J. Appl. Environ. Biol. Sci., 5(12S)319-322, 2015

ISSN: 2090-4274
Journal of Applied Environmental and Biological Sciences
www.textroad.com

Evaluation of the effective variables of the value engineering in services (Qazvin post center case study)

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Received: July24, 2015
Accepted: September 31, 2015

ABSTRACT

The value engineering is a systematic method for resolving the problems, reducing the cost and improving the function and quality simultaneously and this leads to the increase of customer satisfaction by investigating and improving the value index. In recent decades, industrial and developing countries and also the Iran's neighboring countries realize the necessity of using value engineering in order to economize the costs and investigate methods to reduce the unnecessary costs. By investigation of value engineering in post center and by observing its comprehensiveness in our routine life, we try to recognize value engineering and its implementation in this organization. The results of this research which are based on the post managers and specialists responses show that applying value engineering by the post managers has significant effects on reducing the cost, saving time and customer satisfaction..

KEYWORDS: Value engineering, Quality, Cost

1. INTRODUCTION

Today, value engineering as a new managerial theory to reduce costs with maintaining quality is taken into attention. Value engineering dates back to Second World War, when the quality increase of products production was taken into attention and vital materials were not available [1] Value engineering is a strong methodology to solve the problems, reduce the costs and improve the performance and quality and by identification of value indices and creativity, customer satisfaction is increased and investment value is increased [2]

The aim of value engineering is less time to achieve operation stage without increasing costs or reducing work quality. The continuous increase of executive costs and increasing development of technology has made the elimination of costs without any role in improving quality and unnecessary from implementation aspects [3]

Wide recognition of value engineering and using this aim in industries, various activities is of great importance. Based on the importance and role of post center in routine life and fulfillment of the needs of customers and macro plans in society as distribution of fuel card, distribution of rural, urban and nomad coupons, registration and distribution of ID and many other services caused that we design and implement value engineering by reducing the costs and increasing the quality and providing the expectations of customers and this saves time in operations.

The second section reviews the literature in this field and then the study subject is presented. Third section deals with the design of value engineering and questionnaire and fourth and fifth sections analyze the questionnaire and conclusion. Sixth section as the conclusion deals with the references.

2. REVIEW OF LITERATURE

Value engineering is new science and it is taken into attention seriously in industries among industrial groups of country and this method has been started for more than half centuries in industrial countries.

The source of value engineering technology as present concept dates back to the Second World War. In the war, due to shortage of resources, the change of raw materials and plans was occurred and it was used in General Motors factory. This idea was raised for the first time in 1947 by Larence Miles. He believed that value analysis sis a creative and organized method and its aim is identification of unnecessary costs [4]. The increase and improvement of products production (compared to traditional condition) was taken into consideration. The changes of this period were vital and access to some alternative materials caused that costs were reduced and performance was also improved. Thus, searching to find "choices", processes, procedures and other similar items via an organized approach increased the quality and decreased the costs [5]

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2-1 REVIEW OF LITERATURE

A review of literature in recent years on value engineering in Iran is presented in this section.

Table 1: A review of literature regarding value engineering [6, 7 ,8 , 9.10.11]

Name of author	Year	Case study	Study result
Mahmood Rahimi	2006	Perspective of Resalat tunnel in Tehran	Evaluation of the position of value-engineering in management of urban civil plans with positive effects
Saleh Mohammadi Bolbolanabad, Yaser Goldust Juybari	2008	Manufacturing, service companies in Isfahan	Identification of effective factors on continuous implementation of value engineering process
Mohammad Reza Govahi, Mojtaba Hosseinalipour	2008	Civil projects	Identification of effective parameters on value engineering studies
Norolhoda, Pourabasi, Bahare Borhani	2010	Iranian organizations	Value engineering is a tool for costs management in organization..
HamidReza Saba, Meysam Shayeste, Roya Shayeste	2012	Executive projects of schools renovation	Reduction of costs and improvement of projects by using value engineering method
Zahra Ebrahimi Gotkesh	2013	Natural resources projects	The evaluation of position and functions of value engineering

2-2 Value engineering

Value engineering is an organized attempt with the aim of evaluation and analysis of all activities of a plan (since the formation of initial thinking to the design and execution stage and then launching and operation) and it is recognized as one of the most efficient and most important economic methods in engineering activities [12].

Today, value engineering and its dependent methods as value analysis, value management or value planning are the most effective methods to improve productivity and reduction of costs.

