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Understanding Value Engineering

Managers across various industries constantly face the challenge of surviving and growing in today's dynamic and competitive business environment. For years, companies across the world have been looking for methods to improve and grow successfully. One of the methods is Value Engineering (VE), a powerful technique which, when applied on a systematic basis, helps users improve efficiency by cutting costs and improving performances. Also known as value management or value analysis, VE is a function-oriented, systematic team approach to reducing costs and simultaneously adding value to a product or service.

VE is a framework with proven methods that are systematically employed to identify better value for products and services. Although the key disciplines are not new, it is the way they are integrated and deployed that makes the approach effective. The VE methodology includes multi-disciplined teamwork, function analysis, implementation, financial reporting, communication techniques and life cycle costs.

Identifying the Priorities of VE

First, the main business goals of the organization have to be summarized broadly with regard to:

- The company's vision for business improvement
- An understanding of its products or services from the customers' perspective
- Analyses [identification] of its main customer and market segments
- An assessment of competition
- Objectives for growth, profitability, and customer and employee satisfaction

On the basis of these elements, a prioritized list of challenges facing the business is developed. These priorities are then evolved into projects suitable for the VE process. The VE Job Plan is then applied to the individual projects based on their priority. A Job Plan typically consists of the following phases:

- **Planning Phase.** During this phase, emphasis is on the objectives to be achieved, composition of the project study team, information on which to base the study, and detailed planning.
- **Information Phase.** Here, the detailed information requirements for the project are identified and distributed to team members. This ensures that adequate data is available to the VE team.
- **Analysis Phase.** During the analysis phase, the VE team structures the information and applies techniques to analyze the problem.

- **Creative Phase.** During the creative phase, the teams undergo structured 'brainstorming' to generate ideas, which are again combined or developed further.
- **Evaluation Phase.** Also called Team Design, this phase comprises a series of processes to evaluate the best ideas generated during the creative phase. The ideas are prioritized in terms of cost, time and practicality. Those that meet most of the customers' requirements at the lowest life cycle cost are selected.
- **Reporting Phase**. Here, the new initiatives are formally presented to senior management as business cases, along with alternatives and appropriate financial cases wherever investment is required.
- **Implementation Phase.** The selected proposals are implemented and the new approaches are brought into practice.
- **Follow-up Phase.** In order to ensure that all the benefits of the VE project are achieved, systematic follow-up procedures must be in place.

Although VE practices vary from business to business, the above phases must be implemented to get full benefit.

VE has been applied for cost reduction in purchasing, overall reduction in the cost of products and minimizing costs in the early stages of product development. It has also been applied to assembling and machining processes, packaging, transportation and distribution, construction, health care and environmental engineering.

Value engineering begins with functional analysis. Function is defined as the characteristics that products / services possess to make them work and sell. In VE, the various functions of a product are listed based on their priority.

Take the case of a washing machine. The functions to be performed, in the order of their priority, can be listed as: remove dirt; extract water, rinse contents and drain them. Similarly, in the case of an automobile, various parts perform various functions, and so the VE project can be broken into subprojects for various subassemblies to facilitate better results. VE methodology takes the cost of a product or service and allocates it to each function being performed to determine the cost of each function. In conducting value studies, functions are classified as either basic or secondary.

- **Basic functions.** These are essential for the product to perform well and sell. In simple terms, they refer to the primary characteristics necessary for a product or service to fulfill a user requirement.
- **Secondary functions.** These are the functions indicating quality, dependability, performance, convenience, attractiveness, and other features required beyond those needed to satisfy the minimum requirements specified by the user (basic functions).

Functional analysis helps to detect whether minor functions are responsible for a major part of the total cost, or vice versa. Moreover, it enables detection of relatively expensive but unimportant parts of a product or aspects of a service so that they may be eliminated.

Benefits of Value Engineering

VE can integrate both value-for-money and quality initiatives under a common framework. Long-term benefits of this approach include:

- **Best of class performance.** VE not only brings about improvements in function, performance and quality, but also results in improved business processes and reduced project lead times. It facilitates growth in companies, even those in highly competitive markets. VE provides a framework with which businesses can either gain ground on their top competitors or maintain their competitive edge when they are currently leading.
- **Enhanced quality.** The quality of products, services, projects and business processes is a function of cost, time and performance. By systematically focusing on these aspects, VE provides a structured approach to enhance quality.
- **Greater employee involvement and better morale.** VE stimulates an improved working culture by motivating employees to contribute to their business environment through team-based workshops. It encourages suggestions and feedback not only from employees, but also from customers and suppliers. Thus, it helps sustain competitiveness.

VE has been shown to result in:

- Quick, creative and effective solutions
- Optimal environmental impact
- Maximum and economic utilization of resources
- Lower life cycle costs
- Sustainable environmental solutions
- Discovery of alternative technologies

Summary

The best results are achieved when VE methodologies become part of the business culture and are automatically used for problem solving. Better quality and added value to products, projects, services and business processes leads to happy customers and increased profitability and competitiveness. VE has made this possible.