International Journal of Construction Engineering and Management 2017, 6(1): 13-21
DOI: 10.5923/j.ijcem.20170601.02

Obstacles against Value Management Practice in Building Projects of Dar es Salaam Tanzania

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Abstract This study investigated the obstacles that face Value Management (VM) practice in building projects of Tanzania. The research was confined in Dar es Salaam region and the key respondents being clients, consultants (architects, engineers, quantity surveyors) and contractors who had enough experience in the management of building projects. A quantitative questionnaire survey was used to extract responses from respondents who practice professionally as part of the construction industry. Descriptive statistical tools were used to analyse collected data. Findings revealed that the most critical obstacle is lack of understanding of VM in the construction industry which was rated the first followed by wrong choice of procurement route and lack of trained value managers in the construction industry at second and third. Recommendations include among others that efforts should be made to create awareness of VM in the industry and reinforcing conditions of contracts by introducing value clauses that would support value management.

Keywords Value Management, Value in Building, Building Projects, Tanzania

1. Introduction

The Tanzanian construction industry continues to be one of the key sectors in the economy. In 2010 the construction sector grew at a rate of 10.2%, compared with 7.5% in 2009 and contributed 8.0% to the national GDP, compared with 7.9% in 2009. The industry also employed 9% of the workforce in Tanzania [24, 25]. The cconstruction industry contributed 13.6% to Tanzania's GDP during 2015, reaching almost USD6b. In 2010 the sector accounted for only 7.8% of the country's GDP or USD1.6 billion. The growth rate of the Tanzanian construction sector was 4.3% in Q1 2016, compared to 23.2% in the first quarter of 2015 [23]. According to the Tanzania National Bureau of Statistics (NBS), the slowing of the growth rate was due to reduced investments in construction activities. However, for the fiscal year 2016–2017 the government of Tanzania has budgeted Tanzanian Shillings (TZS) 5.47 trillion equivalent to 25.4% of the total budget, excluding public debt service, for infrastructure projects [23]. Tanzania construction sectors have been a vital for human settlements and direct employment in construction sites. The industry provides a large magnitude of other jobs, such as in the production of building materials, equipment and post-construction maintenance [25]. The construction industry in Tanzania is divided into three service groups; the first group comprises professional service (consultants) such as architectural, quantity surveying, civil engineering, electrical and other specialist services [25]. The second group comprises the support services which include regulations and advisory institutions that monitor professional constructions to ensure that they run systematically as per their objectives. The third group comprises the construction services which include all kinds of contractors [25].

The concept of Value Management (VM) has existed for more than half a century. Its application in the construction industry is credited with some success notably in public contracts in the United States. [3]. VM is a function-oriented technique that has proven to be an effective management tool for achieving improved design, construction, and cost effectiveness in various construction and transportation project elements. It is anticipated that the successful implementation of a VM program will result in additional benefits beyond design and cost savings; for example, constant updating of standards and policies, accelerated incorporation of new materials and construction techniques; employee enthusiasm from participation in decisions; increased skills obtained from team participation.

In advanced countries, VM, or more accurately, the value methodology, has been used to improve construction and transportation projects for more than 30 years. Traditionally, VM has been used by transportation agencies and municipal organizations to reduce or avoid excess capital construction expenditures. However, VM can play a broader role to support effective decision making to construction projects,

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Published online at http://journal.sapub.org/ijcem

increase project performance and quality, balance project objectives, and manage community expectations [22].

For over three decades VM has had a notable history as an effective savings tool for the governments. Current studies like [32] indicate that there is an inclination in the use of VM in the construction industry in order to support project decision making. Countless projects have used VM to reduce cost and improve both products and process. Contractors have also used VM to increase their profit and to ensure continuing improvement to their products. Most authorities concede that VM is an excellent tool but its use has waned in recent years due to a perceived lack of support by various entities and government agencies. Providing this seed money would encourage various sectors and agencies to establish VM, promote wider acceptance and provide criteria for a sound project. In today's environment, VM practice has a vital role as one of the proven tools for reducing cost and improving product and process performance.

