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Value Analysis: a way to increase the value creation

Abstract

The value analysis is an important tool to create a value culture in organizations. It is intended to enhance the relevance of the value concept and the creation of a value culture, to foment and increment the success of the methodology application. The importance of the value analysis increases with the application in the conception phase, so it is necessary to expand the boundaries of the method utilization to every type of project or configuration models. The differentiation of a product can be defined by the constant seek in joining more and new values to the products. We pretend to provide a better knowledge of value analysis and suggest possible ways of its application to increase surplus values in the organizations.

Keywords

Value analysis, value concept, value creation, case studies

1. Introduction

In this paper, we intend to promote the use of Value Analysis (VA) by the examples of advantages given with different types of application. We will start by briefly describing the methodology for highlight the importance of creating a value culture in the organizations and the VA contribution for this. We pretend to provide a better knowledge of VA, its possible boundaries and potentialities. We also present various possible ways of its application with qualitative and quantitative results. The value creation should be sustainable, and aiming not only to the economics but also to the environmental, social, ethical and other components and VA can present an important role for these challenges.

2. Value Analysis Methodology

VA is a well-known structured method to increase value and support the selection of the most valuable solution (Romano, Formentini, Bandera and Tomasella, 2010). VA has proven able to reduce costs and ensure quality, while also contributing to the improvement of decision-making and other important organizational tasks (Rich and Holweg, 2000). The VA can be defined as an organized and creative methodology that uses a functional approach and aims to increase the value of a product/service (Ho, Cheng and Fong, 2000).

Currently VA is considered a method and not a simple technique. This is because, not only is an organized approach to improve and create value, but also uses several different techniques to achieve this goal. We are witnessing today an attempt to renew the VA. The competition is forcing companies to re-examine its range of products in order to provide a higher level of satisfaction to their customers without increase the costs. This need is based on a growing competitiveness and globalization of the markets and an increasingly essential innovation capacity.

2.1. Value Analysis Job Plan

The VA methodology uses a structured and methodical job plan contemplating several steps to assure the success in their application. In the extent of our work we use the job plan presented in table1 (Pires, Putnik and Ávila, 2007).

The job plan starts with the orientation/preparation phase, which is the preparation of VA application namely the formation of VA team, scheduling and planning of the study, objectives, resources, etc. In the information search, the VA team should obtain all the necessary information for the study. The importance of an effective diagnostic, to obtain an objective knowledge of the organization and the product in analysis, is another relevant factor, for perspective possible actions and solutions derived from the method application. Functional Analysis is an important phase of the method with five main steps: identification; characterization; weighting; ranking; evaluation. With this functional analysis is intended to describe the functions that the product performs, provide a better knowledge of the product, evaluate the degree of satisfaction of the product through its functional performance and facilitate the search for alternative solutions.

The other phases are the creativity phase where is promoted the generation of alternative ideas, followed by the evaluation and selection of the best alternative ideas. Next, the selected ideas are developed and presented and the job plan finishes with the implementation of the VA project.

Table 1. VA Job Plan

Phases	Management	VA Team	Operational Departments
Orientation/Preparation	•		○
Information Search		•	○
Functional Analysis		•	○
Creativity		•	○
Evaluation		•	•
Development		•	○
Presentation	•	•	○
Implementation	•	○	•

- - Responsibility
- - Participation

Value is one of the fundamental concepts of the method. VA follows a functional approach. The value can be defined as the relationship between the function performance (contribution) for the need satisfaction and the resources costs spent.

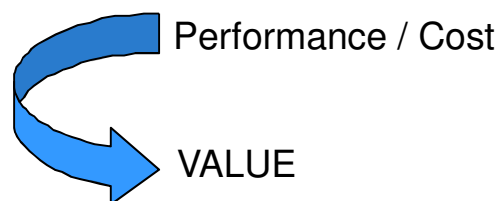


Figure 1. The Value concept

3. Value Analysis Applications

In this chapter, we will present some results of three kinds of different VA applications, starting with a VA study in a product, followed by a VA study in a service and finishing with the VA application in virtual enterprises. It is

not our intention to fully describe the applications but only to present some brief parts of the studies in order to illustrate some of the actual and potential benefits of the VA

3.1. Value Analysis Results in a product

The first case presented is related to a functional analysis (FA) study that was developed to characterize the customer's needs and to quantify the value of a product, a bookcase, of the furniture industry. In the next table, it is presented the first step of the FA phase, the identification of the product functions.

