

The Possibility of Applying the Value Engineering: Case of Municipality of Al-Salt

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Abstract

The study is aimed at investigating the possibility of applying the value engineering in the municipality of Al-Salt. The study proposes the value engineering for implementation in Jordan. The sample consisted of 132 employees derived from a population that had a sufficient knowledge of value engineering in the municipality of Al-Salt team. The data collection tool used was a self-administrated questionnaire. The study revealed the existence of a strong correlation between. Furthermore, the study sample agreed that value engineering is a widespread organizational practice. The study concluded that the utilization of value engineering is related to proper planning and follow-up of the applications for the value engineering in Al-Salt. In addition, the study recommended the spread of the culture of value engineering which was supported by the senior management at Al-Salt municipality.

Key words: Al-Salt; Jordan; Value engineering

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INTRODUCTION

All around the world, the government sector is striving to be more efficient and effective. In Jordan, government provides the opportunity to make major contributions to economic development. Value is the critical aim that any

organization trying to gain. The municipality services are the engineered to produce the value, Jordan is a developed country that tries to achieve the planned value in the municipal sector. For the achievements of the planned value in the municipality services in Jordan the ministry of the municipality affairs gives all municipality their full dependence to achieve their goals. The purpose of Value Engineering (VE) is to add value and enhance the quality of a project in the in any sector, not simply to reduce costs. Value engineering studies should question the elements that add cost or complexity to a project without improving its overall function.

The municipality is a vital service sector that must managed to deliver the intended value for the citizen. The possibility of applying of the Value Engineering (VE) in the municipal organizations to reduce or avoid excess capital construction expenditures (Wilson, 2002).

1. VALUE ENGINEERING

The Society of American Value Engineers (SAVE) defined the value engineering as “a function-oriented, systematic, team approach to eliminate and prevent unnecessary cost”. This is a general definition for the concept the can be overcome in any domain. The municipal application of the terms can be as an organized creative approach which intends to find inessential costs accurately (Rasuli, 2007), value engineering the relevant products, schemes, components situation the worth of each one of them. Value engineering examines the scheme responsibility to determine the realization of the actual value. Therefore, value engineering tries to find the completion of the crucial functions with the least cost (Sharifimilani, 2007; Tajic, 2005).

1.1 Value Engineering History

The pioneer manufacturers were forced to use substitute materials in the World War II, those manufacturers

designed as a result of critical material shortages, the General Electric Company found many of the substitutes were providing equivalent or better performance at less costs, General Electric launched an effort in 1947 to advance product efficiency by calculatedly and systematically developing less costly options which was the value engineering. The concept quickly extends through private industry as the possibilities for large returns from relatively modest investments were recognized. This methodology was originally termed value analysis or value control then the value engineering was exported for many domain in the human life, Now the value engineering methodology applied in many services sectors (Mahdi, 2015; Cooper & Slagmulder, 1997; El-Badry, 1997). Heiza (2012) explain that the value engineering implementation is decreasing costs, time, and increasing profits, coupled with expanding. Heggade (2002) explained that value engineering is a method used to analyse all the function of the merchandise and services and to obtain the required functions of the end user at the lowest total cost without dropping the performance quality.

1.2 Value Engineering in Municipal Sector

The municipality sector is a vital services domain that contact with citizen life, the appliance of value engineering in the municipality in any functions of the service provided by the municipality entity will be used to directed the improving performance, reliability, quality, safety, and life cycle costs (Al-Nsour et al., 2011), the value engineering implementation can be done at all levels for designing development to ensure that the mission achieve the all functions and objectives as required in the organization (Jaapar et al., 2012).

1.3 Value Engineering Applicability

Value engineering applied during the project design development cycle, to gain the greatest benefit and resource savings and the value engineering can apply more than once during the life of the project (Abdulaziz, 2007). Early application of value engineering helps to get the project started in the right direction, and the repeated function help to refine the project track based the changing information. The value engineering study is conducted, the higher the cost of change will be to implement the developments (Seyed, 2014). The ideal way is to apply value engineering at three deferent design stages, as shown in Figure 1.