Several studies have been done on VM. One of the studies looked on VM as used in the United States of America's construction industry by investigating current theory and procedure. It evaluated VM projects and calculates the savings achieved by them. It goes on to analyse the nature of those savings. It looks at four Value Engineering (VE) workshops and makes an appraisal of the technique [19]. Also [20] did a study on constructability in relation to Total Quality Management and Value Engineering. They as well established a framework to measure costs and benefits related to constructability.

Previous studies relating to VM have focused on optimization of value engineering that is to change the concept that VE is a function by one party (designer, contractor, or user), to treating VE as structural component of the delivery process which forces all parties to voluntarily integrate the VM process without monetary incentives in the design-bid-build or design-build processes [5]. Also in an attempt to find the linkage between VM theory and practice in UK construction industry, [6] investigated the attitudes and experiences of VM facilitators within major UK cost consultants. In their study they found that Formal VM rarely extends beyond tender stage. Also workshops remain the common format, but these are often compressed into a half-day due to commercial pressures. They also found that VM techniques are adapted to suit the needs of the project, team and client rather than being rigidly applied according to the theoretical approaches outlined in the literature. Other studies like [26-30] have integrated VM and sustainability issues while [31] assessed earned VM practice in the construction industry.

In a developing country like Tanzania where existing buildings and infrastructure are restored and reinstated and even replaced by new construction, the consideration of VM on construction projects seems vital. However, despite the fact that VM seems to be a necessary tool for cost saving and managing value in building, still there are obstacles in practicing VM and as a result most of construction output in Tanzania fail to provide effective adherence in all necessary variables required by clients and users. Thus strengthening formal methods of managing value such as VM would bring further developments aimed at improving value. In this regard therefore, this research is aimed at investigating the obstacles against VM practice in building projects of Tanzania.

2. Efforts to Improve Value in Tanzania Building Projects

In building development clients may fall in three categories: those who have clear intention of their building requirements but are not aware of the cost implication, those who have a maximum amount of money to spend on project but do not know exactly what amount is required to spend and those who know their building requirements and ha a fixed sum of money to spend on a project [2]. According to author's experience in most building projects in Tanzania construction industry, all these kinds of clients are available and thus cost planning is performed using two options depending on the nature of clients. The first option is costing a design which involves development of the cost of a given design. The architect design and costing is done to get the estimate of total cost. The figure obtained forms the budget for the project. The second option is design to a cost where an architect and cost planner combine their skills to produce a design that accommodate cost limitations as well as functional and aesthetics requirements. Cost planning process in Tanzania normally involves the following stages:

- Preliminary estimating
- Preparation of cost plan: requirements are preliminary sketch drawings, indication of materials to be used, contractual information and comparable cost analysis from previous project
- Cost checking when there is cost limit
- Tender reconciliation and
- Post-contract cost control

According to a contention by [21] techniques mostly used for cost planning in Tanzania building projects are performance measurements for assessing project progress and magnitude of any variations that occurs, cost change control system and project performance review.

From the discussion above the three techniques of cost planning are very essential in project performance but still these are only useful for cost control of building projects and not value for money tools. Performance measurement is essential because it gives indication on how the project progress and variations that occur would affect the cost plan of which does not guarantee value for money. Cost change control system is for ensuring the project costs are within budget. [21] Pointed that cost change control system is a tool that can be used to control project cost and ensure projects come in-on budget. This shows that these techniques are for providing effectiveness and efficiency in cost of projects other than value of building projects because they only base on single value parameter that is a cost cog. Therefore these

techniques do not suffice to provide value for money in building projects.

In view of the risks associated with project failures it was recognized that project promoters and financiers require an independent review on the performance of their projects. This would be possible through the use of project audit which is one among VM approaches. The National Construction Council of Tanzania (NCC) established the project audit service in Tanzania to fulfil such needs in 1991. Project audit should be applied at any of the stages in a project's life cycle, that is: pre-project, in-project, and post project. Pre-project audits demonstrate the viability of the project or on how best to implement the project. In-project audits review an ongoing project at design, tender, and construction stages; diagnose its problems and recommend means to improve project performance particularly for projects that are overrunning time and cost targets and in situations where there are doubts on the quality of work. Occasionally post-projects audits are required to investigate lack of proper performance of completed projects or to help clients record good practice for future projects [18].

