to make an appropriate solution to overcome the problems. Moreover, the interviewees stated that VM adopts a cost-effective approach while simultaneously enhancing the value of the project. However, one of the interviewees disagreed that although VM enhances the quality of the project, it is rather providing the same quality at a lower price which reduces construction cost. In alignment with the results findings, Che Mat (2010) had observed that VM practice promotes the involvement and contribution to all the team members, the cross-functional discussions and suggestions contributed during the creative phase which will enhance communication between project teams with a better understanding of the project's objective. Nonetheless, interviewee 4 expressed that VM requires consultants and contractors to have more time to evaluate on the selection in terms of specifications or materials which does not improve team spirit but affect productivity and efficiency in their daily schedule.

In theme “B5”, the significant benefits that gained from the implementation of VM is value for money. Norton and McElligott (1995) stated that the main function of VM does not reduce cost but to improve the overall value by balancing the cost, time, and quality factor in the project. The VM approach creates the opportunity to explore alternative materials which allow the project to go in-depth on the project specifications to select the best quality to best suit the project scope. Furthermore, the successful implementation of VM will recognize a good quality end product that satisfies the client’s objectives which in turn encourage more professions to adopt and practice this application.

5.2 Key findings in relation to Objective 2: Challenges faced when implementing Value Management

There are a total five (5) key challenges faced when implementing VM in construction projects which are divided into Theme C1 to C5 as presented in Table 2.

Table 2: Coding in Relation to Objective 2

Category	Theme	Sub-theme	Code
C. Challenges in implementing Value Management	1. Lack of knowledge and practice of value management	a. Restrictive knowledge and information	C1a
		b. Misconception of value management	C1b
		c. Disregard the presence of value management	C1c
		d. Lack of interest	C1d
		e. Lack of experience in value management	C1e
	2. Lack of qualified professionals	a. Willingness to explore	C2a
		b. Disrupt the flow of value management	C2b
		c. Lack of focus and sense of belonging	C2c
		d. Infrequent practice	C2d

	3. Defensive attitude of design team	a. Willingness to explore or change	C3a
		b. Avoid and minimize legal actions	C3b
		c. Appropriate approach and discussions	C3c
		d. Resistance from consultants	C3d
		e. Reluctant to revise project design	C3e
	4. Time constraint in implementing VM	a. Additional time to assess and evaluate	C4a
		b. Projects on fast track basis	C4b
		c. Awareness on cost optimization	C4c
		d. Reduces workload	C4d
		e. Process of VM is time consuming	C4e
	5. Lack of support from local authorities and project owners	a. Resistance to change	C5a
		b. Lack of input by authorities	C5b
		c. Encouragement from project owners	C5c
		d. Encouragement from local authorities	C5d
		e. Lack of publicity	C5e
	6. Main challenges when adopting value management	a. Lack of support from authorities and clients	C6a
		b. Minimal knowledge	C6b
		c. Resistance from designers	C6c
		d. Time constraint	C6d

Results (Table 2) show that the application of VM has faced challenges in Malaysian construction industry, especially in the private sector. The interviewees emphasize that lack of support from authorities and clients is the main challenge in the application of VM. They further elaborated that they are often found out that both parties are resistant to change on the new approach. In addition, one of the interviewees expressed that stakeholders are unwilling to take the risk due to uncertainty of return on investment as VM is not commonly practiced in the industry. These findings are further supported by Lin and Shen (2006) and Shen and Chung (2002). Besides, the interviewees shared their opinions that the support from authorities plays a crucial part in the implementation of VM.

The lack of knowledge by construction professionals on the application have impeded the implementation of VM. The restrictive information and knowledge on the application has caused misconception of VM as a cost cutting tool. This statement is further supported by Ng (2006) as he stated that misconception of VM is a major issue when implementing VM. With the lack of closure on the practice of VM, practitioners will tend to disregard the presence of VM and deny the benefits of VM offers.

The interviewees agreed that resistance from designers contributes as one of the main challenges that caused hindrance to the implementation of VM. The reluctance of designers to explore changes towards the approach and revise their design is because of the wrong mindset that VM studies are criticism towards their capability and integrity. This statement is reinforced by Maznan et al. (2012). Moreover, interviewee 2 expressed that many designers are defensive in nature to avoid being accountable for any legal matters. However, interviewee 3 explained some designers do not have the same attitude towards the concept of VM design and willing to undertake the approach.

Lastly, the process of VM is known to be time consuming. All the interviewees agreed that construction professionals often faced time constraint when implementing VM. Oftentimes, developers implement their project on a fast-track basis which limits the time to conduct VM studies. Interviewee 1 mentioned that time is of the essence for a project but a comprehensive VM practice requires additional time to access and evaluate the information as project teams are constantly occupied with work. Interviewee 4 also expressed that implementing VM reduces the workload that can be done on other projects. Nevertheless, interviewee 3 strongly believed that the process should involve all key parties with the intention to achieve cost optimization.