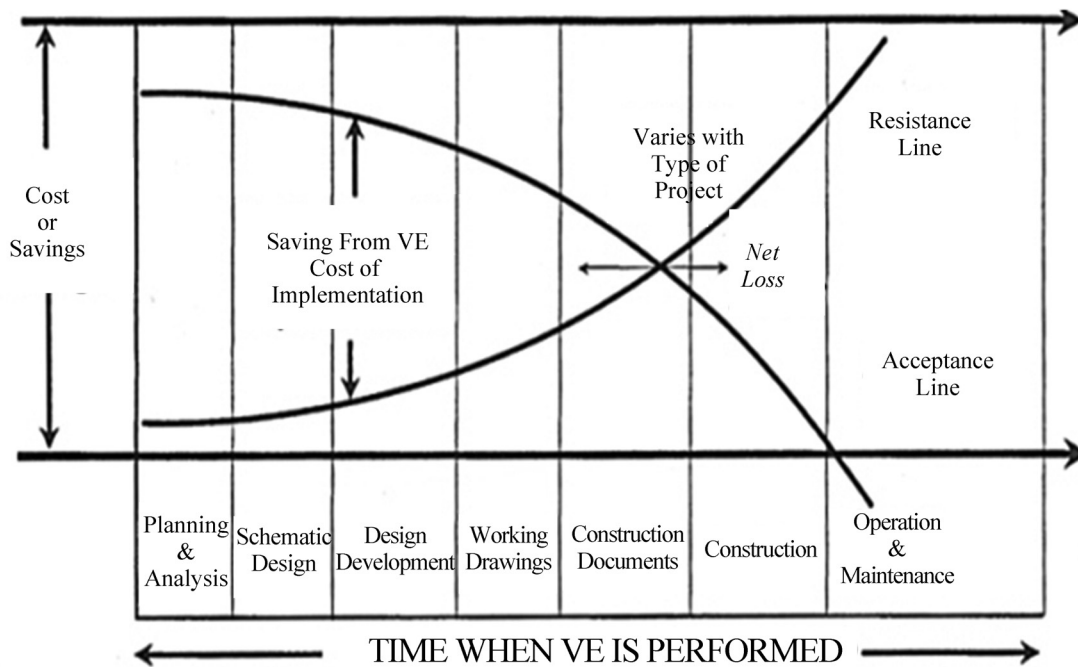


Figure 1
The Ideal Way Is to Apply VE at Three Deferent Design Stages

Abdulaziz (2007) explain the first value engineering study (VE 1) is applied during the design planning stage to define project functions, goals, objectives, requirements, design Criteria and Scope Of Work (SOW). The second value engineering Study (VE2) is applied at about 15%-30% of design, to generate detailed value engineering proposals and alternatives to the design and to define

technical systems and make sure that value engineering proposals (VEP) of value engineering 1 are implemented. The third value engineering study (VE 3) is a mix of value engineering and design review (DR) and its is applied at about 80%-85% of design to check the conformance to codes, standards, specifications and make sure that VEP of value engineering 2 are implemented.

