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Expanding Value Engineering Knowledge II
Value Engineering in Construction Management

D. Arditi and R. Alifen

Introduction

The implications of value engineering (VE) in the construction industry were appreciated by Dell’Isola in the mid 1960’s. VE incentive provisions were used in construction contracts by the Navy Facilities Engineering Command, followed by The Army Corps of Engineers, and VE incentive provisions with additional sharing to the contractor were developed in the General Services Administration (GSA) Public Building Services (PBS). In 1968, VE became mandatory as a requirement in design contracts. In 1968, VE became developed in the General Services Administration (GSA) Public Building Services (PBS). In 1968, VE became mandatory as a requirement in design contracts. In the 1970’s, the introduction of VE programs into construction management (CM) services, was also pioneered by the Public Building Services.

To date, due to high construction demand, escalating material costs and wages, and the increasing complexity of construction projects, VE programs have become more popular in the construction industry. Technological developments such as sophisticated software, new materials, advanced equipment and innovative construction methods make the use of VE worthwhile if project owners want to get better value. The basic objective of VE in construction is to achieve an optimum balance between cost, quality and reliability.

VE Role in Project Life Cycle

Project costs reflect all costs incurred during a project’s life cycle, including planning, construction and operating costs. The planning cost includes the cost of feasibility analysis and design; the construction cost is a one-time expense that takes place during actual construction; and operating cost is an annual cost that is incurred throughout post occupancy, including energy, maintenance, and replacement costs. A regular procurer in North America would normally expect savings in the order of 8 to 25% with an outlying range between 3 to 30% when VE is implemented (Kelly and Male, 1993). Another source (Acharya et al, 1995) states that the savings realized by using the VE concept can be in the range of 5-30% of the original total project cost.

VE experts agree that the potential saving occurs early in the design process. VE is commonly used at the end of the formulation of the conceptual design or 10% into the design stage; at just prior to working drawings or 35% into the design stage; and during the construction phase. But VE may be effective in a project’s life cycle if used not only during design, but also during pre-design and post-design phases.

It is easier to influence a project’s outcome during the project planning stage, when expenditures are relatively small, than it is during project execution or during the operation of the facility, when expenditures become significant (Gibson et al, 1995). The illustration of the influence of VE during the project life cycle is shown in Figure 1. Fabrick (1988) also agrees that the greatest potential for cost saving occurs at the initial concept development stage of the project life cycle, if it is compared with the additional cost to make change. This potential cost saving will decrease significantly until a break-even point is reached; after that point, the cost to make the change will exceed the potential saving.

Attaining value in projects requires intelligent efforts on the part of the parties involved throughout the project’s life cycle: owner, designer, and contractor. In some projects, user inputs are also required in the design stage, such as in hospitals, apartment buildings, factories and process plants. The parties that have the greatest influence during the project’s life cycle are the owners (through their requirements, standards and criteria), and the designers (through their decision-making in the design process). That is why, most VE activity takes place first in the inception phase where an owner is establishing his/her requirements, than in the design phase where the concept design layout and later the engineering systems are designed by the architect/engineer (Figure 1).

The Owner as Information Resource: Construction demands initially emerge from the owner’s ideas based on his/her basic requirements, financing capabilities, quality expectations, standards, and success criteria. The overriding goal of the private owner is to create the most profitable enterprise, whereas for the public owner, the overriding goal is to maximize public welfare. Project strategy can be effectively accomplished by having the owner participate in VE studies.

The information supplied by the owner has a significant impact in establishing the design output; it is also related to the project life cycle cost. The responsibility of the owner as an information resource in the very early stages of the project necessitates the supply of the following information:

- **Type of facility and its primary function** are the fundamental requirements to serve the owner’s needs.
- **Project constraints** such as the state of the site, regulations and planning requirements will impose a discipline upon the design process.
- **Budgetary limit** expressed as the total amount which may be committed to the project in terms of initial capital, and life cycle cost estimated in accordance with the life expectancy of the facility.
- **Construction performance and comfort level** are the embellishments which would achieve the owner’s wants as well as the owner’s needs.
Recently, the construction industry has become aware of the importance of client satisfaction in terms of how well owners’ expectations can be fulfilled. As quality performance has become high priority in construction projects, the intelligent owner who is the buyer of construction services, will have to rethink the project priorities in term of quality, function, completion time, aesthetics, compliance with regulations, maintenance cost, energy cost, minimum stress, and initial cost (Miller, 1994). In a research study conducted to investigate the client-satisfaction factors in the construction industry, Ahmed and Kangari (1995) indicated that six factors namely quality, cost, response to complaints, communication, time, and client orientation are considered most important.

**The Design Consultant as Interpreter:** All of the owner’s demands and criteria are translated into a design solution that is communicated to the constructor through drawings and specifications made by the design consultant. Since each design is a creative process, a large number of combinations exist between designs, materials and methods to obtain the ultimate goal of the project in accordance with the owner’s requirements.

