The Status of Value Management Practice on Construction Projects in Uganda and Strategies for Improvement

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Abstract: In many developing countries, value management (VM) is not applied widely and systematically in construction projects. This limits the achievement of value for money. The objectives of this study were to describe the state of VM practice in Uganda and suggest strategies for improvement. Based on the extant literature, a conceptual framework depicting VM practice in the lifecycle of construction projects was developed. A questionnaire containing both nominal and ordinal measures was distributed to a sample of Ugandan construction industry professionals. During data analysis, the distributions of nominal variables were expressed in terms of percentages. A univariate analysis of the ordinal variables was undertaken using measures of central tendency (mean) and dispersion (standard deviation). A bivariate analysis of the ordinal variables was undertaken using Friedman, Fisher's exact and Mann-Whitney U tests. The application of VM in Uganda was rudimentary, inconsistent and misguided, based on the reports of the respondents. This finding constitutes the first major contribution of this work to knowledge. It also led to the idea that the practice of VM in Uganda can be improved by raising awareness and the standard for VM application. Ten strategies for these two purposes have been put forward in this article. These strategies constitute the second major contribution to knowledge.

Keywords: Construction industry, Construction professionals, Uganda, Value management

INTRODUCTION

In the context of construction projects, value management (VM) optimises value throughout the project lifecycle by making the various stakeholders' differing priorities explicit and aligning them, thereby enabling the selection of optimum solutions with available resources (Institute of Value Management, 2018; Kelly, Male and Graham, 2015). VM is associated with several benefits to construction projects, such as improvements in performance, efficiency, competitiveness, transparency, and reputation, in addition to the creation of a common value culture (Dahiru, 2019; Khodeir and El Ghandour, 2019; Fong, 2004). Hence, it is necessary to formulate strategies for increasing the level of application of VM throughout the world, particularly in developing countries, where VM has not diffused to an appreciable level.

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The application of VM in construction projects started in the 1970s in the United States of America (USA). In the last 40 years, VM has spread to Europe and Australia and become an established framework in the construction industry with common tools, techniques and styles (Kelly, Male and Graham, 2015; Spaulding, Bridge and Skitmore, 2005). Although VM is now generally widespread internationally, its application in the construction industry is still not well established in many developing countries. Outside Europe, the USA and Australia, various studies undertaken to investigate the state of the application of VM in construction projects in specific countries (including China, Hong Kong, Nigeria, South Africa and Vietnam) generally show that the application of VM in construction projects is increasing, although it has been applied on a small proportion of construction projects and is often limited to the design and construction stages (Khodeir and El Ghandour, 2019; Aghimien, Oke and Aigbavboa, 2018; Kim et al., 2016; Bowen et al., 2010; Liu and Shen, 2005; Fong and Shen, 2000).

A systematic search of literature about VM in Uganda revealed no publications. Therefore, Uganda is one of the developing countries where the status of the application of VM is not well documented. In general, the application of VM has been shown to improve performance within the construction industry (Madushika et al., 2020; Roslon, Książek-Nowak and Nowak, 2020; Shahhosseini, Afshar and Amiri, 2017). The lack of a discourse on VM in Uganda suggests that the potential of VM to contribute to construction industry performance is relatively untapped and therefore presents an opportunity for considerable improvement. Hence, the present research was undertaken with two objectives: (1) To describe the current status of VM practice in Uganda and (2) To propose strategies that will help realise improvement in VM practice in Uganda.

OVERVIEW OF VM THEORY AND PRACTICE

VM concerns maximising value. Value is defined as the relationship between the satisfaction of needs (benefits) and resources used in achieving that satisfaction (costs). In other words, VM is concerned with harmonising the relationship between benefits and costs (Institute of Value Management, 2018; British Standards Institute, 2000). VM is therefore aimed at making explicit the various stakeholders' differing priorities, needs and expectations and then aligning them; this enables the achievement of an acceptable balance with required resources (Institute of Value Management, 2018).