Table 2. Identification of the functions for a product

Identification of the functions		
Verb	Noun	Function
Be	Functional	A
Be	Resistant	B
Present	Aesthetic	C
Be	Flexible	D
Adjust	Environment	E
Be	Compact	F
Be	Versatile	G

As an example of this phase we will make a description of the first three functions of the previous table (table 2): Be Functional: the product should be practical and useful, should allow the user easy access and its components should be removable; Be Resistant: the product must have a strong structure to support heavy materials, shall be resistant to impact, moisture and sun; Present Aesthetic: the product must have a pleasant color and design as well as a good and quality finishing.

Next, we will show in figure 2, the results of another phase of the study, that is the evaluation of the product functions versus its cost.

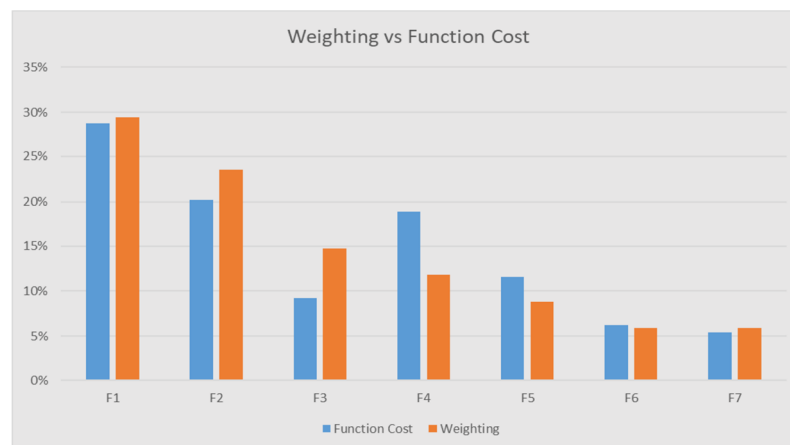


Figure 2. Some results of the VA study for a product

The analysis of figure 2 demonstrates that Functions F4 (Be Flexible), F5 (Be Compact) and F6 (Adjust Environment) shall be intervened because function cost is higher than its importance (weighting). The next phase consisted of the generation of alternative ideas for perform the functions of the product, stimulating creativity and innovation for the product in study.

3.1. Value Analysis Results in a service

The next example of VA application is concerning to a service of the printing industry, and it will be presented also some results of the VA study. In table 3, it is presented, the identification of the service functions.

Table 3. Identification of the functions for a service

Identification of the functions		
Verb	Noun	Function
Be	Fast	A
Be	Complete	B
Be	Efficient	C
Be	Pragmatic	D
Be	Professional	E
Be	Flexible	F
Be	Formative	G

Below, in figure 3, appears the characterization step of the functional analysis phase illustrating the importance of each function. This was given by an inquiry on the customers with a sample of size 20, which allows to conclude the order of importance of the functions and the functions where the customers requires a better performance.

	I 1	I 2	I 3	I 4	I 5	I 6	I 7	I 8	I 9	I 10	I 11	I 12	I 13	I 14	I 15	I 16	I 17	I 18	I 19	I 20	Soma	Order Nº
Fast	7	10	10	7	7	4	7	8	10	9	8	10	10	8	10	9	8	10	10	10	172	F4
Compleat	10	9	10	7	7	10	5	10	10	9	8	8	10	8	10	9	9	10	8	7	174	F2
Efficient	10	9	8	7	7	9	8	10	9	7	8	10	10	5	10	9	10	9	9	9	173	F3
Pragmatic	8	8	7	7	7	8	7	7	8	7	9	8	8	8	10	6	10	9	7	7	156	F6
Professional	10	8	10	7	8	8	8	10	10	9	9	8	10	10	10	10	10	10	9	10	184	F1
Flexible	5	8	7	7	7	9	8	7	8	10	10	5	9	8	8	8	5	8	8	10	155	F7
Formative	5	6	7	7	8	9	9	10	8	9	8	10	10	10	9	9	10	9	9	9	171	F5
Total																					1185	

Figure 3. Some results of the VA study for a service

In this example, the functions in which the current service (Spex) is lower than the customers acceptable (Sma) are: Be Professional; Be Fast; Be Formative and Be Flexible.

