

Key Performance Indicators for Value Management in Saudi Construction Industry

Khalid Al-Gahtani¹, Ibrahim Al-Sulaihi², Raed Al Rashed³, Ali Batarfi⁴

¹Associate Professor, Civil Engineering Department, College of Engineering, King Saud University, Kingdom of Saudi Arabia;

²PhD candidate, Civil Engineering Department, College of Engineering, King Saud University, P.O. Box 800, Riyadh 11421; Kingdom of Saudi Arabia (Corresponding Author).

³PhD student, Civil Engineering Department, College of Engineering, King Saud University, Kingdom of Saudi Arabia

⁴PhD student, Civil Engineering Department, College of Engineering, King Saud University, Kingdom of Saudi Arabia

ABSTRACT

Highly competition in the construction industry pays the construction developers to produce valuable projects with the lowest cost. Value management depends in the value based assessment of the project. The project value is directly proportional to the functionality achieved in the project, and inversely proportional to the cost of the project. Existing studies for seeking the key performance indicators (KPIs) for value management (VM) in construction industry are still limited. Furthermore, KPIs differs from country to other according to different market situations, policies and strategies, cultures, and competitive environments. To date, KPIs for VM in construction industry in Saudi Arabia have not been systematically investigated. Consequently, this study aims to identify the key indicators for evaluating the performance of value management practices in construction industry in Saudi Arabia. List of 55 initial performance criteria classified within three main groups have been identified through literature and interviews with VM experts. A survey for 119 of practitioner Engineers in Saudi construction industry has been conducted to achieve the study objectives.

Keywords: KPIs, Value management, Construction industry, Saudi Arabia.

1. INTRODUCTION

Value is defined as a fair return for something exchanged. It can be expressed mathematically by dividing the functionality achieved in the project over the project's cost [1], [2]. The value methodology is commonly expressed as value analysis (VA), value engineering (VE), and value management (VM) [1]. Although some schools of thoughts tend to distinguish VM from other relevant terms such as value engineering (VE) and value analysis (VA), it is more widely accepted that the term VM can be used to represent other related value methodologies [3]. Value management is a systematic process that aims to create the best value for project on the basis that the project factions must be achieved [4]. It is defined also as a proactive, problems solving management system that maximizes the functional value of a project by managing its development from concept stage to operation stage of a projects through multidisciplinary value team [5]. VM has been developed due to shortage of materials and components that faced the manufacturing industry in the North America during the World War II. It seeks to obtain the best functional balance between cost, quality, reliability, safety and aesthetic [6], [7]. AVM study generally encompasses three stages: pre-workshop, workshop and post-workshop. The workshop stage is normally conducted in a structured and disciplined procedure with six phases, namely, information, function analysis, creation, evaluation, development, and presentation [1]. VM is regarded as a useful method in addressing challenges, such as budget constraints and project complexity in the construction industry [3], [8]. VM plays a very important role to maintain the continuing evolution for project and construction organization. As a result, VM has become one of the critical approaches for organization success.

Measuring the performance of value management studies is an essential requirement to identify how effective is these studies in the improvement of construction projects performance, functionality, reliability, benefits and cost effectiveness. In order to reach this objective we need to define some suitable, easy to measure and clear key performance indicators. There are many indicators that can be used to evaluate the performance of implementation the VM in construction industry. The indicators with the heights importance weight can be expressed as a key performance indicators (KPIs). KPIs help organizations that implement VM in realizing the most important indicators that should be considered for evaluating VM practices. Ignorance KPIs leads to prevent the organization from getting full advantage of using VM. Performance measurement is urgently required in VM studies to improve decision making processes and to ensure returns of investment on VM studies. The performance of VM studies must be properly and promptly measured to meet the limited budget and time [8]. Accordingly, there is critical need to identify the KPIs for

measuring and evaluating the performance of VM implementation in construction industry.

Existing researches that conducted to identify the KPIs for VM implementation in construction industry are still limited. Most of past related studies were conducted for set of participants and organizations within specific region. However, different market situations, policies and strategies, cultures, and competitive environments require different measures [9]. Consequently, the different in the investment environment can lead to get other results for such researches. To date, there is no effort to identify the KPIs for VM in Saudi construction industry. To bridge this gap, this research aims mainly to identify the most important indicators for measuring the performance of VM practices in Saudi construction industry. These KPIs will help in measuring how VM studies were successfully practiced to reach its defined goals. The available literature was reviewed to obtain set of initial criteria for evaluation the performance of VM. Consequently, a survey questionnaire has been conducted with set of experts and practitioners Engineers in Saudi construction industry to collect their perceptions of identifying KPIs for implementing VM in their business.