At the project level, VM can be defined as a systematic, multi-disciplinary effort directed towards analysing the functions of projects for the purpose of achieving the best value at the lowest overall lifecycle cost (Norton and McElligott, 1995). Therefore, VM (at the project level) covers a full range of available methods and tools and all specific forms of its application. At its best, VM maximises the functional value of a project as it is developed from a concept through operation and thus increases the value for money incurred over the project lifecycle (Kelly, Male and Graham, 2015).

The conceptualisation of VM in construction projects is usually based on a typical project lifecycle that includes pre-briefing, briefing, conceptual design, detailed design, construction and operation (Bowen, Edward and Cattell, 2009). Based on these project phases, the exploration of the extant VM literature
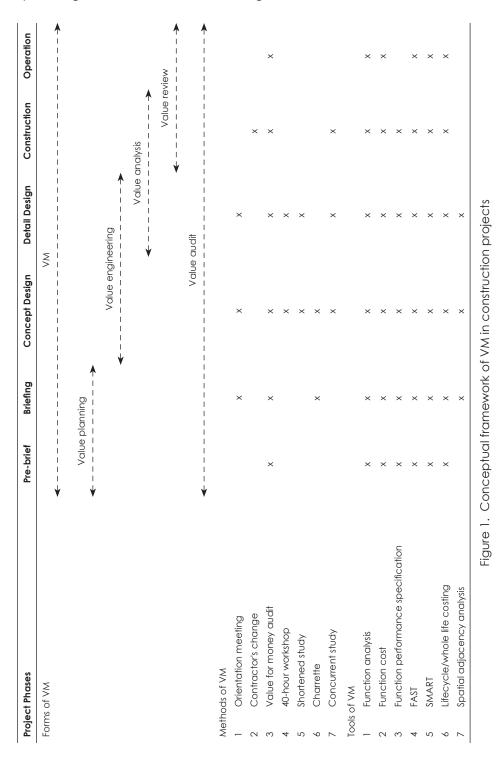
suggests three themes that are ubiquitously discussed by scholars: forms of VM, methods of VM and tools of VM. The forms of VM include value planning, value engineering, values analysis and value review (Uganda Road Fund, 2018; Luvara and Mwemezi, 2017; Kelly, Male and Graham, 2015; Jaapar, Maznan and Zawawi, 2012; Sievert, 1991). The methods of VM widely discussed in the literature include an orientation meeting, contractor's change, value for money audit, 40-hour workshop, shortened study, charrette and concurrent study (Uganda Road Fund, 2018; Office of the Auditor General, 2017a; Shen and Yu, 2015; Perera, Hayles and Kerlin, 2011; Male et al., 1998; Kelly and Male, 1993). In addition, the tools of VM include function analysis, function cost, function performance specification, function analysis system technique (FAST), simple multi-attribute rating technique (SMART), lifecycle/whole life costing and spatial adjacency analysis (Kelly, Male and Graham, 2015; SAVE International, 2015; Bowen, Edward and Cattell, 2009; British Standards Institute, 2000; Cheah and Ting, 2005; Younker, 2003; Green, 1994).

By mapping forms of VM, methods of VM and tools of VM over the typical project lifecycle phases, a conceptual framework was generated, as summarised in Figure 1. The conceptual model is premised on the idea that, ideally, VM methods and tools should be applied in their respective phases of all projects. This conceptual framework was used to design research instruments to enable data collection.

VM IN UGANDA

A systematic search was undertaken for all literature about VM in Uganda up to and including December 2019. The only reference to VM research in Uganda found was a 2010 unpublished postgraduate dissertation by David Kivumbi, entitled "Adaptation of the Smart Methodology to Value Management of the Uganda School Facilities Grant". The paucity of VM research in Uganda is likely to be an indication of the limited and unsystematic application of VM in Uganda's construction industry.

