

Research paper on value and cost

[Business](#), [Company](#)



Introduction

The term value analysis (VA) refers to a procedure that involves an orderly analysis and evaluation on an already existing product design so as to balance out the function of the product required by the customer. In balancing out, the customers' requirements are satisfied at the lowest cost in accordance to the required reliability and specified performance (Rich and Mathias 2). Value engineering (VE) is used when developing new products and it is a term that is used when carrying out a value analysis at the concept development, design, and prototype stages of a product (Rich and Mathias 2). However, both terms VA and VE can be used interchangeably as they all signify the same thing (Dell'Isola 3).

Value analysis (VA) concept originated in America in 1940—after World War II-- at General Electric Company. Since then, the technique has progressed and enhanced with other procedures that have surfaced and blended with the formal VA technique. Currently, VA is in demand amongst various companies as global competition has forced many organizations to re-evaluate their product collections with an aim to obtain maximum customization at the lowest penalties incurred. Similarly, major companies are implementing the concept together with their suppliers with an aim of taking advantage of its benefit in Supply Chain. Therefore it is clear that businesses—whether small or big—would greatly benefit if they applied the VA process. There is also a likely hood that companies that do not take time to implement this concept face an unpredictable and uncertain future as lessons and hurdles of the yester years are remodelled into future products.

This paper will bring out clearly the basics of VA/ VE in an organization, its focus, organization and phases of implementation. A critical analysis of the concept will also be done with an attempt of supporting the fact that organizations that apply the process produce products that offer maximum customer satisfaction at the lowest costs.

In improving the value of a product two fundamentals are considered: Use Value (use of the product; and Esteem Value (Ownership) (Younker 49). This is enlightened by the example of a luxury car and a basic car at the same engine size. They both have the same use value but when it comes to Esteem Value, then the luxury car contains a greater Esteem Value. The cost must also be considered in producing a product that has either high-esteem value or use value. Therefore the value index and cost should be considered in any VE/VA process. They are related through the formula (Rich and Mathias 4):

Generally, there are three essential costs of a product: parts purchased cost; direct labour costs; and factory overheads cost (Dell'Isola 8). Therefore a detailed understanding of how costs accumulate throughout a design process to the dispatch of the product is the key to exploiting VA/VE process. All VA and VE activities are aimed at reducing unnecessary and unavoidable costs without tampering with the value the product offers.

The VA/VE approach is governed by simple rules which include: not eliminating any cost if it would negatively influence the quality or reliability of a product; not compromising the saleability of a product; and any action that would reduce the maintenance cost of a product would result in the

increase in cost of ownership hence lowering the value of a product.

Dell'Isola, notes that in implementing the rules in VA process, value of a product could be increased through (12): advancing the utility of a product without change in cost; retaining the same utility at a lower cost; blending improved utility with a reduced cost.

VA/VE Methodology

The exercises involved in value analysis consist of (Rich and Mathias 18): VA for existing products; Value analysis for new products (Value engineering); VA for product families (Horizontal Deployment); and Competitive VA.

Furthermore in implementing the VA/VE concept a multi stage process should be followed. Larry Milles was the creator of the steps and he called the process a 'job plan' which consists of between six to eight procedure steps. The VA/VE job plan has a function of dividing the task at hand into functions. Using a job plan in VA/VE would results in coming up with an effective plan that would utilize the best value alternatives. The job plan concludes with specific recommendations that are anchored with necessary data, identified necessary implementation actions, projected implementation schedule, and necessary follow-up procedure.

A value team leader organizes the job plan which, in many organizations is implemented in an eight-step procedure. The phases may overlap during implementation and consists of (Younker 48):

I. Phase of Orientation (Preparation)

At this phase, the problem is deduced and the value study prepared. In order for the value team to appreciate the function of a product, it must

experience it. This phase is important as it creates unity amongst the team members and creates a common understanding—common language included—of the different parts of the product being studied. At this phase it is beneficial for the team to collect such items as (Rich and Mathias 16): a fully assembled product that is to be studied; a sub-assembled product that would enable team have more information for product analysis; product components mounted on a board; raw material examples; examples of scrap at the various steps in manufacturing procedure; and products of the competitor which would be reviewed and compared by the team.

