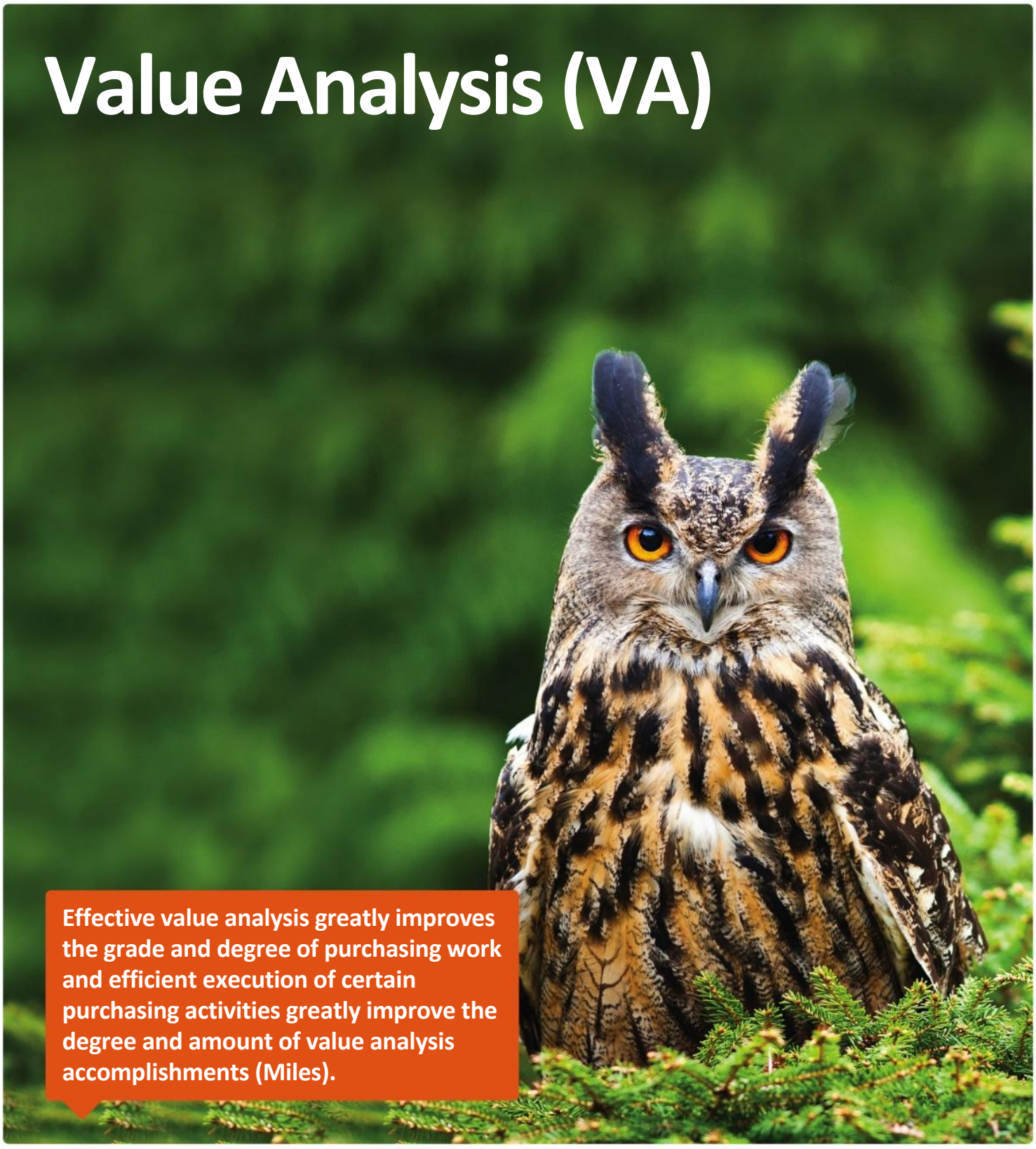
Value Analysis (VA)



Effective value analysis greatly improves the grade and degree of purchasing work and efficient execution of certain purchasing activities greatly improve the degree and amount of value analysis accomplishments (Miles).

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Introduction

One of the earliest writers on the subject of value analysis was Lawrence D. Miles who, in his book Techniques of Value Analysis and Engineering, described value analysis as "a philosophy implemented by the use of a specific set of techniques, a body of knowledge, and a group of learned skills" and as a "creative approach which has for its purpose the efficient identification of unnecessary cost, i.e. cost which provide neither quality, nor use, nor life, nor appearance, nor customer features" (Miles, 1972).

Miles helped shape the value analysis approach shortly after the Second World War and was driven by the material shortages which were a serious issue for companies engaged in the war effort. During his time at General Electric, Miles was credited with having saved the company around US$200m over 17 years (Khanna, 2008). Since this time value analysis has been adopted by many organisations around the world as a means of reducing costs without comprising on product quality, functionality, performance and aesthetics.

Value analysis involves decomposing a product into elements, attributes or functions. A value or price is estimated for each of these for what a customer would be willing to pay. A total target cost is calculated and the cost of each function is compared with perceived customer benefits. Functions are modified or removed until the perceived value exceeds cost. There are two keys to successfully implementing value analysis (Lysons and Farrington, 2006). First, the right people need to be brought together representing departments and functions such as cost accounting, design, marketing, manufacturing, purchasing, and quality control. Second, the right project needs to be selected which ultimately shows potential for cost savings.

Definition

Value analysis (VA) is a systematic interdisciplinary examination of factors affecting the cost of a product or service in order to devise means of achieving the specified purpose most economically at the required standard of quality and reliability (British Standards Institution, 1992).