In terms of VM practice, there is evidence of some (but very limited) effort to address VM in the public sector. In order to improve the value for money in public sector projects, the 1995 Constitution of Uganda, specifically, Article 163(3)(b), concerning the Auditor General, and the National Audit Act of 2008, mandate that all projects involving public funds can be subjected to value for money (VFM) audits to check whether principles of economy, efficiency and effectiveness have been followed and whether there is room for improvement. In accordance with these regulations, Uganda's Office of the Auditor General regularly undertakes VFM audits on a variety of government projects, including construction projects, every year (Office of the Auditor General, 2017b). These VFM audits tend to be forensic audits carried out after a project is completed. Therefore, from a project lifecycle perspective, such VFM audits happen only in the operation phase (Office of the Auditor General, 2020). Hence, the VFM audits cannot lead to improvements or maximisation of VM in the specific projects in question. In addition, the VFM audits are not undertaken on all public sector projects and as far as private sector projects are concerned, there is no evidence of formal VM practice.

Project Phases	Pre-brief	Briefing	Concept Design	Detail Design	Construction	Operation
Forms of VM						
Methods of VM						
1 Orientation meeting		x	x	x		
2 Contractor's change					x	
3 Value for money audit	x	x	x	x	x	x
4 40-hour workshop			x	x		
5 Shortened study			x	x		
6 Charrette		x	x	x		
7 Concurrent study			x	x	x	
Tools of VM						
1 Function analysis	x	x	x	x	x	x
2 Function cost	x	x	x	x	x	x
3 Function performance specification	x	x	x	x	x	
4 FAST	x	x	x	x	x	x
5 SMART	x	x	x	x	x	x
6 Lifecycle/whole life costing	x	x	x	x	x	x
7 Spatial adjacency analysis		x	x	x		

Forms of VM (spanning arrows): VM, Value planning, Value engineering, Value analysis, Value review, Value audit

Figure 1. Conceptual framework of VM in construction projects

From the foregoing, it can be concluded that VM has not diffused in Uganda's construction industry. Because the literature (e.g., Madushika et al., 2020; Roslon, Książek-Nowak and Nowak, 2020; Shahhosseini, Afshar and Amiri, 2017) has shown that the application of VM can improve performance within the construction industry, the lack of VM practice suggests that the industry is operating at a lower level of performance and development than necessary. Popularising VM is worth the effort since through regulations, Uganda has already committed to value for money in its projects at the highest levels, and VM will lead to a wider and timely realisation of the intentions of the regulations. Therefore, levels of performance and the development of Uganda's construction industry can be improved by a concerted effort to facilitate the systematic application of VM. However, such an effort should be based on understanding the baseline state of VM practice. The research reported in this article was undertaken to provide such a baseline and suggest strategies to facilitate the systematic application of VM in Uganda.

METHODS

The population of reference was construction industry professionals in Uganda, including architects, engineers and quantity surveyors. Contact information was available from official lists of registered professionals for the year 2017, as published by the respective professional regulatory bodies. A random sample of 328 professionals (comprised of 87 architects, 192 engineers and 49 quantity surveyors) was drawn. In order to collect primary data, a questionnaire was designed using an online survey provider (onlinesurveys.ac.uk) and made available to the respondents by an email solicitation and link.

Because the absence of literature, as highlighted in the two previous sections, suggested that the level of maturity of VM practice was low, the issues being researched were envisaged as possibly being unfamiliar to some respondents. As such, show cards (Singh, 2007), containing relevant definitions and illustrations of the VM concept, project lifecycle, methods of VM and tools of VM, were embedded in the questionnaire. Table 1 provides a summary of the study variables and how they were measured in the questionnaire.

A number of statistical tests, including Fisher's exact test, Friedman test and Mann-Whitney U test (Gray and Kinnear, 2012), were used to address the research objective of describing the current status of VM practice in Uganda. The various assumptions underlying each of the statistical tests, such as homogeneity of variance, were examined before applying the appropriate statistical tests (Fielding, Lee and Blank, 2016).