The design consultant may have a great impact on the project life cycle cost; therefore, the design consultant seeks to reach the best balance between cost, performance and reliability of the constructed facility. It is the design consultant’s responsibility to finalize the selection of the architectural concept, building orientation, materials, structural system, electrical distribution, system control, automation, and energy consumption.

**The Contractor as Builder:** In realizing the design drawings and specifications that have been prepared by the design consultant, the builder is under contract to the owner to finish the overall project in a certain period of time and within a certain budget. The natural tendency is for the designer to create expensive and complex solutions in the design. As a result, if the contractor has already been selected during the design phase, the contractor may propose to the designer cost saving suggestions in construction materials and construction methods during design. If the owner selects the contractor after the design is complete, the contractor’s input can also play an important role in the construction phase of the project.

**Development of the Questionnaire**

A questionnaire survey was conducted of construction management firms to investigate the extent to which VE is used, its impact on the activities in the various stages of a project, the VE techniques commonly in use, and the type of material and human resources used in VE implementation. The questionnaires were mailed to the 200 US construction management firms listed in the 1994 directory of the Construction Management Association of America (CMAA). All questions pertained to projects undertaken in 1995.
VE has been extensively used in the public sector since it was a requirement of the Public Building Services since 1970. On the other hand, the diffusion of VE into the private sector was slow and required considerable marketing effort on the part of practitioners (Kelly and Male, 1993). One of the major goals of this survey was to investigate how widespread the use of VE is among construction management firms.

Most of the respondents occupy key positions in the firms. The large majority (88%) are presidents, vice presidents, CEOs, chairmen, and principals and 12% occupy middle management positions such as supervisors, directors, project managers, and construction managers.

Most of the respondents (63%) have 6-15 years of tenure with the firm (Figure 2).

The questionnaire was composed of two sections; the first section recorded respondent characteristics, including the respondent's position in the firm, the years with the firm, and the total value of projects undertaken by the firm in 1995. The second section was divided into two parts; the first part investigated whether the firm offered VE services and whether the firm used VE in projects undertaken in 1995. Another question explored the reason why they used (or did not use) VE. The second part was related to the use of VE as part of the construction management services offered by the firm; it covered the type of projects (building, civil engineering or both), the project phases (conceptual, planning, design, bidding, construction, operation) during which VE was implemented, the VE techniques commonly used (cost model, energy model, life cycle costing, functional cost analysis, etc.), the type of owner (public or private), the perceived cost saving resulting from the use of VE, whether computer software is used or not, and the way of conducting VE (in-house VE capability, use of outside consultants, or in cooperation with owner, designer, or contractor).

ANALYSIS OF THE SURVEY DATA

Eighteen out of the 200 mailed questionnaires were returned as “undeliverable as addressed”. Fifty four responses out of the remaining 182 questionnaires were completed and returned within four weeks after the mailing date, representing a response rate of 29%.

Based on the responses to the questions in the first section, the respondents can be described as follows:

- Most of the respondents occupy key positions in the firms. The large majority (88%) are presidents, vice presidents, CEOs, chairmen, and principals and 12% occupy middle management positions such as supervisors, directors, project managers, and construction managers.

- Most of the respondents (63%) have 6-15 years of tenure with the firm (Figure 2).

- Most of the firms can be characterized as relatively small-size firms since the total value of work undertaken by 52% of the respondents is less than $50 million. In contrast, firms in the $300+ million category were few (15%) (Figure 3).

- Mostly building projects (79%) were undertaken by the responding firms that indicated using VE, whereas only one firm (2%) undertook mostly civil works and some (18%) both building and civil works.

Information collected in the second section of the questionnaire indicated the following:

- The large majority (94%) of the responding firms offer VE as part of the CM services provided by their firm. Slightly fewer (91%) of the respondents had used VE in projects they undertook in 1995. The mostly cited reasons why VE is used include that it saves money (86%), it is the CM's responsibility (71%), it fulfills owner needs (67%), it enhances construction (65%) and design quality (59%) (Figure 4).

- The three respondents who did not use VE in projects they undertook in 1995 indicated that VE takes too long to perform, that it requires hiring experts, that it costs too much and that the designer resists the use of VE.

- It appears from Figure 5 that VE is used mostly in the pre-bid phases of a project, namely in the design (82%), planning (63%) and conceptual (61%) phases. It is interesting
More than 500 million dollars 11% 0-10 million dollars 10%
300-500 million dollars 4%
100-300 million dollars 20%
50-100 million dollars 13%
10-50 million dollars 31%

Figure 3. Total Value of Projects Undertaken by Responding CM Firms

Figure 4. Reason for using VE
Consortment Management Role

**CONCEPTUAL PHASE** → **PLANNING PHASE** → **DESIGN PHASE** → **BIDDING PHASE** → **CONSTRUCTION PHASE** → **OCCUPANCY PHASE**

Value Engineering

**Percentage of CM's that Perform Value Engineering**

<table>
<thead>
<tr>
<th>CONCEPTUAL PHASE</th>
<th>PLANNING PHASE</th>
<th>DESIGN PHASE</th>
<th>BIDDING PHASE</th>
<th>CONSTRUCTION PHASE</th>
<th>OCCUPANCY PHASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>61%</td>
<td>63%</td>
<td>82%</td>
<td>29%</td>
<td>27%</td>
<td>0%</td>
</tr>
</tbody>
</table>