Successful application

A value analysis study can be broadly implemented in three stages: pre-VA, VA study and post-VA. Each stage has its own set of sub-requirements and procedures to follow. The pre-VA stage encompasses (1) determining the study scope, objectives and participants; (2) recruiting VA team members, some part-time participants, possibly subject matter experts, and (3) collecting some data to build initial assumptions for the analysis. The VA study stage involves (1) meetings and field research; (2) comparing performance between alternatives and existing option; (3) testing assumptions and findings; and (4) conducting additional analyses if required. Finally, the post-VA stage entails (1) reviewing reports, comments and clarification requests; (2) participating in implementation meetings; (3) distributing final VA reports; and (4) following-up conditionally accepted alternatives (California Department of Transportation, 2007). Another variation of this approach can be found in Lysons and Farrington (2006).

Steps to successful application

1. Select a suitable project for investigation. For example, think about where the greatest potential for savings is to be made.

2. Obtain information relating to the item (e.g. cost of materials, machining and assembly times, methods and costs, quality requirements, and so on) and define the functions of the product, particularly in relation to the costs of providing them.
3. Brainstorm ideas for achieving the desired function, reducing costs or improving the product. This stage can be referred to as a speculation or creative stage.
4. Select the best ideas produced from the previous stage and evaluate their feasibility. Team-based VA will see each specialist approach things differently before reporting back.
5. Present recommendations to the level of management able to authorise suggested changes (e.g. what changes are being proposed? What are the costs and the projected savings?).
6. Approve changes and agree recommendations that can be progressed through the normal production, purchasing and other procedures. This is the final implementation step.

Hints and tips

- It is important to apply VA early on in the design process to create designs that leverage competitive advantage through enhanced customer satisfaction (Lysons and Farrington, 2006).
- As members of the VA team purchasing professionals can advise on legal, economic, ethical, environmental and sustainability issues, provide a key link between the value team and suppliers, offering access to supplier knowledge, increasing supplier understanding of customer needs, and enhance their own reputation and the status of purchasing in the organisation and with suppliers (Lysons and Farrington, 2006).
- There are two useful approaches to VA: functional analysis and cost function analysis (see Lysons and Farrington, 2006).

Potential advantages

- VA, along with standardisation and variety reduction, allows purchasing professionals to consolidate requirements, reduce acquisition costs, obtain volume discounts and increase leverage (CIPS Australia and Portland Group, 2006).
- Applying VA early on in the design stage of a new product can be critical. Thus, a study by Dataquest showed that the typical cost of a design change made during design of $1,000 grows to US$10,000 during testing, US$100,000 during process planning, US$1,000,000 during test production and US$10,000,000 during final production (Lysons and Farrington, 2006).
- Extensive use of VA can improve purchasing performance by creating and sustaining a value culture that manifests in all different types of purchasing activities (Lysons and Farrington, 2006).

Potential disadvantages

- Although VA provides a way of making non-value added costs visible, defining what is value added versus what is non-value added can be problematic. Regardless of how rigorous the process is there is always some level of subjectivity (David and Robert, 1995).
- Successful application of VA tends to be restricted to organisational environments that are team-based and collaborative. Usually, these environments already have existing structures that combine to foster a culture of innovation, creativity and problem-solving (Rainey, 2007).
- Activity VA can often become a 'people issue'. Generally employees do not like to be labelled as performing non-value added activities, therefore, labelling could potentially become a threat to job security or reputation (Gunasekaran et al., 2000).

Performance monitoring

- The value can be expressed as (1) performance capability/cost, or (2) function/cost (Rainey, 2007).
- Function and design value benchmark questions: does it contribute value? Are its cost proportionate to its usefulness? Does it need all its features? Is there anything better for the intended use? (Lysons and Farrington).
- Cost benchmark questions relating to cost: can a usable part be made by a lower-cost method? Do materials, reasonable labour, overheads and profit total its cost? (Lysons and Farrington, 2006).
- Supply benchmark questions: can a standard product be found that will be usable? Can another dependable supplier provide it for less? Is anyone buying it for less? (Lysons and Farrington, 2006).

Case studies

- During the Second World War the US planned to manufacture 1,000 landing crafts each with 200 gallon capacity fuel tanks costing US$520 per tank. However, the insights gained from using VA suggested that it was more economical to use four 50 gallon standard drums costing US$80 each (Khanna, 2008).
- IBM's e-Business flow model (based on an activity VA) was applied to a car servicing system. As a result dealer revenues decreased from the first model to the second and third models from US$462,240 to US$402,240. this was attributed to decreases in repair time and lower charges to customers for each repair (Caswell et al., 2008).
- A chemical company manufacturing caustic soda and caustic potash saved 33% in packaging costs when a VA revealed that it should switch from using mild steel drums for storage to 50kg capacity polythene bags (Khanna, 2008).

Further Resources/Reading

Web

International society advancing and promoting the value methodology.

Detailed report on value analysis and its application.

Overview of value analysis.

Value analysis guides (California Department of Transportation).

Example of how to use value analysis.

Books

Strategic Procurement and Sourcing: Value Analysis, Ethics, Solid Contracts ISBN 978-3843377027

Purchasing and Supply Chain Management ISBN 978-0273694380

Value Methodology: A Pocket Guide to Reduce Cost and Improve Value Through Function Analysis ISBN 978-1576811054

Purchasing and Supply Chain Management ISBN 978-1408017449

Operations Management ISBN 978-0131273108

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Video

The story of value analysis.
https://www.youtube.com/watch?v=VrkTkWRx60o

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