Table 1. Variables, their measurement and measurement scales

Variable	Measurement/Question	Measurement Scale
Profession	Which of the following describes your profession?	Nominal scale: Architect; Civil engineer; Electrical engineer; Mechanical engineer; Quantity surveyor; Other
Type of organisation	Which of the following describes your organisation?	Nominal scale: Client; Consultant; Contractor
Professional experience	How long have you been working in the construction industry?	Ordinal scale: < 5 years; 5 years to 10 years; 10 years to 15 years; 15 years to 20 years; Over 20 years
Presence of VM policy/programme	Does your organisation have a VM policy or programme?	Nominal scale: Yes; No
Familiarity with VM	Are you familiar with VM?	Nominal scale: Yes; No
Understanding of VM	By your own understanding, which one of the following statements best defines VM?	Nominal scale: Increasing the benefits at the same or lower cost; Providing the same benefits at a reduced cost; Greatly increasing the benefits at a slight increase in cost; All the above
Source of VM knowledge	Which of the following best describes how you acquired knowledge about VM?	Nominal scale: Programme of study (please specify); My organisation's practices; Professional association; Fellow professionals
	Please specify the programme of study from which you acquired knowledge about VM.	Nominal scale: Undergraduate study programme; Master's study programme; VM short course; Other

(Continued on next page)

Table 1. *Continued*

Variable	Measurement/Question	Measurement Scale
Reference to established VM benchmark/ standard	Do you undertake VM by referring to any established standard or manual?	Nominal scale: Yes; No
	Please specify the established standard or manual of VM you use for reference in your work.	Nominal scale: SAVE International Value Standard; British/European Value Management Standard; ICE Creating Value from Engineering; Australian Value Standard AS 4183:2007; The Value Management Benchmark by Male et al. (1998); Others
VM methods usage	Indicate according to your own actual experience over the last five years, how often the following (VM methods in the conceptual model) were used in respective stages of the lifecycles of projects in which you were involved.	Ordinal scale: Never (0); Rarely (1); Fairly often (2); Very often (3); Always (4)
VM tools usage	Indicate according to your own actual experience over the last five years, how often the following (VM tools in the conceptual model) were used in respective stages of lifecycles of projects in which you were involved.	Ordinal scale: Never (0); Rarely (1); Fairly often (2); Very often (3); Always (4)

Univariate data analysis was undertaken in order to illuminate the status of VM practice by highlighting parameters of the distributions of the relevant variables. An appropriate measure of effect size for each statistical test was calculated, and categorisations were made in accordance with Cohen (1988). Owing to the relatively small sample size, wherever possible, exact significance values were used instead of less accurate asymptotic estimations, as recommended by Gray and Kinnear (2012). In addition, a bivariate analysis of the data was also undertaken in order to explore relationships between each pair of groups of cases formed based on the key criteria of organisation type, VM policy/programme and professional experience. This helped further illuminate the status of VM practice through exploration of differences (if any) among the different groups of cases. As with the univariate analysis, categorisations of effect size were also made in accordance with Cohen (1988), and wherever possible, exact significances were used as recommended by Gray and Kinnear (2012).

RESULTS AND DISCUSSION

Overview of Responses

A total of 38 respondents participated in the online questionnaire survey, out of 328 identified for the target sample that had received the solicitation, giving an overall response rate of 11.6%. This was not very surprising since the literature suggests that response rates for online surveys are notoriously low. Previous published studies on VM by Bowen, Edward and Cattell (2009) and Fong and Shen (2000) had similar response rates of 13.5% and 7% for their online questionnaires, respectively.

The respondents included five architects, six quantity surveyors and 27 engineers; therefore, all the key professional groups involved in Uganda's construction industry were represented. Respondents working with client (13) and consultant (25) organisations were represented. The respondents had a wide range of professional experience in terms of years of practice: None had less than five years, four had 5 years to 10 years, 11 had 10 years to 15 years, nine had 15 years to 20 years and 14 had 20 or more years of experience.