2. BACKGROUND

VM provides a structured and analytical process that help in increasing the value for money by providing all necessary functions which are consistent with required levels of quality at the lowest overall cost [10]. VM performance measurement is essential for practitioners to evaluate how good are the outcomes of VM studies they are conducting, and for clients to be convinced by the benefits of these studies and to be able to monitor & ensure achievement of best results. Performance measurement in the context of VM studies is about quantifying the efficiency and effectiveness of VM workshops [8]. Lin and Shen [8] concluded that a VM study is a systematic approach which consists of pre-workshop, six-phase workshop and post-workshop. Each phase requires the input of previous phases and yields output for the subsequent phases. The performance of each phase could be measured and integrated to form the process performance of VM studies. Performance measurement of a VM study starts from the objectives of the study. Each objective should be linked to one or more critical success factors (CSFs) which are identified according to the inputs and processes of VM studies. Each CSF should have a few KPIs that can be measured and quantified.

Some previous studies concentrated only on the monetary side achieved from a VM study as a measure of success i.e. rate on investment (ROI) which measures the saving achieved relative to cost of VM study, which should not be the case if we want to measure the real success of these studies. Kelly and Male [11] investigated several VM studies in the construction industry in the United States, and argued that the main concern when judging whether or a VM study is successful is the percentage of savings a study can achieve. Other factors should be taking in consideration to evaluate VM studies success, which should include systematic process, multidisciplinary approach, function analysis, and value improvement, which differentiate them from cost-reduction techniques [12].

In order to measure the performance of a VM study, we need to identify suitable and effective indicators that will lead to quantify the efficiency of this study. These KPIs should be linked to the critical success factors (CSF) that describe how to measure and achieve VM study objectives. Identification of the causal relationship among CSFs and KPIs should help in measuring performance [13]. KPIs can be defined as the indicators showing the level of performance achieved against an operation that is of key importance to the successful completion of the service being provided [14]. Some characteristics of KPIs as defined by Parmenter [15] are: KPIs are not always expressed in financial, KPIs are measured frequently within certain periods, KPIs provide a clear indication of what action is required by the staff, KPIs are measures that tie responsibility down to a team, KPIs have a significant impact in many directions such as critical success factors, and KPIs encourage performing appropriate action and they have a positive impact on performance.

Lin et al. [16] described KPIs which measure performance of VM studies that were identified from previous studies to be ranged from specific aspects to more general analytical foundations. Knowing what performance should be measured, how the performance can be measured, and what the measurement results mean is fundamental to the selection of KPIs. This knowledge is used to avoid the use of improper indicators that may lead to the bias in measurement results [17]. While Kulshrestha and Deshpande [18] developed a multiple criteria decision support system (MCDSS) for value management implementation in construction projects. They presented some concepts of multiple criteria decision theory (MCDT) and established an analogy among decision environments of VM and MCDT.

3. RESEARCH METHODOLOGY

The research methodology included many phases that aimed to achieve the project objectives as shown in Figure 1. These phases have been started with investigation of initial performance indicators (IPIs) for measuring the performance of VM in construction industry through reviewing of the relevant literature. Previous phase led to identify a list of 47 indicators that are considered suitable to measure VM performance in construction industry. The list of IPIs represents the basis of the questionnaire which aims to identify the most important KPIs for measuring the VM performance in construction projects in Saudi Arabia. The IPI identified through literature were classified into three main groups which include: pre workshop stage indicators, workshop stage indicators, and post workshop stage indicators.