1.4 Value Engineering Methodology

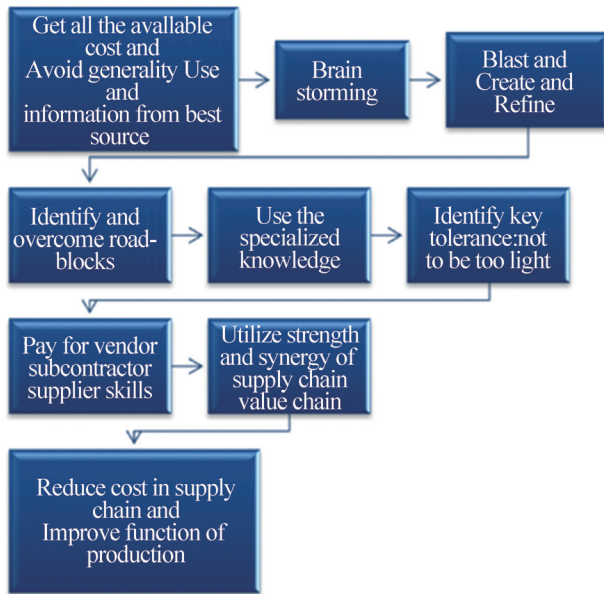


Figure 2
Value Engineering Methodology

Heggade (2002) and the SAVE International (2007) explain the value engineering methodology as the systematic application of recognized tools and techniques by a multidisciplinary team to identify and categorize the functions of a project and to create, select, and develop alternative approaches to cost-effectively deliver the functions and improve performance. Value engineering is applied in a logical process known as the “Value Engineering Job Plan. The purpose of the value engineering job plan is to assist a study team to identify and focus on key project functions in a systematic manner, in order to create new ideas that will result in value improvements. The value engineering Job Plan consists of the following seven sequential phases:

- 1) Information Phase
- 2) Function Analysis Phase
- 3) Creative Phase
- 4) Evaluation Phase
- 5) Development Phase
- 6) Presentation Phase
- 7) Implementation Phase

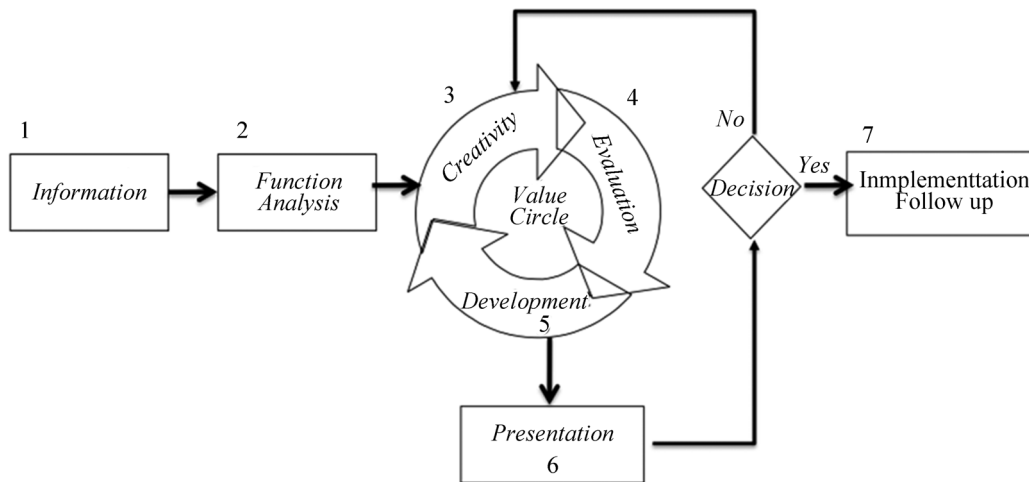


Figure 3
Value Engineering Methodology, Abdulaziz (2007)

In this research study, the researcher tried to discover the possibility implementing the value engineering methodology in Al-Salt municipality.

The current construction and development of a municipality in Al-Salt is not satisfactory. This is because emphasis has been placed on publicity and construction. Also, it is due to the ignorance of government services, which cannot meet the administrative needs of government decision making.

2. STUDY QUESTIONS

This study tries to answer the following questions:

- a) What are the existing attitudes toward the value

engineering in the Al-Salt municipality?

- b) What is the resistance to the applying the value engineering in the Al-Salt municipality?

- c) What is the technical, cultural, and commercial feasibility for the value engineering in the Al-Salt municipality?

3. OBJECTIVES

The aim of the study was to investigate the possibility of applying the value engineering in the Al-Salt municipality. The Al-Salt municipality as many governmental entities in Jordan tries to cope with changes by adding values to its services in the municipal sector.

4. METHODS AND PROCEDURES

The expletory research used to set up the attitudes and thickening of the body of engineers in Al-Salt municipality to the value engineering. The case study strategy was adopted to provide in-depth examination of the value engineering thinking. The primary data have been derived from a self-administrated questionnaire, the questionnaire with a five-point scale has been developed based on the literature review.

5. DATA COLLECTION TECHNIQUES

The community of this study consisted of all employees in the Al-Salt municipality, the sample was selected randomly from all seiner employees in the Al-Salt municipality, and thus formed the study sample of (132) employees. The questionnaire was valid for the analysis (132), Table 1 shows the distribution of members of the study sample.