State of VM Practice in Uganda's Construction Industry

Familiarity with and understanding of VM

An overwhelming majority of the respondents (33, or 86.8%) indicated they were familiar with VM. However, the respondents made the following selections regarding how they understood VM: 11 chose "Increasing benefits at the same or lower cost only" (Option A), four chose "Achieving same benefits at a reduced cost" (Option B), one chose "Greatly increasing benefits at a slight increase in cost" (Option C) and 17 chose "All the above" (Option D). Since Option D was the most complete description of VM, this finding casts doubt on the suggestion that there is a high level of familiarity with VM among construction professionals in Uganda.

No association was found between type of organisation (client vs consultant) and familiarity with VM (Fisher's exact test, Exact p = 1.00, two-tailed) or between type of organisation with description of VM (Fisher's exact test, Exact p = 0.50, two-tailed). No association was found between VM policy/programme and familiarity with VM (Fisher's exact test, Exact p = 0.37, two-tailed) or between VM policy/programme and description of VM (Fisher's exact test, Exact p = 1.00, two-tailed). Furthermore, Fisher's exact test showed no association between professional experience and familiarity with VM (Exact p = 0.37, two-tailed) or between professional experience and description of VM (Exact p = 0.50, two-tailed).

Sources of VM knowledge and presence of a VM policy/programme

A total of 33 respondents claimed to be familiar with VM, and the sources of their VM knowledge were an organisation's practices (17), fellow professionals (8), professional association (7), postgraduate studies (6), undergraduate studies (3), VM short course (3) and others (one each noted the Internet and on-the-job experience). However, it was found that 73.3% of the respondents

whose organisation had a VM policy/programme identified the organisation's practice as a source of knowledge compared to 33.3% of respondents whose organisation did not have a VM policy/programme.

Established VM standard/benchmark

Only 21.2% of the respondents had undertaken VM using an established standard/benchmark. Of the few respondents that referred to a VM standard/benchmark, the majority (57.1%) reported using *BS EN 12973: 2000 Value Management* (British Standards Institute, 2000), 14.3% reported using *Creating Value from Engineering: ICE Design and Practice Guide* (Institution of Civil Engineers, 2015), another 14.3% reported using the Value Management Benchmark (Male et al. 1998) and 28.6% reported using their organisation's quality manual and FIDIC's (International Federation of Consulting Engineers [Fédération Internationale Des Ingénieurs – Conseils]) conditions of contract. Interestingly, no respondent reported using the *SAVE International Value Methodology Standard* (SAVE International, 2015) or the *Australian Value Standard AS 4183:2007* (Standards Australia, 2007). Therefore, there was very little reference to VM standards/benchmarks in Uganda's construction industry.

VM methods usage

The usage of VM methods in the different phases of the project lifecycle over the past five years is presented in Table 2.

Table 2. VM method usage across phases of the project lifecycle

VM Method	Pre-Brief*		Briefing*		Concept Design*		Detail Design*		Construction*		Operation and Maintenance*	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Orientation meeting	3	1.4	3	1.2	3	1.2	3	1.3	3	1.3	2	1.3
Contractor's change proposal	1	1.4	2	1.3	2	1.3	2	1.3	3	1.1	2	1.3
Value for money audit	1	1.3	1	1.4	2	1.4	2	1.3	3	1.2	2	1.3
40-hour workshop	–	0.7	1	0.9	1	1.1	1	1.2	1	1.2	1	1.0
Shortened study	1	0.9	1	0.8	1	1.0	1	1.1	1	1.3	1	0.9
Charette method	1	1.1	1	1.3	1	1.4	2	1.4	1	1.3	1	1.1
Concurrent study	1	1.3	1	1.3	1	1.5	2	1.5	2	1.4	1	1.2

Notes: 0 = Never; 1 = Rarely; 2 = Fairly often; 3 = Very often; 4 = Always; M = Mean and SD = Standard deviation.