The target practitioners in this study were engineers who engage in construction industry in Saudi Arabia. Investigating the opinions of these practitioners will definitely help to determine the most important KPIs which affecting the performance of VE in Saudi Arabia since they are working in construction industry in Saudi Arabia. The research population includes engineers from owner, design and consulting and contracting organizations. The communication plan with the targeted population was through interviewing and online questionnaire. Initial questionnaire has been design based on the list of 47 IPI. Using the initial questionnaire, a pilot study has been conducted through interviewing 14 value management experts in construction industry in Saudi Arabia to validate the initial questionnaire. This phase caused increase the initial indicators to 55 IPIs as showing in Table 1. Final questionnaire has been designed based on final list of IPI and distributed to the targeted population. The final questionnaire included two main sections. The first section included some questions to investigate the respondent and organization information such as respondents' positions, number of experience years, organization type and number of employees. The second section included a list of 55 IPI that classified in three main groups. The respondents were asked to rate each indicator based on their professional judgment on a given five-points scale (where 1 = very low importance, 2 = low importance, 3 = medium importance, 4 = high importance, and 5 = very high importance). At the end of each group of indicators, the chance is given to respondents to add other additional indicators. At the end of the questionnaire, full contact information of the surveyor was inserted to be used by respondents if they have any questions regarding the study. The final results that achieving the study objectives can be reached by analyzing the data gathered via the questionnaire.