**Figure 5. VE in Project Life Cycle**

**Figure 6. VE Techniques Used by Respondents**

- Cost Model
- Energy Model
- Life Cycle Cost
- Functional Cost Analysis
- FAST Diagram
- Gordon Technique
- Delphi Technique
- Others
Figure 7. Perceived Savings Obtained through VE

Figure 8. VE Implementation by CM Firms

Note: Percentages do not add up to 100%, because some respondents marked more than one alternative.
to note that very few firms (27%) indicated using VE in the construction phase. These findings support Gibson et al's (1995) and Fabrick's (1988) claim that the greatest potential for cost saving occurs at the initial stages of a project.

- The most popular VE techniques used by the responding firms are the Cost Model (73%) and Life Cycle Costing (65%) (Figure 6). The Cost Model makes use of the Pareto principle that states that 20% of the items in any complex operation encompass 80% of the total cost; this philosophy can point out the item with significant potential for cost reduction (Dell'Isola, 1982). Also, VE using Life Cycle Cost analysis makes solid sense. There is no doubt that identifying those items with major cost significance over the entire life of the constructed facility and performing VE should be standard procedure in all capital investment projects.

- Forty percent of the CM firms that took part in the survey reported that they provided VE services in projects that were mostly commissioned by private owners, 35% by public owners, and 25% provided VE service to both public and private owners. The historical development of VE indicates that it was first used in public projects, most notably by the military and later by the General Services Administration in the late 1960's. Its adaptation by private owners came relatively later in the 1970's. Considering the responses of CM firms, it appears that VE is equally known and used by both public and private owners in the 1990's.

- The cost saving achieved through using VE, is perceived by respondents to be 1-20% of the total project cost. Very few firms indicated smaller or greater savings (Figure 7). This finding is consistent with claims made by Kelly and Male (1993) and Acharya et al (1995) that VE savings amount to 8-25% and 5-30% respectively of the total project cost.

- Sixty-one percent of the respondents use computer software to implement VE, while 39% do not. These programs include estimating, scheduling, word processing, database management and spreadsheet software. No specialized VE software was ever mentioned by any of the respondents.

- Figure 8 indicates that more than half of the CM firms that responded to the survey have some in-house VE expertise but that they need the cooperation of another party very often. Seventy six percent of the respondents seek the input of the designer whereas only 43% cooperate with the contractor. This finding is consistent with the earlier finding that most VE takes place in the design phase and tapers off in the construction phase.

Conclusion

A survey of CM firms in the US indicates that VE has become an established process that is typically part of the services provided by CM firms to both private and public clients. It appears that the implication of VE takes place mostly in the pre-bid phases, very much in accordance with the recommendation found in the literature. The importance of using VE in association with life cycle costing seems to be well understood. VE is perceived by most users as reducing cost by up to 20%. Whereas no special VE software is yet available, various computer packages such as estimating, spreadsheets, etc. are extensively used. Less than half of the CM firms claim to have in-house expertise in VE and most cooperate with the designer and the owner in this endeavor.

A construction project is complex, budget oriented and time consuming. A VE team working with the cooperation of the project owner, designer and constructor, can refine a project's program and reduce life cycle cost without sacrificing design specifications.

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Bibliography


Whether evaluating major transportation systems or major food delivery systems to provide hot meals to 28,000 inmates in jails; analyzing the world’s most innovative, complex wastewater treatment plant or simply helping a local school district to find the most cost effective design solution for a middle school, the U.S. Cost Value Team Leaders are always focused on delivering the best possible value to our customers.

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Value Based Decision Making for the Small Engineering Firm

Robert C. McElroy, Ph.D.

Abstract

With VA/VE/VM techniques properly applied, net revenues can be increased by appropriately decreasing cost and increasing cost.

Background

While classical Value Analysis and Engineering emphasizes cost reduction, some modern Value Management techniques incorporate classical VA/VE and go onward to address cost increases for essential business growth.

A business system is composed of a variety of different inputs, tasks/processes and outputs. Tasks and processes are performed to support functions, which are higher order activities. To improve a business, VM focus should be on inputs, tasks/processes and outputs as determined by available high value opportunities.

Introduction

This paper presents how staff members representing administrative areas and management activities of a small engineering firm used a one day Value Management Seminar: 1) to address challenges, issues and concerns and, 2) to arrive at winning high value solutions for all parties.

Value Methodology and a Mini Value Study assisted each individual to identify their role in the organization and identify impediments to their success. Problems were identified, analyzed, brainstormed, evaluated and implemented with a Mini Value Project.

Value Based Decision Making

Composite analysis encompassed baseline functions, function analysis, matrix assessment and brainstorming to identify "throughput" as the single company problem. This analysis resulted in a logical single solution which addressed each individual, each identified problem, and the identified problems of management. The one day Value Management Seminar produced positive focused results which were of significant benefit to each individual and to the company.