The Friedman test indicated that there were significant differences in the means for the usage of VM methods for the different project phases ($p < 0.05$). The effect sizes, as measured using the coefficient of concordance (w) varied among the different VM methods and manifested in the three defined categories of "Small", "Medium" and "Large". The differences were further explored with pairwise comparisons for the respective project phases for each VM method

using a Bonferroni-adjusted Wilcoxon signed-ranks test (with effect sizes measured using matched-pair rank bi-serial correlations, r_{rb}). It was established that each VM method had some instances of statistically significant differences with effect sizes of "medium" or "large". From the findings, it can be concluded that the usage of VM methods was not uniform throughout the project lifecycle.

The findings considered along with the conceptual model (as shown in Figure 1) show that the VM methods were applied in project phases where they should not be and/or were not applied in phases where they should, as reported by the respondents. This suggests that the practice of VM in Uganda departs from the ideal as espoused in the contemporary body of VM knowledge and, therefore, has potential for improvement.

The Mann-Whitney U test for a difference of mean ranks was used to examine VM method usage across the independent variables of organisation type and VM policy/programme. The results showed that between the organisation types that were considered (client and consultant), the frequency of usage was only statistically significantly different at the pre-brief phase for the orientation meeting method (p = 0.01); these levels had a Glass rank bi-serial correlation = 0.53 and a "large" effect size. Thus, client organisations (M = 3.31, SD = 1.11) used the orientation meeting method significantly more often than consultant organisations (M = 2.08, SD = 1.35) at the pre-brief stage. This result may mean clients are more attentive to this VM method at the front end of projects than consultants because of the intrinsic interest they have (or should have) for value in their projects.

The Mann-Whitney U test results indicated that usage of VM methods were dependent on the presence of a VM policy/program. Specifically, there was a significant difference in the usage of the orientation meeting, contractor's change proposal, 40-hour workshop, charrette and concurrent study methods based on the presence of a VM policy/programme in an organisation with generally a "medium" effect size. These results suggest that the presence of a VM policy/programme influences more frequent use of VM methods. This is not surprising since the purpose of such a policy is expected to be the diffusion/ implementation of VM in the project/organisation.

VM tool usage

The results regarding the respondents' VM tool usage in the different phases of the project lifecycle over the past five years are presented in Table 3. In general, the reported usage of VM tools was lower than those of VM methods, with all the tools reported as being used either "Fairly often" or "Rarely" (except for one instance of "Very often"). This suggests that VM was sometimes undertaken without making use of the well-established formal VM tools.

Table 3. VM tool usage across phases of the project lifecycle

VM Tool	Pre-Brief*		Briefing*		Concept Design*		Detail Design*		Construction*		Operation and Maintenance*	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Function analysis	2	1.5	2	1.5	2	1.3	3	1.2	2	1.4	1	1.1
Function cost	1	1.2	1	1.2	2	1.4	2	1.6	2	1.6	1	1.3
Functional performance specification	1	1.3	1	1.1	2	1.3	2	1.5	2	1.6	1	1.3
Functional analysis system technique	1	1.2	1	1.2	1	1.3	2	1.5	1	1.3	1	1.3
Simple multi-attribute rating technique	1	0.9	1	1	1	1.1	1	1.2	1	1.2	1	1.1
Lifecycle/whole life costing	1	1.2	1	1.3	2	1.5	2	1.5	2	1.5	1	1.5
Spatial adjacency analysis	1	1	1	1.1	1	1.2	1	1.3	1	1.2	1	1.1

*Notes: 0 = Never; 1 = Rarely; 2 = Fairly often; 3 = Very often; 4 = Always; M = Mean and SD = Standard deviation.