Thus, companies, organizations and big plans put value engineering on priority and have created specific sectors for this and they reduced their costs and increased productivity.

Thus, using value engineering is a systematic and group problem-solving method by which we can achieve the goals. These goals are reduction of investment costs and reduction of capital return period.

2-3 Study purpose

The purposes of this study are as followings:

1- Recognition of the method maintaining quality and reducing the costs.
2- The reduction of costs with increasing quality by value engineering in post center
3- Attracting the customer expectations by value engineering
4- Evaluation of the effect of value –engineering on required time of an operation in post center
5- Considering implementation principles of value engineering

3- METHODOLOGY OF STUDY

3-1 Study hypotheses

The hypotheses of the study based on existing criteria in value engineering and the requirements of this organization are as:

1-Value-engineering in post center saves time
2-Value engineering in post center attracts customer satisfaction.
3-Value-engineering in post center reduces costs and maintains quality

3-2 Data collection method and measure and its validity and reliability

The present study is descriptive. Like most of similar descriptive studies, the data is collected via questionnaire, interview or observation. Thus, a questionnaire is used as data collection measure.

The questionnaire is designed in four pages and includes 20 questions and all questions are five-item.

The scoring is done by Five-item Likert scale and very much to very little in each sector had five to one scores. The content validity is used in this questionnaire and in this study, the views of managers, lecturers of University and experts are used to support validity of questionnaire. Then, the corresponding questions for hypothesis are designed based on the opinions of experts and after supporting was verified by some of experts of post center of Qazvin. The, the final questionnaire is designed and distributed among managers of units. To evaluate reliability of questionnaire as the main data collection measure, SPSS software (Statistical pachange for Social Sciences) is used and reliability of test for the set of questionnaire questions by Cronbach's alpha is 0.88. Based on ranges of Cronbach's alpha as zero to one and value higher than 70%, it shows suitability level and the que4stionaiare could measure the issue acceptably and the study had good and acceptable reliability.

3-3 Study population and sample size

The study population here as managers includes 20 members and due to low number of study population, sample size is not determined and our test is on total study population.

4- Data analysis and its findings

The study hypotheses test

To test the hypotheses, SPSS19 software and t-test are used and the general results of hypotheses test are referred.

By the relevant software and testing the questions of questionnaire, the output is 0.88 and it shows high validity of questionnaire.

At first stage, to evaluate the normality of data, Kolmogrov-Smirnov test is used and based on the results of SPSS Software outputs, the output data followed normal distribution and based on following normal distribution, t-test was used for hypotheses test. Then, the results were extracted from the study and the values of this test are shown in Table 2.

Based on the observed Table and support of hypotheses, it was found that time saving, customer satisfaction and reduction of costs factors were effective factors on implementation of value engineering in this organization and Friedman test is used to find the priorities of these factors and the results by this test are as:

In this method, saving time dimension in the first priority is the most important factor in value engineering and its implementation and customer satisfaction and quality were in second and third priorities.

Table 2- The prioritization Table based on Friedman test

Priority	Mean of rank	Hypothesis dimensions
1	2.50	1-Saving time
2	2.30	2-Customer satisfaction
3	1.20	3-Quality

5-Conclusion and Summary

Based on the results of study, value engineering is a process with reduction of costs and maintaining quality and has considerable achievements and savings. The data collection measure is a questionnaire designed by experts and lecturers. This measure is designed based on three dimensions (saving time, customer satisfaction, reduction of costs and maintaining quality). To determine the reliability of questionnaire, by Cronbach's alpha as 0.88, as this value is bigger than 0.7, the questionnaire has good reliability. Total number of study population is 20 and due to low number of population members, sampling is eliminated. By focusing on main indices of this method and designing questions with these indices and testing the hypotheses to achieve their validity or non-validity, these results are achieved that value engineering in an organization can save time, absorb satisfaction and reduce costs and maintain the quality level. Here, saving time is of high priority compared to two other cases. As saving time is one of the most effective factors of value engineering in this organization, the managers by taking effective solutions can improve this issue to optimize time and achieve customer satisfaction. Thus, costs are reduced with maintaining quality in services and by fulfillment of saving time and customer satisfaction by managers can be fulfilled.

Table 3- The Tables of supporting hypothesis

H1	Degree of freedom	Significance level	t-test statistics	Hypothesis
Supported	19	0	9.7	Saving time
Supported	19	0	9.11	Customer satisfaction
Supported	19	0	6.9	Quality

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