Value Management Seminar

A one day Value Management Seminar was conducted with the assistance of NT Associates, Inc. for five staff members, representing each department, of an engineering firm in the business of providing traffic accident reconstruction services.

Value cost and function relationships set the tone for this seminar, see Figure 1. A small engineering business requires that each staff member perform a number of distinct roles and assume various duties. Business growth, and the addition of part time staff members, creates an overlap of responsibilities and an increase in the need for attention to customer, case and corporate objectives. Additional responsibilities from growth include general business and finance decisions, for each staff member, which create stress and confusion because these are new issues which now have to be dealt with on a daily basis.

VALUE

<table>
<thead>
<tr>
<th>AN APPROPRIATE</th>
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<tr>
<td>FUNCTION to COST</td>
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<td>Improve/Advance to Reduce/Cut</td>
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Figure 1. Cost & function relationship in value.

In the seminar, staff members were found to be performing specific job tasks at individual levels of efficiency and comfort which they deemed to be satisfactory. However, this performance was not necessarily what management had established for individual work product performance. Each staff member identified particular problems which needed attention. Engineering staff members were not focused on corporate objectives of efficiency and cash flow. A similar problem existed for high value customer satisfaction. Engineering and management agreed that high value customer satisfaction is a primary issue, see Figure 2.

Customer Satisfaction

In the 1990's and beyond: Value Driven, Flawless & Affordable Performance Is the New Norm!

Value Methodology

- High Value Teams
- Job Plan
- Common Sense
- Function Analysis
- Value Techniques

Figure 2. Customer satisfaction through value method.
With individual and departmental problems identified, the seminar then focused on value based decision making to successfully move forward in an organized corporate manner, see Figure 3. Cost-Value-Worth and Value Index assessments provided the method by which the primary problem for the company was identified and agreed to by all participants personally and for their respective departments. Clearly defining the company's primary problem provided a foundational basis which then permitted identification of enabling objectives which would correct not only the company's primary problem but also the specific problems identified by the departments and individuals.

**Value Based Decision Making**

What are you doing? WHY?
What should you be doing? HOW?

Figure 3. Value based decision making focuses effort.

Individual tasking revealed that dissonance and reduced productivity in the organization occurred because work tended to bottleneck instead of smoothly flowing through the organization. Determination of problems, in an organized manner, permitted a logical method to be developed in order to implement total corrective action without creating dissonance in another part of the organization due to constructive change. Figure 4 illustrates the adopted win for all approach.

Win - For - All = Win

The VALUE in Value Engineering

\[
\text{Win} = \text{Win}^1 \\
\text{Win} - \text{Win} = \text{Win}^2 \\
\text{Win} - \text{Win} - \text{Win} = \text{Win}^3 \\
\text{You} - \text{Me} - \text{Others} = \text{Win}^n
\]

Figure 4. Winning exponentially identified by Value Engineering

**Background of the Business**

Growth of this engineering service company is not unique. Starting ten years ago, this sole proprietor business grew because of a demand for the engineering services provided. Six to seven years into operation, the decision to build the business into a medium size firm was made. Over a two year period the staff increased to five full-time and five part-time. Full-time staffing permitted a breakup of primary job responsibility into the areas of marketing, engineering, technical support, operations, finance and management, see Figure 5. Guidelines for each position were developed and incorporated into each job description in an attempt to improve efficiency.

Work seemed to pile up or languish depending on the business cycle and cash flow seemed to vacillate in the same manner. In an attempt to improve company efficiency, a one day Value Engineering Seminar was conducted (1). Key elements of value engineering were addressed and each staff member participated as the representative for their respective area of the business.

Exercises permitted each staff member to identify specific areas of concern to their areas of responsibility. Each responsibility was discussed in light of the company's overall function and ultimate value to primary objectives. Improvement ideas were written down and ranked to create an evaluations matrix. Ordering permitted organization of responsibilities in a manner which would optimally benefit the corporation. A verb-noun word combination was applied to identify the firm's primary challenge. Improve throughput described not only our problem but also the solution, see Figure 6. This phrase addressed the fact that we needed to promptly get cases setup when they came in, delegate who was going to do what activities when, and establish ongoing review of staff accomplishments to ensure that cases did not languish.

**Value Based Decision Making**

Function Analysis System Technique

FAST Diagram

Value based decision making focuses effort.

**Implementation**

Improve throughput is the organized flow of a project through the organization. Projects are set up with specific objectives to be met at a target budget amount based on the number of hours required. Staff adherence to this method focuses activity and ensures that direction, for a particular project, is always toward the specific objective established for each phase of the total project. Phases are organized so that a logical sequence of activity will produce optimal...
benefits for the client in the overall concept of how a particular project is to be approached.

Staff meetings are typically held twice a week. A single case tracking sheet is compiled, by the technical support staff member, which includes all active cases, short term objectives and who is responsible for the next phase of operation. Group discussion permits an organized approach to accomplishing what needs to be done in order to move forward with a particular case.