The Friedman test indicated that there were significant differences in the means in the usage of VM tools for the different project phases ($p < 0.05$). The effect sizes, as measured using the coefficient of concordance (w), varied among the different VM tools and manifested in the three defined categories of "Small", "Medium" and "Large". The differences were further explored with pairwise comparisons for the respective project phases for each VM tool using a Bonferroni-adjusted Wilcoxon signed-ranks test (with effect sizes measured using matched-pair rank bi-serial correlations, r_{rb}). It was established that each of the VM tools had some instances of statistically significant differences, with effect sizes of "Medium" or "Large". From the above, it can be concluded that the usage of VM tools was not uniform throughout the project lifecycle.

The above findings, considered along with the conceptual model (as shown in Figure 1), show that the VM tools were not applied in project phases where they should be. This is further evidence that the practice of VM in Uganda has the potential for improvement.

The Mann-Whitney U tests found no significant difference of mean ranks when examining the level of usage of VM tools across organisation types. This can be explained by the low level of organisational sophistication in Uganda's construction industry, as observed by Muhwezi, Acai and Otim (2014). There was, however, a significant difference ($p < 0.05$) in the mean ranks of the levels of usage of VM tools when looking at the presence and absence of a VM policy/programme in an organisation (with generally, either a "Medium" or "Large" effect size). The usage of VM tools was higher when an organisation had a VM policy/programme.

Improving the Practice of VM in Uganda's Construction Industry

The findings in the preceding sections suggest that the practice of VM in Uganda's construction industry can be strengthened by taking action on two related themes: raising awareness of VM and raising standards in the application of VM.

Raising awareness of VM in Uganda

The results suggest that the level of awareness of VM is currently inadequate given that only about half of the respondents demonstrated an accurate description of VM. Therefore, there is a need to improve the general level of awareness of VM through the dissemination of VM knowledge in all key construction organisations, both public and private, and all the different professions involved in construction. Hence, five suggestions to facilitate raising the level of awareness are proposed.

Firstly, VM standards/benchmarks should become the basis of VM practice in organisations. Because the most common source of VM knowledge was found to be the practices of organisations, there is a need to ensure that they are formulated to follow the established body of knowledge and best practice. Every organisation should refer to a VM standard/benchmark in the process of designing and implementing corporate and project policy.

Secondly, learning activities, such as VM seminars and workshops, should be promoted and delivered to all construction professionals. The seminars and workshops should be effectively organised and facilitated as a mechanism to teach relevant stakeholders about the various aspects of VM as well as to provide a platform for sharing experiences and ways of improving VM application in the particular context of Uganda's construction industry.

Thirdly, the undergraduate curricula for construction-related programmes should be redesigned to include comprehensive coverage of VM. Considering that postgraduate studies were found to be the most common source of VM knowledge in our study (yet, not everyone undertakes postgraduate studies), the undergraduate stage is the most obvious venue for ensuring that construction professionals in Uganda obtain VM knowledge as early as possible in the professional formation process.

Fourthly, there is a need to publish articles about VM in various construction industry journals, as well as general newspapers, magazines and websites, in order to reach not only construction professionals but also the general public, who are all potential stakeholders in construction projects in Uganda.

Fifthly, there is the need to establish a Ugandan chapter of an international VM association in the short term and a Ugandan VM association in the medium to long term. Such steps will promote interaction with international VM associations that can provide qualified trainers, workshop facilitators and consultants to support the development of VM practice in Uganda.

Raising the standard of application of VM in Uganda

The results show that the standard of application of VM is rudimentary and, in some areas, inconsistent and misguided. To address this, five suggestions are put forward.

Firstly, it is necessary to encourage the use of an established standard/benchmark when undertaking VM to help ensure it is undertaken correctly and uniformly across projects. This will also make the VM process easier, help guarantee effectiveness and prevent misconceptions and misguided implementation.

Secondly, a repository of various demonstration projects should be established, as was done in the United Kingdom (Office of Government Commerce, 2007). This would entail comprehensive documentation of information about demonstration projects in which VM was properly undertaken and the results tracked to show successes and failures, thus highlighting lessons from which project teams in the future can learn (Cheah and Ting, 2005).