3.2. Value Analysis Results in Virtual Enterprises

To achieve the benefits that the VA can add to the virtual enterprises, we must relate them with value models. It is essential to identify and create models and criteria for evaluating the required performance and its consequent impact on organizational change. The performance measures entail benefits for businesses from both economic, technical and social (Kaiara and Fujii, 2006).

Currently it is fundamental that companies improve their performance to produce products more focused in customer requirements ideal, sustainably, with lower costs and generating resources for its continuous development. One of the methods which may contribute to these goals is the VA. The joint application of VA, with the paradigms of the virtual enterprises, in which we believe that companies can explore the implementation of its potential as it happens in the conventional systems, goes towards the future perspective of these enterprises performance.

These type of companies, which are under development and optimization involve other factors not considered in conventional companies, and the VA integration will bring a new support decision for the configuration

process, namely in the selection of resources. These factors are related to the nature of inter-organizations such as: trust, integrity, dynamic reconfiguration and dynamic organizational integration.

Attending the results of VA application in the selection of resources in virtual enterprises, three global considerations can be made (Pires, 2011): the final systems selected with VA increases the final system value; VA leads to lower selection times, leading to faster selection, with obvious savings in time and associated cost reductions; the applicability domain with VA is higher, attending the nº of tasks and the nº of candidate resources. For example, the last aspect related to the applicability domain is illustrated in figure 4.

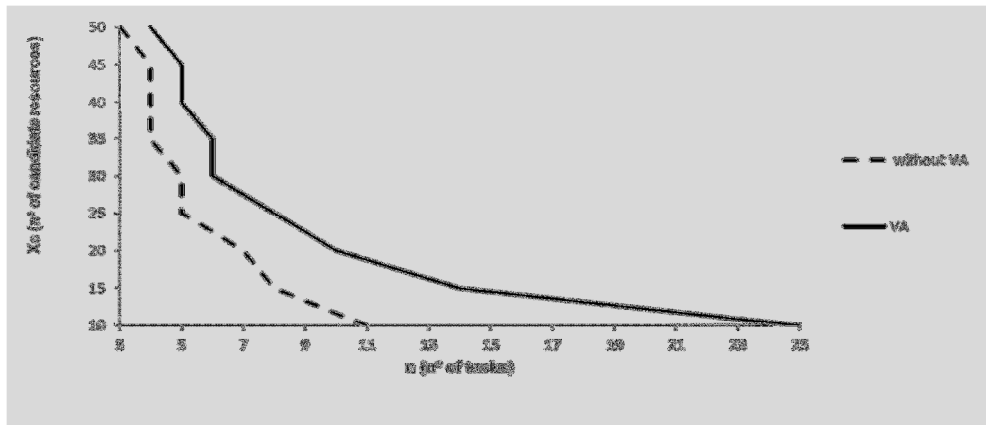


Figure 4. Some results of the VA study for virtual enterprises

The main conclusion is the rise in the efficiency of the model with VA. The domain of the model is superior with VA. VA integration allows analyzing and performing a greater domain of tasks, validating our model's assumptions.

4. Conclusions

The value creation should be sustainable, and it is very important to properly understand the VA methodology. The analysis of results of the examples of VA application illustrates the potential of the VA that enables quantitative and qualitative benefits. The VA enables to characterize the customer's needs in functional terms of the product/service in study. Enhances the functions that the product/service performs, providing a better knowledge of the product/service. Evaluates the degree of satisfaction of the product/service through its functional performance and facilitate the search for alternative solutions. The VA can play an important role and establish itself as one support tool throughout the product/project conception, contributing with an important improvement for the organizations. The importance of VA methodology increases with the application in the conception phase, so it is necessary to expand the boundaries of the method utilization to every type of project or configuration models. The VA can play an important role and establish itself as one important support tool throughout the virtual enterprise project, which is increasingly emerging as one of the existing paradigms of organizational change.

As a final conclusion it can be said that in this paper we intend to provide a better knowledge of VA and its potentialities. We also suggest new possible ways of its application, namely the integration in the virtual organizations models. The use of VA together with the paradigms of virtual enterprises, allows organizations to explore the method benefits, already verified in the conventional systems, for these new challenges.

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