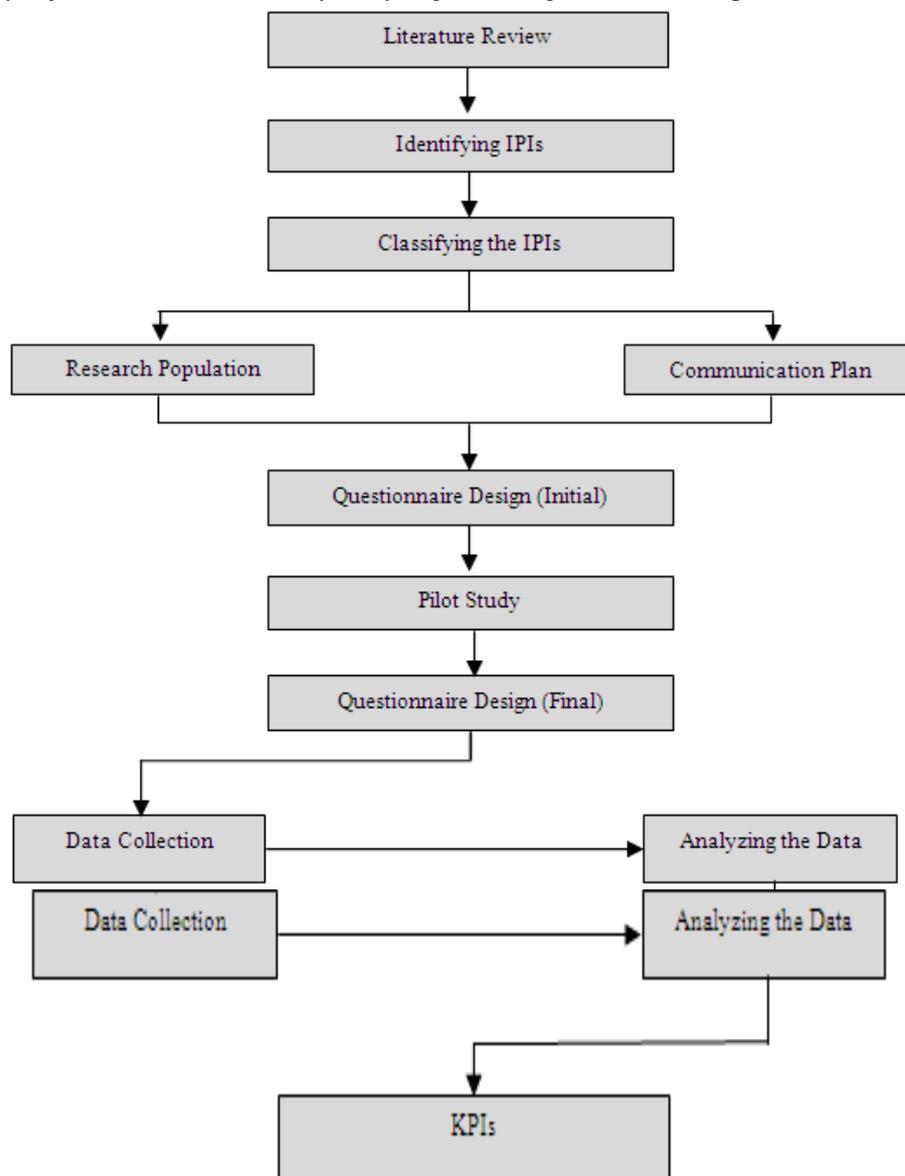


Figure 1. Research Methodology Flowchart

Table 1: List of IPIs

No.	Pre Workshop Stage Indicators	No.	Workshop Stage Indicators	No.	Post Workshop Stage Indicators
1	Satisfaction of the time when the VM workshop will be conducted (Reference to project life cycle)	1	Background information collected (during workshop)	1	Duration to complete the report
2	Satisfaction of venue (workshop venue)	2	Number of site visits	2	Quality of the report
3	Disciplines of participants	3	Number of related documents analyzed	3	Percentage of action plan carried out
4	Authority of key stakeholder participants	4	Duration of each phase (workshop phases)	4	Proposed change on project investment
5	Years of professional experience of participants	5	Time keeping of each phase	5	Proposed change on life-cycle cost
6	VM knowledge of participants	6	Satisfaction of the techniques used in each phase	6	ROI of VM study, i.e., proposed savings/cost of VM
7	Years of experience of facilitator	7	Interaction among participants in each phase	7	Proposed change on design schedule
8	Numbers of VM workshop facilitated	8	Client's objectives clarified	8	Proposed change on construction schedule
9	Qualification of facilitator	9	Project givens/assumptions clarified	9	Reducing the difficulty of construction, i.e., rework times
10	Client's support	10	Primary function identified	10	Improving the project quality
11	Client's participation	11	Total number of ideas	11	Improving the project appearance
12	Clear objectives of workshop	12	Average numbers of ideas generated by each participant	12	Identifying and clarifying the client's requirements
13	Relevant departments' support	13	Equal contribution of participants	13	Accelerating the decision making
14	Time spent on preparation before workshop	14	Deliberating the alternatives (evaluating each alternative)	14	Improving communication and understanding among stakeholders
15	Number of pre-workshop meetings held	15	Efficiency of idea generation	15	Client's satisfaction
16	Having a good clearly defined agenda and workshop preparation checklist	16	Human relations among team members	16	Participants' satisfaction
17	The application of VM at strategic level of the project	17	The team conducted VM	17	Facilitator's satisfaction
		18	The Methodology of VM used	18	Commitment of stakeholders to implement study outcomes
				19	Follow up implementing the proposed ideas
				20	Assign dedicated person to the implementation

4. DATA ANALYSIS METHOD

The importance score of KPIs can be calculated using the Relative Importance Index (RII) (Eq. 1) [19]. Microsoft Excel can be used as software to analyze the data collected from respondents.

$$RII = \frac{\sum_{i=1}^5 W_i X_i}{A \times n} \tag{1}$$

Where:

W_i = the weight given to the i th response: $i=1, 2, 3, 4, 5$; X_i = frequency of the i th response; A = highest weight (5 in this study); n = number of respondents.

Performance indicators has been classified according to their RII scores using the following scale: RII= 80-100 Very High Importance (VH), RII= 60-79 High Importance (H), RII= 40-59 Medium Importance (M), RII= 20-39 Low Importance (L), and RII= 0-19 Very Low Importance (VL).

Spearman's rank correlation has been used also to identify the degree of agreement between the different population parties. The correlation coefficient interval between +1 (perfect positive relationship) and -1 (perfect negative

relationship [20]. Spearman's rank correlation calculated using Eq. 2 [21].

$$r = 1 - \frac{6 \sum d^2}{n^3 - n} \quad (2)$$

Where:

r = the Spearman rank correlation coefficient between two parties, d= the difference in ranking between any two factors, n = the number of factors.

5. RESULTS AND DISCUSSION

The questionnaire has been delivered to owners, contractors, consultant, and designers involved in construction industry in Saudi Arabia. 119 responses have been obtained. The responses rate were 23.53 % from owner, 33.61 % from contractor, and 42.58% from designer and consultant (Table 2). 5.88% of participated organizations have less than 10 employees, 11.76% have between 10 to 50 employees, 12.60% have between 51 to 100 employees, and 69.74% of the organizations participating in the questionnaire have more than 100 employers (Table 3). 22.68% of respondents have more than 15 years of experience while 28.57% have between 11-15 years of experience and 30% have between 6-10 years of experience (Table 4). This high experience of respondents gives high reliability of results.