In Tanzania experience shows that, technical audits especially on public projects are conducted on projects which have run into trouble. These types of auditing normally end up into a fault finding exercise and thus denying the client many of the other benefits of technical audit. It is therefore very important right at the beginning of an audit to set clear objectives with the participation of the clients [12].

According to [17] the government and some public institutions require two types of independent audits. One involves the examination of value for money and efficiency of multi-project design and management organizations. The other covers those individual projects which have got trouble for reasons which typically involve lack of funding and passive management. There are a number of construction project audits in both building and civil works that have been carried out by NCC, these audit assignments are associated with construction failure, cost overrun, time overrun, suspicion on poor quality, suspicion on malpractices in procurement and mitigation of construction risks.

From the nature of audit carried out by NCC it can be deduced that most of these audit assignments have based on evaluation of project performance in terms of cost, quality, delivery and progress. Since project evaluation is a post-ante analysis of project after it has been undertaken then such audit would give the client just an indication or a good understanding of project performance. These audits will reveal the incompetence or competence of project participants other than providing value for money to clients. Value for money would have been achieved if an ex-ante analysis of a designed scheme is performed at every stage of construction project. Thus it is of the author’s opinion that technical audit carried out in Tanzania construction projects does not provide value for money in terms of economic parameter, efficiency and effectiveness. Unless the project audits are undertaken at every stage of construction with regard to all value parameters VM will not be achieved.

3. Obstacles against VM Practice

The management and enhancement of value doesn't imply that there may be intentional "gold plating," conscious neglect of responsibility, or unjustifiable error or oversight by the design team. VM simply recognizes that social, psychological, and economic conditions exist that may inhibit good value. The following are some of the more common obstacles against VM practice in building projects as stipulated in different literature:

3.1. Wrong Choice of Procurement Route

The wrong choice of procurement is a threat to value effectiveness. The majority of construction projects in Tanzania have been carried out using traditional methods with only a relatively small number of projects being implemented by other procurement systems [14]. Strict distinctions between design and construction phases in traditional contracting methods have caused confrontational attitudes between design and construction teams, which are in fact major obstacle to apply VM successfully [9].

3.2. Lack of Awareness about VM by Construction Industry Practitioners

There is slight understanding of VM in the industry stakeholders such as clients and some consultants and contractors. So far in Tanzania construction industry very few people have put a hand to do research on VM [11]. In Tanzania there are no construction institutions that offer courses in VM except for Ardhi University and only in the School of Construction Economics and Management [11].

3.3. Failure to Admit Ignorance of Certain Specialized Aspects of Project Development

Most construction industry designers in Tanzania especially architects become conceited and uncooperative when they are advised to make design changes which would bring optimum design [4]. Mostly designers would think of one parameter i.e. architectural beauty and engineering aspects but take no attention in reduction of unnecessary cost. The principal aim of VM is to reduce unnecessary cost with maintaining or increasing the function of the structure.

3.4. Lack of Good Communication among Project Stakeholders

As contended by [11] construction projects involve many people with different professionals as well as functions. These may be the client, consultants (architect, Quantity Surveyor, engineer, project manager and construction manager), and contractors [11]. Others are subcontractors, material suppliers, bankers, insurance companies and other public agencies. Interactions of a team during design stage

means exchange of information from one part or design profession to the other, this leads to involved decisions and may result into making better decisions on the designs [11]. During construction stage there has to be a flow of information either from the employer through his consultants or within consultants and contractors [11].

Lack of good communication among project participants has been a barrier to VM. In early works i.e. pre-construction activities there is both an explicit and implicit charge that poor communication has been a core problem for many years [7]. Communication within the construction team as seen to suffer because insufficient information was available, information was incomplete, rushed and not available in time therefore this would result to poor value of the project output. In construction the information is usually prepared by individuals from diverse backgrounds, such as Architects, Quantity Surveyor, Engineers, Subcontractors and Specialist Suppliers, often using different terms and methods of graphical representation. Failure of information, poor quality of information or inappropriate communication modes between different participants in construction projects has been an obstacle to value effectiveness and the cause of poor quality of final product. If there is no good communication among project participants then VM is blocked to be effective.