Table 1
Sample Distributions

Variables	Levels	N
Gender	Male	87
	Females	45
Experience	Less than 5 years	71
	5-10 years	34
	More than 10 years	27
Qualifications	Bachelor or below	122
	Graduate	10

6. VALIDITY AND RELIABILITY OF QUESTIONNAIRE

Reliability is a method employed to ensure the internal consistency of test questions against every other test item when completed by different participants. In order to estimate reliability, 30 questionnaires were sent to employees. Overall Cronbach's alpha for the sample was 0.88 which indicate an excellent level of statistical internal consistency. In order to increase the content validity of

the research instrument, the questionnaire was "pilot-examined" by interviewing 25 managers and experts in the banking industry who agreed to fill in the questionnaire and also to comment on the scales employed. Then, their suggestions were collected and some reformations were made to improve validity of questionnaire.

7. LIMITATIONS

The of this study:

- The boundaries and limitation of the study and its determinants as follows:
- The application of this study was limited to employees in the Al-Salt municipality, 2015.
- Determined that the results of this study on the implications of validity and reliability of the tools in the study used.

8. ANALYTICAL PROCEDURES

To achieve the objectives of the study was the use of statistical software packages for the Social Sciences (SPSS) to answer the questions of the study.

9. HYPOTHESES TEST

This research has one main hypothesis:

There is a possibility of applying the value engineering in the municipality of Al-Salt.

In order to test this hypothesis, three other sub hypotheses:

- a) There are positive attitudes toward the value engineering in the Al-Salt municipality.
- b) There is a resistance for the applying the value engineering in the Al-Salt municipality.
- c) There are technical, cultural, and commercial feasibility for the value engineering in the Al-Salt municipality.

In order to test hypotheses research, we used SPSS software. The results of the analysis have been discussed below.

Hypothesis 1: There are positive attitudes toward the value engineering in the Al-Salt municipality:

Hypothesis 1	Dependent variable	Independent variable	R square	Standard β	T test	Result
	Attitudes	Appling (VA)	0.287	0.276	3.820	Confirmed

According to the results, Beta Standard ratio is calculated 0.276 which is significant. Thus, this hypothesis is confirmed and attitudes will has positive impact on

applying value engineering in the Al-Salt municipality.

Hypothesis 2: There is a resistance for the applying the value engineering in the Al-Salt municipality:

Hypothesis 2	Dependent variable	Independent variable	R square	Standard β	T test	Result
	Resistance	Appling (VA)	0.243	0.179	2.455	Confirmed

According to the results, Beta Standard ratio is calculated 0.179 which is significant. Thus, this hypothesis

is confirmed and resistance will has positive impact on applying value engineering in the Al-Salt municipality.

Hypothesis 3: There are technical, cultural, and commercial feasibility for the value engineering in the Al-Salt municipality:

Hypothesis 3	Dependent variable	Independent variable	R square	Standard β	T test	Result
	Feasibility	Appling (VA)	0.232	0.256	3.239	Confirmed

According to the results, Beta Standard ratio is calculated 0.256 which is significant. Thus, this hypothesis is confirmed and feasibility will has positive impact on applying value engineering in the Al-Salt municipality.

CONCLUSION

The concepts of the value engineering have been shown an ability to be conceded in the Al-Salt municipality. The messages that emerge from this paper and opportunities for further research can be summarized as follows:

There are positive attitudes toward the value engineering in the Al-Salt municipality. Which needs a good view point from the decision makers in the Al-Salt municipality.

There is a resistance for the applying the value engineering in the Al-Salt municipality. This resistance comes from the nature of the governmental employee that tries to be more stable in a continuous rhythm in the work. This resistance can be reduced by the spreading a culture of value within the Al-Salt municipality.

There are technical, cultural, and commercial feasibility for the value engineering in the Al-Salt municipality. This feasibility may be covered by the deep involvement of the high management in the Al-Salt municipality.

Despite the limitations of using data, the present study provides valuable insights into the applying the value engineering in the Al-Salt municipality, and the utilization of value engineering is related to proper planning and follow-up of the applications for the value engineering in Al-Salt. Finally, this study helps to extend the current research agenda on the value engineering discipline in the area of governmental entities.

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