5.3 Key findings in relation to Objective 3: Strategies to improve the implementation of Value Management

Table 3 shows the clients' point of view on the potential approaches in order to increase the uptake on implementation of VM in construction projects. The responses are divided into Theme D1 to D5 as presented in Table 3.

Table 3: Coding in Relation to Objective 3

Category	Theme	Sub-theme	Code
D. Strategies to improve the implementation of Value Management	1. Clarify client's perception	a. Influence other stakeholders and consultants	D1a
		b. Clear understanding on value management	D1b
		c. Avoid false perception	D1c
		d. Understanding on client's objective	D1d
	2. Synchronize client's expectation with the outcome	a. Prevent refusal to practise the application	D2a
		b. Prevent the exercise of the cost cutting	D2b
		c. Performing respective roles	D2c
		d. Clear client's objective and demand	D2d
		e. Understanding on concept	D2e
	3. Conducting conference and seminar	a. Broaden knowledge and information	D3a
		b. Showcase successful references	D3b
		c. Create awareness	D3c
		d. Participation of all parties	D3d
	4. Inclusion of value management clauses in procurement contracts	a. Ensure companies benefits	D4a
		b. False exercise	D4b
		c. Part and parcel projects	D4c
		d. Encouragement to other practitioners	D4d
		e. Awareness of value management	D4e
	5. Application of effective techniques and tools in value management	a. Functional Analysis System Technique (FAST)	D5a
		b. Creative Technique	D5b
		c. Simple Multi Attribute Rating Technique (SMART)	D5c
	6. Most practical approach in the construction industry	a. Application of effective techniques and tools in value management	D6a
		b. Conducting conference and seminar	D6b
		c. Inclusion of value management clauses in procurement contracts	D6c
d. Enhancement of publicity on VM achievements and benefits		D6d	

		c. Inclusion of value management clauses in procurement contracts	D6c
		d. Enhancement of publicity on VM achievements and benefits	D6d

From the findings obtained, all five (5) interviewees were unanimous that client's perception plays an important role in the implementation of VM in the construction industry. They have also emphasized the importance of synchronising client's expectation with VM outcome to obtain client's support in the VM practice. In addition, the interviewees suggested that applying effective techniques and tools in VM to improve the implementation of VM in the construction industry. Techniques and tools such as FAST, Creative Brainstorming Technique, SMART methodology will improve the evaluating process and analysis to be more effective.

Besides that, the provision of VM clauses in procurement contracts such as FIDIC form of contract which encourage client and contractor to adopt this application. However, Interviewee 2 further enhanced that with the inclusion of VM clauses, VM practice will become a false exercise as the results will not be implemented as a voluntary basis. Interviewee 5 also disagreed that the inclusion of VM provision will not be effective due to the lack of awareness of VM among construction practitioners.

The last practical approach suggested by interviewees is conducting conference and seminar to extend knowledge of practitioners and create awareness of benefits on the implementation of VM. This statement is supported by previous literature Ramly and Shen (2012) and Abidin and Jaapar (2010), as the best way to educate construction practitioners is through conferences, courses and training. Interviewee 4 suggested that the enhancement of publicity towards VM achievement and benefits should be promoted aggressively by government or professional bodies such as IVMM by showcasing successful references to the public.

6. LIMITATION OF THE STUDY

The scope of the study is only targeted in Klang Valley, Selangor as Klang Valley has the most projects ranging from small to large scale, forming a region with ample of construction projects and the likelihood of implementing VM will be high. Moreover, this research study is mainly focusing on developers and does not consider the other professions of the construction field.

7. RECOMMENDATION FOR FURTHER STUDIES

Future research can be carried out with a comparison between the private and public sectors' perceptions. The intention is to seek different perspectives based on two different sectors and perhaps it may achieve different outcomes in future studies. Moreover, it is also recommended that future researchers may suggest a conceptual framework or process flow chart as a guideline to promote the uptake of VM approach in construction industry. In addition, researchers can focus on other professions in the construction field such as VM facilitators, consultants, and contractors in order to obtain different views and outcomes for future studies. On top of that, the research findings would be more accurate if the scope of the study is conducted over other cities. This will validate and strengthen the conclusions and recommendations of this study.

8. CONCLUSION

In conclusion, the literature revealed that the adoption of value management is relatively low in Malaysia. However, the findings of this research proved otherwise, the implementation of value management in Malaysia has been practiced extensively among private sector projects. Nevertheless, there is an opportunity for enhancement and improvement towards the application of value management in the construction industry to enhance the willingness of construction professionals to implement this application. Throughout the study, it has been understood the perception of clients towards the application of VM and the beneficial impacts that are associated with the implementation of VM in the construction industry. Besides that, it has also identified that there are challenges faced by developers when implementing VM in their projects. Hence, a few proposed strategies such as FAST and SMART approaches are adopted towards the implementation of VM in Malaysian construction industry. These approaches showed the improvement of implementing the VM in the construction industry. Ultimately, the outcome of this research is to create an awareness and understanding towards the importance of VM practice to the construction industry and construction practitioners.

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