3.5. Other Obstacles

Other obstacles as portrayed by [11] and [3] are poor human relation, rigid application of standards and traditions without consideration of changing function, technology and value, lack of contractual provision to support VM, lack of trained value managers in construction industry and conflicts of interest among project participants.

4. Methodology

4.1. Population and Sampling Design

The objective of this research was to identify obstacles against VM practice in building projects and analyse their relative importance index. The population of the study comprised of clients, Consultants (Architectural firms, Engineering firms and Quantity surveying firms) and building contractors class one (I) to class three (III) registered by Contractors Registration Board (CRB). The sample size was 231 firms comprising of 30 clients, 150 consultants and 51 building contractors.

In Tanzania contractors are categorized into seven classes. Criterion set to obtain the sample from building contractors was: building contractors to be class one, two and three because in Tanzania these are grouped as large contractors who have much experience and resources in managing projects. Stratified systematic sampling was used to select 51 intended building contractors out of the population strata of 144 building contractors in which 85 formed class I stratum, 23 class II stratum and 36 class III stratum. The sample size of each stratum was kept proportional to the size of the population strata and multiplied by the intended sample size [10]. After stratification, systematic sampling was used to select every i^{th} item from the list of each stratum. For the case of consultants stratified sampling was not used because their population did not constitute a homogeneous group instead systematic probability sampling was used to draw companies from the lists of consultants. Purposive sampling was used to select clients on the basis that the small mass that was so select from the huge one will be typical or representative of the whole [10].

4.2. Questionnaire Design

This study investigated the obstacles against VM practice in building projects of Tanzania. The investigation considered the building clients, consultants and building contractors (Architects, Quantity Surveyors and Engineers). Obstacles were gathered based on literature review. Face-to-face discussions were carried out held with two building clients from public and private sector, three consultants from architectural, quantity surveying and engineering firms respectively, and three building contractors representing class one to three. These representatives did not participate in the questionnaire later. Rather, they offered their opinions and thereby helped to improve the questionnaire as portrayed in similar way by [1].

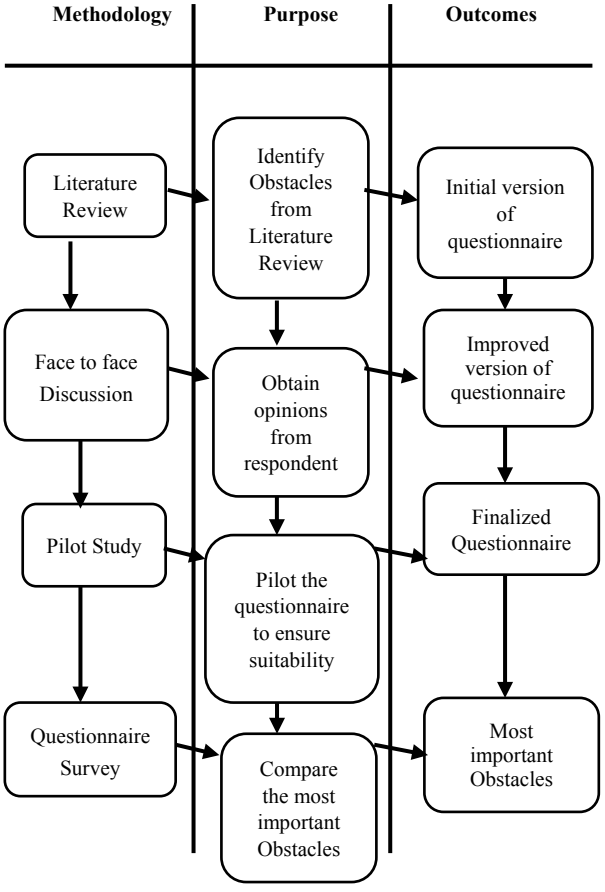

Figure 1. Summary of Methods and Outcomes. Adapted from [1]

Through a quantitative approach, data used were acquired with a questionnaire survey. The questionnaire was compiled based on the refined list of VM obstacles after a pilot study as depicted in ***the appendix***. The pilot was conducted to improve the quality of the questionnaire and enhance reliability of the questions. Closed-ended questions were used as they are very convenient for collecting factual data and are simpler to analyze because the range of potential answers is limited [8, 1]. The respondents were asked to provide their views on the relative importance of the obstacles against VM using a 5-point Likert scale [8]. In a Likert scale, the respondent is asked to respond to each of the statements in terms of several degrees, usually five degrees [10]. The ratings used were: Not important = 1; Fairly important = 2; Important = 3; Very important = 4; and Extremely important = 5. This type of scale has been found to be acceptable in other construction economics and management research. For example, [16] used a similar approach to study joint venture formation between construction organizations in Tanzania. Figure 1 shows a flow chart of the methods and outcomes as used in this study.