Thirdly, there is a need to alter existing procurement practices in various ways to facilitate the effective implementation of VM. This can be achieved by promoting procurement systems that involve contractors and/or operators earlier in a project (as in design-build and build-operate-transfer) in order to get their input in VM (Fong and Shen, 2000); procurement strategies can also be used that encourage collaboration, such as framework agreements, which facilitate contractors' and design teams' involvement in not only value engineering at the design and construction phases but in continuous VM throughout the project lifecycle (Cooper and Potts, 2009). It can also be achieved by using contract forms that include provisions for the sharing of savings gained from value engineering with the contractor, such as those suggested by FIDIC (2010), or amending standard contract forms in order to encourage contractors to submit VM proposals, as is the case in the United Kingdom (Cooper and Potts, 2009). Furthermore, it can be achieved by including VM among the assessment criteria in tendering processes for both consultants and contractors.

Fourthly, it would be beneficial to create a value culture from the highest to the lowest levels of the governance structure or private corporate structure (see Cheah and Ting, 2005; British Standards Institute, 2000). The established value culture could then be used to ensure that organisations always select projects based on whether they fit into the organisation's value strategies, which should be in line with the sector value strategies; those strategies, in turn, should be in line with the national strategy/vision at the macro level. This would facilitate a top-down approach to value addition in the economy at large (British Standards Institute, 2000).

Fifthly, there is a need to establish a government VM policy/directive. This would require all relevant government departments to have VM policies and programmes. It should also make it mandatory to undertake VM on large projects, as is the case in the USA (Cheah and Ting, 2005), but with varying requirements depending on project size and scope, as was recommended by Kiboome (2017). Jaapar et al. (2012) showed that this can lead to a definite increase in interest, appreciation and implementation of VM. However, this should only be enacted after an appropriate level of VM awareness has been established to avoid the hurried labelling of wrong interventions and programmes as VM in a bid to be compliant, as was the case in China (Cheah and Ting, 2005).

CONCLUSION

VM is a technique that has been developed and has gained international recognition over the last five decades. Many construction projects in the USA, United Kingdom and Australia have benefited from the application of VM and have achieved far better value for money. As highlighted in the first section, outside of these countries, VM research has been reported in a few developing countries: China, Nigeria, South Africa and Vietnam. This is because many developing countries (including Uganda, which is the focus of this article) have yet to embrace VM. These countries are missing out on opportunities to improve project performance and deliver better value for money. Everyone and every organisation is encouraged to embrace VM in construction projects so that they can benefit from the opportunities it has to offer. This study was undertaken with two objectives: (1) Describing the current status of VM practice in Uganda and (2) Proposing strategies to help realise improvement in VM practice in Uganda. It was based on the perspective of construction professionals who are engaged in projects for which VM is highly relevant.

The most important contribution to knowledge about the status of VM practice in Uganda is that it can be described as rudimentary and, in some areas, inconsistent and misguided. This means that the level of maturity of VM in Uganda's construction industry is very low. Given the status of VM practice in Uganda, the immediate strategies to improve its practice must focus on the two related themes of raising awareness and raising the standard of VM application. Raising awareness about VM can be accomplished with the following strategies: (1) Harmonise corporate policies with VM standards/benchmarks, (2) Deliver VM seminars and workshops for construction professionals, (3) Address VM in undergraduate curricula, (4) Produce publications about VM and (5) Create a VM association in Uganda. Raising the standard of application of VM can be accomplished with the following strategies: (1) Institutionalise VM standards/ benchmarks, (2) Establish a repository of VM demonstration projects, (3) Innovate procurement practice, (4) Promote a value culture, and (5) Promote national VM policy. These 10 strategies constitute the most important contributions to knowledge about realising improvement in VM practice in Uganda. Such improvements will put Uganda in a position to benefit from all the good things that come with the effective implementation of VM. Moreover, other countries at similar levels of VM maturity can also benefit from the suggestions presented in this study and get started on the journey of institutionalising VM.

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