Staff meetings are conducted in the conference room and each staff member brings to the meeting all case files in their possession so that all questions may be answered about a particular project and issues do not “slip between the cracks” for efficiency. Meetings permit close scrutiny of work completed and budget targets which have been agreed to by clients, which were established before the work began.

Clients are contacted and work is performed by the appropriate staff member based on the group meeting and discussion.

FAI VA/VE/VM

VA/VE/VM has permitted our firm to focus on high value opportunities. All divisions now know what is the primary objective, throughput, based on a budgeted set of phases, intended to optimally promote progress through a project. With everyone and every division in agreement there is unity of action and direction. Dissonance is reduced since all parties have agreed on the manner in which action is directed. Based on improved throughput, five supportive functions were identified for the firm to focus on: improve staff, cost recovery, scheduling, response time, and billing.

Conclusions & Recommendation

1. VA/VE/VM is a proven methodology for improving a business in a timely and cost effective manner.

2. Although a one day value seminar can be beneficial, more time is needed to more fully realize many available high value opportunities.

3. VA/VE/VM is recommended for taking the necessary next steps now by which high value improvements can be better accomplished in each area of a firm’s operation.

4. Utilization of value methodology assisted FAI, a small engineering firm, to identify and secure its best value opportunity.

Reference


Bibliography


Acknowledgment

Tom Warwick, CVS, President, NT Associates, Inc. who conducted a one day seminar for FAI on which this paper is based.

Robert McElroy, PhD. is with Forensic Automobile Investigations, Inc.

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Value Engineering is a function oriented approach to identify the unnecessary cost in a product/service. The onus of utilizing this technique is vested not on an individual but on a group of people. Avoidance of the individualistic approach is because of a one-track mind. This group of people is from various disciplines. The success of VA/VE Program will depend on how the group of people transfers themselves into a Team.

Nature of Team for VA/VE

Value Analysis/Value Engineering Team is not voluntary; instead the members are nominated by the Management. They may be of two types:

(a) Part-time team
(b) Full-time team

The part-time team is meant for certain specific problems. This type of team is mainly in vogue in Value Analysis/Engineering Workshop.

The full-time team is permanent in nature. The team continues to take up projects one after the other. The team members are more or less constant.

Structure of Team

The multidisciplinary team members of Value Analysis/Engineering are:

- Production Engineer
- Maintenance
- Industrial Engineer
- Designer
- Cost Accountant
- Quality Engineer

Specific team composition can be made for certain specific purposes. For “The Building of a School”, the team may consist of the following members - Architect - Parent - Financial Consultant - Principal - Civil Engineer (1).

Group vs Team

Value Analysis/Engineering is a task force approach. The team members are nominated by the Management. Since it is a multi-disciplinary approach, people from different functions will form a group. Value Analysis/Engineering being a Team Approach, this Group has to be transformed into a TEAM.

For an individual to be successful, the BODY, MIND & SOUL should be synchronized; similar should be the case with the TEAM. In order to transform a Group into a Team, the courses of actions are as below:

- Physical Transformation
- Intellectual Transformation
- Spiritual Transformation

Physical Transformation

The foremost requirement for transformation of a Group into Team is to select a Team Leader. In this assorted nominated members, the person who is knowledgeable to Value Analysis/Engineering Technique should be a preferential candidate. If there are more than one, the members should select their choice for leadership. This is essential because a knowledgeable person can only use the systematic Job Plan successfully.

The members should decide to meet regularly. Since the members of the group are from different disciplines, a scheduled meeting time, day and the venue have to be finalized by the group.

In order to have cohesion among the group members, the minutes of the meeting should be prepared positively. Various activities regarding the projects will be assigned to different members. The probable completion dates of the activities are to be agreed upon by the group members which should be mentioned against the individual members.

Unanimous decisions regarding the above aspects require continuous dialogue among the group members. Benefit of this process will be that the group members will know each member in view of the common purpose. This will transform them to a unique BODY.

Intellectual Transformation

“Intellectual help; the gift of knowledge is a far higher gift than that of food and clothes; it is even higher than giving life to a man, because the real life of man consists of knowledge.”

- SWAMI VIVEKANANDA.

The split-brain theory of Dr. Roger Sperry reveals that the human brain has two distinctive hemispheres- left and right, which function differently. While Left is responsible for Verbal, Logic, Lists, Linearity, Words, Rational, Sequence, Scientific, Numbers, Analysis; the Right is for Spatial,

Individual members of the group have different emphasis either on the Left or on the Right and are different among each other. But when the members are working as a Team, they should develop a mental set-up which will be agreed by all. This mental transformation can be possible by adopting the following action plans.

To develop unidirectional analytical ability, the group members should decide their mission and set the goal. The goal should be accepted by all members. In Value Analysis/Engineering the path has already been established and that is through utilization of a systematic Job Plan. One of the important aspects of analytical ability is the database analysis. Many a time the group members are assigned different tasks.

Function is the key-word in Value Analysis/Engineering. To define a function in two words is the uniqueness of this technique. The group members should start communication among themselves by using two words. This will not only develop clarity about the purpose but also bring the members closer enough to become a Team having singular Left brain.