4.3. Data Collection

In general the data collection process through this method had been quite good. Multiple sources of evidence were used to collect data. Literature was reviewed to identify what has been written on VM practice in building projects as well as its obstacles. Questionnaires survey was used to collect primary data from clients, consultants and building contractors. Closed-end questions were mainly used for this research after considering the results of the pilot study. The respondents were requested to rank 9 obstacles with regard to their importance in VM practice in building projects. A total of 30 questionnaires were distributed to clients, 150 questionnaires to consultants and 51 questionnaires to building contractors. The target respondents were technical directors of firms for consultants and building contractors and Heads of construction units for clients.

In all, 231 questionnaires were distributed and 191 were returned. Of these, 22 responses came from clients, 130 from consultants and 39 from building contractors. A summary of the response rates is provided in Table 1.

Table 1. Response Rate of the Questionnaire

Respondent	Questionnaire sent	Questionnaire received	Success of responses (%)
Clients	30	22	73
Consultants	150	130	87
Building contractors	51	39	76
Total	231	191	83

All respondents had experience of more than 10 years in the construction industry which indicate that most of respondents are familiar with management of building projects.

5. Results and Discussion

5.1. Data Analysis

The researcher prepared and made use of a data analysis sheet to collate data extracted from the interview protocol. The VM obstacles were thereafter rated using the Relative Importance Index (RII) method of descriptive analysis as shown below.

$$\mathrm{RII} = \frac{5\mathrm{M}_5 + 4\mathrm{M}_4 + 3\mathrm{M}_3 + 2\mathrm{M}_2 + 1\mathrm{M}_1}{\mathrm{N\ X\ (M5 + M4 + M3 + M2 + M1)}}$$

where M5, M4, M3, M2 and M1 are frequencies of the rating responses given to each obstacle variable; 5,4,3,2 and 1 are the weight given to each factor by respondents and N is the highest weight.

Relative Importance Indices (RIIs) comparison tables was used to rank the results by taking into account the mean scores and the RII as indicated in Table 2:

Table 2. Relative Importance Indices (RIIs) comparison table

Mean score (M)	RII	Rankings
4.0≤M≤5.0	0.80≤RII≤1.000	High
3.0≤M<4.0	0.60≤RII<0.80	Medium
1.0≤M<3.0	0.20≤M<0.60	Low

5.2. Agreement Analysis

The Spearman's rank correlation coefficient (ρ) was used to show the degree of correlation or agreement between the rankings of any two parties. The Spearman's rank correlation is a non-parametric test for measuring relationship between paired observations of two variables when data are in a ranked form [10]. Non-parametric tests are also referred to as distribution-free tests. The main objective of using this coefficient was to determine the extent to which the two sets of ranking are similar or dissimilar [10]. The correlation coefficient varies between +1 and −1, where +1 implies a perfect positive relationship (agreement), while −1 results from a perfect negative relationship (disagreement) [15]. It might be said then that sample estimates of correlation close to unity in magnitude imply good correlation, while values near zero indicate little or no correlation [15]. The Spearman's rank correlation coefficient (ρ) was calculated as follows:

$$\rho = 1 - \frac{6\Sigma \mathrm{d}^2}{\mathrm{n}(\mathrm{n}^2 - 1)}$$

Where d is the difference between the ranks given by any two respondents for an individual obstacle and n is the number of obstacles which in this case is 9 obstacles. Spearman's rank correlation coefficients between the ranks of obstacles associated with clients and consultants, clients and contractors and consultants and contractors were 0.91, 0.86 and 0.95 respectively. The rankings by the different categories are substantial positively correlated. The strong correlation implies that all the parts had similar emphasis on the different obstacles that they consider important for VM practice.