Table 2: Summary of response

Group	Completed questionnaire received	Response rate (%)
Owner	28	23.53
Contractor	40	33.61
Designers and Consultants	51	42.58
Overall	119	100

Table 3: Number of employees in participating organizations

Number of Employee	Total Number of Respondents	Percentage (%)
Less than 10	7	5.88
10-50	14	11.76
51-100	15	12.60
More than 100	83	69.74
Overall	119	100%

Table 4: Respondents' years of experience

Years of Experience	Total Number of Respondents (Frequency)	Percentage (%)
1-5	28	23.52
6-10	30	25.21
11-15	34	28.57
More than 15	27	22.68
Overall	119	100

The RII for each performance indicator for evaluating the VM in construction industry has been identified using Eq. 1. Table 5 shows the RII for the IPI identified through the literature review and the pilot study according to the respondents' opinions. For pre workshop stage indicators Clear objectives of workshop, qualification of facilitator, having a good clearly defined agenda and workshop preparation checklist, and client's support classified as a very high important factors with 85.55, 81.51, 81.51, and 80.67% respectively. While, for workshop stage indicators, the methodology of VM used, client's objectives clarified, and background information collected (during workshop), achieved the highest ranking of importance with 80.84, 80.17, and 80 % respectively. In other hand, client's satisfaction, quality of the report, improving the project quality, and identifying and clarifying the client's requirements classified as a very high important indicators within workshop stage indicators with 83.03, 81.34, 80.50, and 80.34% respectively. Table 6 shows the ranking of performance indicators according to their RII scores. The indicators with highest RII can be considered as a KPIs for measuring the performance of VM in Saudi construction industry.

Spearman's rank correlation coefficient has been used to identify the level of agreement or disagreement for the RII between each of two parties of the respondents. The degree of agreement between the owners and contractors was 78.8%, between owners and designers was 54.7% and between contractors and designers was 36.2% as shown in Table 7. These results indicate that there is a good agreement between the respondents' parties.

Table 5: RII of IPIs for measuring the performance of VM in construction in Saudi Arabia

Code	IPI	RII (%)	Class
P	Pre Workshop Stage Indicators		
P-1	Satisfaction of the time when the VM workshop will be conducted (Reference to project life cycle)	74.45	H
P-2	Satisfaction of venue (workshop venue)	68.40	H
P-3	Disciplines of participants	78.15	H
P-4	Authority of key stakeholder participants	74.96	H
P-5	Years of professional experience of participants	74.96	H
P-6	VM knowledge of participants	72.27	H
P-7	Years of experience of facilitator	77.65	H
P-8	Numbers of VM workshop facilitated	68.74	H
P-9	Qualification of facilitator	80.67	VH
P-10	Client's support	81.51	VH
P-11	Client's participation	74.79	H
P-12	Clear objectives of workshop	85.55	VH
P-13	Relevant departments' support	77.65	H
P-14	Time spent on preparation before workshop	74.45	H
P-15	Number of pre-workshop meetings held	66.22	H
P-16	Having a good clearly defined agenda and workshop preparation checklist	81.51	VH
P-17	The application of VM at strategic level of the project	79.50	H
W	Workshop Stage Indicators		
W-1	Background information collected (during workshop)	80.00	VH
W-2	Number of site visits	69.92	H
W-3	Number of related documents analyzed	75.63	H
W-4	Duration of each phase (workshop phases)	70.08	H
W-5	Time keeping of each phase	69.75	H
W-6	Satisfaction of the techniques used in each phase	77.14	H
W-7	Interaction among participants in each phase	79.33	H
W-8	Client's objectives clarified	80.17	VH
W-9	Project givens/assumptions clarified	78.82	H
W-10	Primary function identified	75.63	H
W-11	Total number of ideas	68.24	H
W-12	Average numbers of ideas generated by each participant	65.21	H
W-13	Equal contribution of participants	61.01	H
W-14	Deliberating the alternatives (evaluating each alternative)	74.45	H
W-15	Efficiency of idea generation	77.48	H
W-16	Human relations among team members	75.46	H
W-17	The team conducted VM	76.30	H
W-18	The Methodology of VM used	80.84	VH
S	Post Workshop Stage Indicators		
S-1	Duration to complete the report	72.10	H
S-2	Quality of the report	81.34	VH
S-3	Percentage of action plan carried out	78.82	H
S-4	Proposed change on project investment	74.45	H
S-5	Proposed change on life-cycle cost	77.14	H
S-6	ROI of VM study, i.e., proposed savings/cost of VM	74.29	H
S-7	Proposed change on design schedule	74.96	H
S-8	Proposed change on construction schedule	74.79	H