Breakthrough in the Value Analysis/Engineering technique is in its Creative Phase. It is the turning point from the existing to the proposed solution. The individual member has to use effectively their right side of brain, by using creativity techniques, namely Brainstorming, Gordon Technique, Morphological Analysis etc., in a group. This will develop a right brain of the Team.

With this process there will be transformation to a unique MIND of the Team.

**Spiritual Transformation**

"-Spirituality is the true basis of all our activities in life" - SWAMI VIVEKANANDA.

Will the purpose be achieved or the result accrue, if the individuals are meeting/deliberating regularly as per norms and are well knowledgeable about the Value Analysis/Engineering Technique? The straight answer is "NO". It needs something else to be effective. And that is the Spiritual Transformation of the Group into a Team.

The Spiritual requirements of the Team are:

- Patience
- Discipline
- Mutual Trust and
- Loyalty

The time lapse between the decision to implement and the significant results, leads to skepticism among group members which will cause Destructive Conflict (3), but the spiritual transformation will include not only the Patience and Discipline into the Group which will reduce or eliminate Destructive Conflicts, but also Trust and Loyalty.

- Spiritual Transformation is only possible when the group members will develop a family relationship. In order to create the family relationship, each member will have to open an Emotional Bank with other members using the following six deposits. (4)
  - Understanding the Individual
  - Attending to the little things
  - Keeping commitments
  - Classifying expectations
  - Showing personal integrity
  - Apologizing sincerely when you make a withdrawal

Having Emotional Bank Accounts by all members, they will create a unique SOUL of the Team.

**Conclusion**

Team, by itself, is as important as the Technique. Many VA/VE Projects have not seen the life of the day because of the non-coherence of the team. Not only that, many a time the recommendation of VA/VE groups which have not transformed into team are sub-optimal solution. These sub-optimal solutions are neither desirable nor beneficial.

**Reference**

1. Parker, Donald E., *Value Engineering Theory*, Lawrence D'Miles Value Foundation.


Mr. Anil Kumar Mukhopadhyaya, CVS is a Senior Manager with Telco located at Jamshedpur - 83100 Bihar, India.
Employee Motivation, Value Engineering, and the Reinventing Government Process

Paul N. Romani

It has been said that government will not alter its behavior unless someone in power believes that a significant discrepancy between what it is doing and what it ought to be doing exists. President Clinton believes such is the case. He has characterized many government agencies as stultified and slow to adapt to change—particularly change driven by technology and communication—and has initiated a program of reinventing them to reestablish government as the people’s servant. To paraphrase John W. Gardner “government with hardening of the arteries is being replaced by systems within which continuous innovation, renewal, and rebirth can occur.”

A first step in the reinventing process has entailed the elimination/downsizing of entire layers of personnel. Stratification in some bureaucracies, it was found, had reached the point where those at the foot of the organization had been deprived of all discretion, and thus of all initiative. A new paradigm is evolving in the public sector. It is one where the people who must actually do the work are empowered to take more responsibility for their completion. The heart of the theory says the President, is as follows: “If you wish to make real change, you have to engage the people most likely to be affected—the one’s who are already involved and who have the most at stake in getting the job done right.” See Chapter 1 of Common Sense Government/Works Better & Costs Less: Third Report of the National Performance Review.

The Third Report estimates that there have been almost a dozen attempts to reform the Federal government during this century. Little lasting change has resulted. The argument is irrefutable. One need only recall the First and Second Hoover Commissions, the Grace Commission, the Report of the President’s Commission on Privatization and the wholesale application of techniques like zero base budgeting, Program Evaluation Review Technique, management by objectives (how else can one manage?), Planning-Programming-Budgeting System, Critical Path Scheduling, and participatory management methods to government operations to see how desperate for a quick fix government has been. Advocates of the reinventing government process claim it differs significantly from previous attempts at government reform. “One key difference, says President Clinton, is that it never stops. It’s never finished.”

The Report continues: “They [the previous attempts] went nowhere because they were done backwards, from the top down, rather than from the bottom up. They didn’t ask for ideas from the American public, or from the Federal government’s own front line workers, who try to serve the public every day. Most often, the efforts consisted of studies led by outsiders with no real stake in the results.”

The thread of commonality that runs through the previous reform techniques is the problem of motivation—harnessing the public servant to the goal of effective client-centered management, not just temporarily but for the long haul. This problem is dominant if reform is to succeed.

The desire for recognition, self-fulfillment, and similar rewards has been documented repeatedly by behavioral scientists (e.g., Herzberg, Argyris, and Bennis) and public administration theorists (e.g., Kuhn, Downs; and Caiden) to be among life’s strongest cravings. Financial incentives alone, given once and then forgotten, do not lead to the kinds of continued, high-quality public service the administration wishes to elicit. To sum, the idea that the nobleness in men’s hearts will assert itself during reform attempts is hardly realistic and constitutes the Achilles heel of the entire reinvention process.