Table 3. Ranking of Obstacles against VM Practice

Obstacles	Clients				Consultants				Contractors			
	Total weighted score	Mean score	RII		Total weighted score	Mean score	RII		Total weighted score	Mean score	RII	
	Max=110	Max=5	Max=1	Rank	Max=650	Max=5	Max=1	Rank	Max=195	Max=5	Max=1	Rank
Wrong choice of procurement route	93	4.227	0.845	2	548	4.215	0.843	2	172	4.410	0.882	1
Failure to admit ignorance in certain specialized aspects on project development	76	3.455	0.691	4	511	3.931	0.786	4	155	3.970	0.795	3
Lack of awareness of VM by practitioners in the construction industry	101	4.591	0.918	1	569	4.377	0.875	1	172	4.410	0.882	1
Lack of contractual provisions to support VM	69	3.136	0.627	5	511	3.931	0.786	4	142	3.641	0.728	5
Poor human relation	53	2.409	0.482	8	319	2.454	0.491	9	101	2.590	0.518	8
Rigid application of standards and tradition without consideration of changing function, technology and value	54	2.455	0.491	7	447	3.438	0.688	6	134	3.436	0.687	6
Lack of good communication among project stakeholders	49	2.227	0.445	9	386	2.969	0.594	7	116	2.974	0.595	7
Lack of trained value managers in construction industry	91	4.136	0.827	3	535	4.115	0.823	3	156	4.000	0.800	4
Conflicts of interest among project stakeholders	64	2.909	0.582	6	355	2.731	0.546	8	83	2.128	0.426	9

5.3. Significance Test

To determine whether the parties displayed significant agreement in their rankings, the null hypothesis that there is no correlation/agreement in the rankings of "clients and consultants, clients and contractors, and consultants and contractors with regard to the relative importance of the obstacles against VM practice" was tested using a two-tailed test from the values of Spearman's rank correlation table (for $n < 30$) at 5% significance level and found the critical values for ρ to be ±0.6833 representing the upper and lower limits of acceptance regions. And since our calculated ρ for all parts are outside the limits of the acceptance region (see Table 4), the null hypothesis is rejected and accepts the alternative hypothesis that there is correlation/agreement in the ranked data of "clients and consultants, clients and contractors, and consultants and contractors with regard to the relative importance of the obstacles against VM practice".

Table 4. Spearman's Rank Correlation Coefficients Result

Part	Client and Consultant	Client and Contractor	Consultant and Contractor
ρ	0.91*	0.86*	0.95*

*Correlation is significant @ 5% significance level (two-tailed)
ρ - Spearman rank correlation coefficient for each part

5.4. Obstacles against VM Practice

Respondents were required to respond on the obstacles against VM practice in building projects by ranking them according to their relative importance. The obstacles listed to them are; wrong choice of procurement route, failure to admit ignorance in certain specialized aspects in project development, lack of understanding of VM in the construction industry, lack of contractual provisions to support VM, poor human relation, conflicts of interests and jealous among project stakeholders, rigid application of standards and traditions, lack of good communication among project stakeholders and lack of trained value managers in the construction industry.

The top most highly ranked obstacles against VM practice in building projects, as shown in Table 3, were (1) Lack of understanding of VM in the construction industry (mean = 4.591,4.377 and 4.410;RII = 0.918,0.875 and 0.882 as responded by clients, consultants and contractors respectively),this obstacle has also been found to be critical by some researchers for example in his study 'Towards Value Management practice in Building Projects of Tanzania' [11] found the same results that respondents had little understanding of VM but lack very basic concepts of VM which was indicated by some wrong perceptions they had on VM. (2) Wrong choice of procurement route (mean = 4.227, 4.215 and 4.410; RII = 0.854, 0.843 and 0.882 as responded by clients, consultants and contractors respectively), this is the second most critical obstacle of VM practice and is advocated by the domination of traditional system as contended by [14]. In a research by [3] design and build is the best choice of procurement route to allow VM implementation as it provides more flexibility to VM studies in the sense that designers and contractors effectively belong to the same team under procurement routes. Thus frequent communication and close ties exist between the two parties., (3) Lack of trained value managers in construction industry was found to be the third most critical obstacle to VM practice in building projects (mean = 4.136, 4.115 and 4.000; RII = 0.827, 0.823 and 0.80 as responded by clients, consultants and contractors respectively). The medium ranked obstacles were found to be (1) Failure to admit ignorance in certain specialized aspects on project development (mean=3.455, 3.931 and 3.970; RII=0.691, 0.786 and 0.795 as responded by clients, consultants and contractors respectively), (2) Lack of contractual provisions to support VM (mean=3.136, 3.931 and 3.641; RII=0.627, 0.786 and 0.728 as responded by clients, consultants and contractors respectively), (3) Rigid application of standards and tradition without consideration of changing function, technology and value (mean=2.455, 3.438 and 3.436; RII=0.491, 0.688 and 0.687 as responded by clients, consultants and contractors respectively).