II. Phase of Information

This is the phase where the range of matter to be addressed, evaluation factors, and improvement targets are finalized. It is still part of preparation phase where unity in the team is the main goal but involves collection of documents that would be useful as references. The important documents include (Younker 56): original design brief; cut-away drawings; costing information from accounts department; manufacturing quality loss charts; manufacturing process schematic; and specific purchase information including supplier details.

III. Analysis of Functions phase

This is the third phase which involves analysing the product by systematically identifying the vital functions of a service or product. This procedure is referred to as functional analysis and a function can be termed as the demand of a product component and the esteem it brings to the user. In the phase there are several sub-steps which are: describing the functions;

and ranking the functions through pair-wise evaluation. The most useful techniques in this phase are: carrying out a SWOT analysis; using a structures tree diagram analysis; and using QFD (Quality Function Deployment) chart to comprehend customer wants.

IV. Creativity Phase (Creation)

A Phase which requires that each member of provides creative ideas. A common technique that is used nowadays is brainstorming where all members have to contribute an idea and their reason why they are for that idea. The main goal in this phase is to develop an alternate choice that is more cost effective in achieving the basic function. In brain storming several ‘tricks’ are implemented which include (Rich and Mathias 19): intentional short silence periods; ideas on cards anonymously written; suggestions in sequence (round-robin fashion); explaining the product to a customer who has no concept of the product or its application; and sketch making.

V. Phase of Evaluation

A phase where ideas created are filtered and the best ones included in specific value-improvement recommendations. The cost and worth of each function is analysed. Worth is agreed on by approximating the lowest cost of constructing each basic function at a minimum. The value potential therefore becomes the difference between the cost and worth figures. In this phase the team has an option to modify the design of the product so as to: totally eliminate the part in the design that has no value but has cost; and substitute or replace the part hence lowering cost.

VI. Phase of Development

This phase is carried out in tandem with evaluation phase in some organization. It basically entails the stage where the ‘ best’ alternative is selected to be presented to the decision maker.

VII. Phase of Presentation

After the results of evaluation and deliberation by the management team are recorded using a cost-benefit chart, the team develops a brief presentation to the management which would entail a summary of findings and implementations. The report and presentation consists of the following sub-sections (Younker 57): The subject, VA project team, and product; business situation and ways of enhancing the value of product; current cost of product and conversion failures; product analysis and benefit to customers; suggested changes and reasons behind them; contrast of current actual cost and future implementation cost; yearly savings on likely future volumes; items of expenditure required; procedure of implementing change and proposal; matters not resolved by team but important for future analysis; and list of appendices containing materials collected and recorded in the lifecycle of the value team.

VIII. Phase of Implementation (Follow-up)

This is the phase where the VA team report’s findings to management team with the aim of getting permission of implementing the findings on the report. Each product or service is constructed with the aim of generating profits for the company and value for the customer in the most efficient and effective way.

Conclusion

The basic goal for VA/VE is in identifying and eliminating product and service features that do not add true value to the customer or product. The process is used to provide a higher performing product or service to a customer at a minimum cost as opposed to replacing existing merchandise with a low-grade solution. Therefore the process is one of the key features of businesses today that understand and aim for TQM (Total Quality Management). The Major companies that have implemented VA/VE processes and reaped great benefits in terms of returns include: SONY, Nissan, Ford, Hewlett Packard, and Toyota (Rich and Mathias 2).

Works Cited

Dell'Isola, Alphonse. Value Engineering Fundamentals: Project scope and budget construction oriented, Alphonse Dell'Isola, 2004, Web, 4th March 2011 at:

Rich, Nick, and Mathias Howleg. Value Analysis and Value Engineering, Cardiff: Lean Enterprise Research Centre, January 2000, Web, 4th March 2011 at:

Yunker, Del L. Value Engineering: Analysis and Methodology. New York: Marcel Dekker, 2003. Print. : 47-58