S-9	Reducing the difficulty of construction, i.e., rework times	76.47	H
S-10	Improving the project quality	80.50	VH
S-11	Improving the project appearance	74.45	H
S-12	Identifying and clarifying the client's requirements	80.34	VH
S-13	Accelerating the decision making	77.98	H
S-14	Improving communication and understanding among stakeholders	77.65	H
S-15	Client's satisfaction	83.03	VH
S-16	Participants' satisfaction	75.46	H
S-17	Facilitator's satisfaction	71.76	H
S-18	Commitment of stakeholders to implement study outcomes	79.16	H
S-19	Follow up implementing the proposed ideas	75.46	H
S-20	Assign dedicated person to the implementation	76.13	H

Table 6: KPIs Ranking

KPIs code	RII (%)	Class	Rank
P-12	85.54622	VH	1
S-15	83.02521	VH	2
P-10	81.51261	VH	3
P-16	81.51261	VH	4
S-2	81.34454	VH	5
W-18	80.84034	VH	6
P-9	80.67227	VH	7
S-10	80.5042	VH	8
S-12	80.33613	VH	9
W-8	80.16807	VH	10
W-1	80	VH	11
P-17	79.4958	H	12
W-7	79.32773	H	13
S-18	79.15966	H	14
W-9	78.82353	H	15
S-3	78.82353	H	16
P-3	78.15126	H	17
S-13	77.98319	H	18
P-7	77.64706	H	19
P-13	77.64706	H	20
S-14	77.64706	H	21
W-15	77.47899	H	22
W-6	77.14286	H	23
S-5	77.14286	H	24
S-9	76.47059	H	25
W-17	76.30252	H	26
S-20	76.13445	H	27
W-3	75.63025	H	28
W-10	75.63025	H	29
W-16	75.46218	H	30
S-16	75.46218	H	31
S-19	75.46218	H	32
P-4	74.95798	H	33
P-5	74.95798	H	34
S-7	74.95798	H	35
P-11	74.78992	H	36
S-8	74.78992	H	37
P-1	74.45378	H	38
P-14	74.45378	H	39
W-14	74.45378	H	40
S-4	74.45378	H	41

S-11	74.45378	H	42
S-6	74.28571	H	43
P-6	72.26891	H	44
S-1	72.10084	H	45
S-17	71.76471	H	46
W-4	70.08403	H	47
W-2	69.91597	H	48
W-5	69.7479	H	49
P-8	68.7395	H	50
P-2	68.40336	H	51
W-11	68.23529	H	52
P-15	66.21849	H	53
W12	65.21008	H	54
W-13	61.0084	H	55

Table 7: Spearman’s rank correlation coefficients

Parties	Spearman rank correlation coefficient (%)
Owners and Contractors	27.8
Owners and Designers	54.7
Contractors and Designers	36.2

6. CONCLUSIONS

Identifying the KPIs helps the organizations that applied VM in evaluating the VM performance in organization. The participation 14 of highly experienced in VM led to enhance the research methodology and making the research results more accurate. 11 out of 55 performance indicators are considered the most important to be used for measuring VM performance in Saudi construction industry. The performance indicators with high rank of importance can be considered as a KPIs. The KPIs have been identified in this research should play a very big role in measuring the performance of value management in Saudi industry which should reflect the outcome of VM. Continuous performance measuring of the of VM helps in achieving most efficient implementation for VM in construction industry.

Acknowledgment

This Project was funded by the National Plan for Science, Technology and Innovation (MAARIFAH), King Abdulaziz City for Science and Technology, Kingdom of Saudi Arabia, Award Number (11-BUI2090-02)

REFERENCES

[1] SAVE International, 2007. Value standard and body of knowledge.

[2] Mukhopadhyaya, A. K., 2009. Value engineering mastermind, from concept to value engineering certification. Response Books.