An article in the Washington Post, by Ronald E. Yates, dated November 19, 1995 entitled “Motivation’s New Age” contained the following passage: “In an era of massive downsizings and mergers that lead to tens of thousands of layoffs, companies better find successful ways to motivate the survivors. People are scared and angry. In many corporations, we have the walking dead.” Also, “It is clear companies are searching harder than ever for what many consider an elusive key to success: a surefire way to motivate workers.” According to Bob Nelson author of the best seller 1001 Ways to Reward Employees, money and fear are the poorest motivators. People want to be appreciated, they want to be listened to, and they want a greater sense of self-esteem.”

American Airlines’ “Achiever’s Program” is a value enhancement model the government could emulate only with severe modification. Seen as too generous even by the airline’s competitors, it seeks to recognize employees for almost anything they do that is perceived by supervisors as “special” or even for doing consistently good work. In a three-month period in 1994, 1,600 employee ideas (from 3,500 teams) were adopted. They resulted in $20 million in cost-saving or revenue generating improvements. Submitting employees received $4.7 million in merchandise prizes in return. Many feel the real motivation came from the recognition the employees received and from seeing “their ideas” put to use.

Tensions and inconsistencies with other organizational characteristics (tendencies toward routinization, inertia, and inflexibility) often are generated when the deliberate pursuit
of change or innovation—creativity—is emphasized by an organization. Thus, the quasi-alien nature of creativity means that special incentives must be required to promote the generation, adoption, and acceptance of sustained innovation if the reinventing government initiative is, as the President wishes, “never to stop.”

Fortunately, there exists, and has so for almost half a century, a powerful methodology to encourage ingenuity and sustain motivation, particularly in continuously changing environments. It is known as value engineering. Its corporate roots date back to 1947 when Lawrence D. Miles tested and refined it at a General Electric facility in Schneedey, New York. In government, the Department of Defense officially recognized the function’s potential for enhancing value and decreasing cost in the early to mid 1960’s. This period produced a substantial amount of technical, conceptual, and theoretical work in the discipline. For example, in 1963 Revision 3 of Section I, Part 17 of the Armed Services Procurement Regulations was issued. This revision enabled contractors to share in the net savings resulting from the government’s adoption of the former’s value engineering proposals. It also provided for the inclusion of value engineering provisions “in all contracts of sufficient size and duration to offer reasonable likelihood for cost reduction.” A further revision was made to the Regulations on November 11, 1964, when Defense Procurement Circular No. II was issued. Most notably, it extended value engineering savings arrangements to areas beyond the “instant”, or current, contract. Interestingly, the Circular begins with the words that: “It is the Department of Defense policy to be generous in incentive arrangements so long as it is assured that it is being generous only with definite cost reduction savings.”

This Circular and others issued in 1964, 1965, and 1967 were meant to motivate defense contractors, through the use of sharing ratios applied to cost savings, to do value engineering and submit Value Engineering Change Proposals (VECPs). To the defense contractor, the benefits of incorporating the value engineering methodology into work processes are obvious: the potential for increased profit and enhanced competitive position. Its incentive receipts are nearly 100 per cent profit dollars. Underpinning DOD’s position regarding VECPs is the notion that as long as the government can realize one dollar of savings in the total cost of buying and operating a weapon system, for example, no amount of reward to a contractor is exorbitant, as the government payout is less than what was agreed upon at the time of contracting. Both parties, it is implicitly assumed, are better off. The incentives for contractors to submit VECPs are significant. Savings realized by DOD under the “instant” contract, future acquisitions of the item, and in ascertainable savings in net cost (collateral savings) are all subject to sharing. Additionally, unsolicited proposals for product improvement are desired by DOD and are eligible for VECP awards, as are proposals that are submitted by subcontractors (through prime contractors). Contractor awards under the VECP program can be sizeable, amounting to millions of dollars. And there is no limitation on the number of them an organization may submit to the government. The potential savings to the government through widespread application of value engineering to hardware, software, facilities, services, and other purchases is incalculable. One would think every federal employee would be encouraged to “Think VE.” But such has not occurred. Some feel the pigeon holing of value engineering in DOD dates back to its early emphasis on “hardware acquisitions.” Others believe corporations respond to declining profits with traditional marketing tools, particularly promotions, to increase sales.

It did not take long for state and local governments to recognize the methodology’s potential and begin value engineering programs. Dozens of firms considered “non defense” oriented did so too. Only the Federal government remained unconvinced of its dynamic nature. The popularity of books like Bowles and Hammond’s Beyond Quality , which speculated that the Japanese and Germans were winning the battle for the paychecks of the American consumer owing to their ability to produce goods of greater value than their American counterparts, spurred the call for increased quality in U.S. made goods. To counter the Japanese concept known as “kaizen”, a customer-driven philosophy involving an organization-wide commitment to quality control, another acronym was added to the government’s prodigious lexicon of them and total quality management (TQM) seminars proliferated. The Department of Energy became the government’s undisputed leader in dollars invested in TQM training. Unfortunately, almost every dollar the agency saved was credited to TQM. So prolific were savings reported by the Energy Department that its pronouncements lost credibility. And, in spite of the President’s wish to engage the hearts as well as the hands of Federal government workers, value engineering in the Executive Branch was used almost exclusively, and somewhat erratically by the Department of Defense.

