

Value Engineering: Index for Cost Reduction in the Manufacturing Environment

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Abstract:

In a highly competitive market, manufacturers seek ways to reduce the cost of manufacturing products to remain in business despite customers' varying demands, ranging from personalised products to mass production. Value Engineering (VE) explores the functional balance between a product's cost and performance by utilising alternative solutions to eliminate waste. This paper aims to assess the current literature in the topic area to gain insight into how the manufacturing industry can apply VE techniques to reduce product costs. It is evident from the literature assessment that VE significantly addresses manufacturing problems through a systematic and structured approach that aims to identify opportunities for cost reduction, quality improvement, and enhanced functionality while improving customer satisfaction. The method optimises the performance of products, processes, and systems. VE principle evaluates manufacturing procedures to optimise workflow, reduce cycle times, and utilise resources effectively. The approach examines product designs to make them simpler, more functional, and easier to manufacture. It locates and fixes flaws, lessens variation, eliminates wasteful practices and surplus inventory, and enhances overall product performance. Furthermore, it promotes cooperative problem-solving techniques and the investigation of alternative solutions to resolve manufacturing bottlenecks. Manufacturers, therefore, can enhance value, efficiency, and competitiveness by implementing VE principles.

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I. Introduction

Value engineering is a systematic method for enhancing the value of goods, systems, or services by examining how they perform in commercial, corporate, and business enterprises using enterprise resource planning [1]. The use of value engineering is unrestricted since the approach affects most of a country's economic sectors, including the power, energy, and building industries, to name a few [2]. According to [3], value engineering can be applied to a global manufacturing company to increase operational efficiency in strategy, process, material turnover, and customer response times. Although value engineering is a practice that aims to create and enhance value while lowering costs and maintaining performance, it needs to be improved in its ability to address supply chain management issues, such as overemphasising cost and ignoring uncertainties [4] asserted.

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