[3] Shen, Q., Liu, G., 2003. Critical success factors for value management studies in construction. Journal of Construction Engineering and Management 129 (5), 485–491.

[4] Fong, P.S., Eddie, Q.S., Cheng, W.L., 2001. A framework for benchmarking the value management process. Benchmarking: An International Journal, 8 (4); 306-316.

[5] Kelly, J., and Male, S. (2001). “A quick approach to task fast diagrams.” SAVE Int. Conf. Proc., SAVE International, Dayton, Ohio, 219–228.

[6] Palmer, A., Kelly, J., and Male, S. (1996). “Holistic appraisal of value engineering in construction in United States.” J. Constr. Eng. Manage., 122(4), 324–328.

[7] Dell’Isola, A. J. (1997). Value engineering practical application: for design, construction, maintenance, and operations, R. S. Means, Kingston, Mass.

[8] Lin, G., Shen, Q. 2007. Measuring the Performance of Value Management Studies in Construction: Critical Review. Journal of Management in Engineering, 23(1); 2-9.

[9] Kaplan, R. S., and Norton, D. P. 1993. Putting the balanced scorecard to work. Harvard Bus. Rev. 71 (5); 134–142.

[10] Australian Standard, (2007). Value Management. AS 4183m Council of Standards Australia.

[11] Kelly, J. R., & Male, S. (1993). Value Management in Design and Construction: The Economic Management of Projects. London: E & FN Spon.

[12] Norton, B. R. & McElligott, W. C. (1995). Value Management in Construction: A practical guide. Macmillan London.

- [13] Chan, A. et al, (2004) Key performance indicators for measuring construction success, *Benchmarking: An international Journal*, 11(2), 203-221.
- [14] Department of Trade and Industry (DTI), (2002). *Construction Products Industry Key Performance Indicators Handbook*. Construction Products Association, London.
- [15] Parmenter, D. (2010). *Key Performance Indicators (KPI): Developing, Implementing, and Using Winning KPIs*. John Wiley and sons.
- [16] Lin G., Shen G., Sun, M. and Kelly, J. (2011). "Identification of key performance indicators for measuring the performance of Value Management Studies in Construction Industry". *Journal of Construction Engineering and Management*, Vol. 137, No. 9.
- [17] Neely, A., Adams, C. and Kennerley, M. (2002), *The Performance Prism: The Scorecard for Measuring and Managing Business Success*, Financial Times-Prentice Hall, London
- [18] Kulshrestha, M. and Deshpande, V. (2002). Development of Multiple Criteria Decision Support System (MCDSS) for Value Management Implementation in Construction Projects. http://www.value-eng.org/knowledge_bank/attachments/2002-11.pdf.
- [19] Aibinu, A. A., and Odeyinka, H. A. 2006. Construction delays and their causative factors in Nigeria. *Journal of Construction Engineering and Management*, 132 (7); 667-677.
- [20] Assaf, S., Al-Hejji, S. (2006). Causes of delay in large construction projects. *International Journal of Project Management* 24, pp. 349–357.
- [21] Al-Hammad, A. M., and Assaf, S. (1996). Assessment of work performance of maintenance contractors in Saudi Arabia. *J. Mgmt. in Eng., ASCE*, Vol. 12, No. 2, pp. 44–49.

AUTHOR



Dr. Al-Gahtani got his B.Sc. and Master degree in Civil Engineering from King Saud University. He received his PhD degree from State University of New York at Buffalo in Construction Engineering and Management. He served at several administrative workplaces such as: consulting in developing and managing Riyadh Techno Valley (RTV), and working in Saudi Telecom Company for participating in managing TEP6 project (1.5 million Telephone lines by AT&T Company) in 1995. He also participated in coordinating the Collaborative Masters Program in Engineering Management between KSU and Missouri University for Science and Technology. He

is an Associate professor for Civil Engineering in KSU, and Adjunct Assistant Professor in Missouri University for S&T. He is also an affiliate of different organizations. As a result of his publications impact, he received an award from King Saud University named "Distinguished Research and Publication Quality" in 2009, and his name is listed in "Who's Who in the World 2010, 2013" and "Who's Who in Asia 2012". He is author of reference book in the field of Construction Law and he translated a reference book in this field from English to Arabic. In addition, he has publications in number of international journals.