5.5. Conclusions

The aim of this study was to investigate the obstacles against VM practice in building projects of Tanzania. The study employed a quantitative survey method of research to extract responses from respondents who practice professionally as part of the construction industry in Dar es Salaam, Tanzania. Descriptive statistical tools were used to analyse collected data. The Spearman's rank correlation coefficient was used to examine the similarity or dissimilarity in the ranking of the VM practice obstacles amongst the respondents, which were categorised into clients, consultants and contractors for the purpose of this study.

The following are the three most highly ranked obstacles: (1) Lack of understanding of VM in the construction industry, (2) Wrong choice of procurement route and (3) Lack of trained value managers in the construction industry. Significance test was carried out to determine whether the parties displayed significant agreement in their rankings. This demonstrates the validity and reliability of information and findings from this research.

Information collected from this study is expected to be useful both in practice and academics. In practice, the results can assist in the identification of potential areas of weaknesses in practice so that suitable standard remedial measures based on VM attributes can be proactively taken. In academic arena, the research has endowed with some insights on the existing knowledge and theories in the area of construction economics and management, particularly with regards to obstacles against VM practice. This contribution is potential for being used to improve the contents and curriculum of educational programmes for the betterment of project managers and stakeholder management in construction.

This research was limited to identifying and analysing obstacles against VM practice in building projects, future studies could be focused on finding out the drivers that would stimulate VM practice in Tanzania construction industry.

5.6. Recommendations

The following recommendations are made based upon the findings of the study.

In order to build the practice of VM, efforts should be made to create awareness of VM. Providing the workshops and seminars to construction project practitioners for the purpose of creating awareness among stakeholders of the construction industry on the effective use of VM, together with its benefits and shortfalls. In addition it is necessary to introduce VM courses into undergraduate programmes of engineering and construction based universities.

That a clause to be introduced in conditions of contracts of construction projects that supports VM practice. In advanced countries introduction of value incentive clauses into conditions of contracts has been practiced for years (Fong and Shen, 2000). This clause when introduced will encourage contractors to bring change proposals.

It is important that practitioners should change their behaviour towards project development. Most of designers in Tanzania become very arrogant when advised to make changes in their design that would bring potential cost saving. Professionals should accept that team working is very important and they need to share ideas if the best output is required. They should also know that VM results may also be subject to rejection if not worth.

Appendix

Main Questionnaire (For Finding Relative Importance Index)

Which of the following best describes your organization?

[ ] Consultant
[ ] Client
[ ] Building contractor

Regarding experience, how long have you been working in the construction industry?

[ ] 1-5 years
[ ] 6-10 years
[ ] Over 10 years

Please indicate by ticking the appropriate column the relative importance of each of the following obstacles to Value Management practice in building projects. Please tick mark according to your point of view only in one column in each row.

		1	2	3	4	5
No	**Obstacles against VM practice**	**Not important**	**Fairly important**	**important**	**Very important**	**Extremely important**
1	Wrong choice of procurement route					
2	Failure to admit ignorance in certain specialized aspects on project development					
3	Lack of awareness of VM by practitioners in the construction industry					
4	Lack of contractual provisions to support VM					
5	Poor human relation					
6	Rigid application of standards and tradition without consideration of changing function, technology and value					
7	Lack of good communication among project stakeholders					
8	Lack of trained value managers in construction industry					
9	Conflicts of interest among project stakeholders					

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