On July 6, 1995 the President gave an address on “Responsible Citizenship and the American Community” at Georgetown University. He said the following: “Government is struggling to change, and I’m proud of the changes we have made. But no one really believes that government is fully adjusted to the demands of the 21st century and the information age. It clearly must still be less bureaucratic, more empowering, rely more on incentives, . . . Later, “We still have to reduce spending and we have to find a way to do it while increasing our investment in the things that will determine our ability to live the middle class dreams.” The words “rely more on incentives” and “reduce spending” and “do it while increasing our investment in the things that will determine our ability to live the middle class dreams” could have rolled off the tongue of Larry Miles. I was present that day and could think of nothing but value engineering after the President said what he did.

Although the full story about how it happened may never become clear (e.g., this author made several inquiries to
Senator Thurmond’s staff and Senate Appropriations staff) there appears in the National Defense Authorization Act For Fiscal Year 1996 (Public Law 104-106), dated February 10, 1996 an amendment to The Office of Federal Procurement Policy Act (U.S. C. 401 et seq.). The amendment reads as follows:

“(a) General.- Each Executive Agency shall establish and maintain cost-effective value engineering procedures and processes.”

“(b) Definition.-As used in this section, the term ‘value engineering’ means an analysis of the functions of a program, project, system, product, item of equipment, building, facility, service, or supply of an executive agency, performed by qualified agency or contractor personnel, directed at improving performance, reliability, quality, safety, and life cycle costs.”

In a communication on April 19th with Mr. George Lauffer of the Senate Appropriations Committee, it was learned that widespread concern for acquisition reform accounted for inclusion of value engineering provisions in Public Law 104-106. Additionally, the technique had broad support from industry, professional societies, and procurement specialists. According to Lauffer, “expectations are high that value engineering will make a difference in improving government’s procurement processes.”

In the span of fifty years, value engineering has come full circle. From a method in the purchasing officer’s bag to reduce military hardware costs to a centerpiece in the President’s Reinventing Government Program is a significant leap by any standard. Inherent in value engineering are both the motivators most revered by workers and the incentives to continuously seek quality. There is no cap on either of these; real improvements in quality will be accepted, recognized and rewarded at most any time, not just the annual incentive awards ceremony.

Molded in the 20th century, the value methodology could be a 21st century success. It must now live up to its billing by helping to give taxpayers’ their money’s worth; that is, a government that works better, faster, and cheaper than in the past, and one that operates as well as, or better than, the best private businesses. After a 50-year wait, it’s “show time.”

References


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Marketing of Value Engineering Through Human Resource Development

R.L. Narasimhan

Synopsis

This paper highlights the need for aggressive marketing of Value Engineering. VE marketing is explained as marketing of services, and its specific implications are highlighted. Marketing of VE is defined in VE terms. The present demand for Value Engineering and awareness are dealt in brief.

For effective marketing of Value Engineering in an organization, training is dealt as one of the interventions of Human Resource Development process. The vital factor in marketing of services (VE Training) is said to be the faculty and the role of VE practitioner and hence the training approach, skills and traits required for the faculty are explained. For VE marketing, typical methodology, including specific contents of the subject according to the audience level and approach to examples used in the lectures, are described with illustrations.

Faculty evaluation approach and format used by the author, himself as faculty in VE, for collecting feedback & suggestions to update the faculty standards towards the expectations of participants/trainees/customers are described. Also, the traits & qualities of the VE group leader necessary for successful marketing of Value Engineering are highlighted.

Introduction

Marketing is the vital process for the survival of any business. Market research and survey are the tools to help ensure market through orientation of business/operations/products/services to the needs of the customers and thus facilitate survival and growth.

Marketing Defined

The main function of marketing can be defined as “Satisfy Customer” through a passive verb and a nonmeasurable noun in terms of Value Engineering (VE) definition of ‘function’. ‘Satisfy’ is a passive verb, because it is subjective and satisfaction varies from person to person (customer variety). Customer is nonmeasurable, because customer is a human being with varied emotions, attitudes, perceptions, and behaviors towards the product marketed, and thus can not be measured in quantifiable terms of his need for Value Analysis. Thus, the complexity of function to be accomplished in marketing Value Engineering.

Marketing of Services

Another dimension to the complexity can be perceived through the understanding of marketing as a service function in the case of imparting/propagating Value Analysis, where a physical product with measurable properties and specification are non-existent. But, the real value of the ‘service’ is in the quality of the individual (presenter) providing the training/selling of the VE concept, and the receiver/customer/trainee, who also has his own perception about the whole service as function and subject knowledge (as the product) being marketed.

Thus, the mode of presentation and person presenting have a direct impact on the quality and acceptability by the customer and consequently on the marketing of Value Analysis.

Market Demand

Value Engineering is a buyer’s market, but with hardly any buyer. It is the real state of affairs in the developing countries, like India, because of the simple fact, that, though there is a huge potential to enhance value of systems and save resources, there is no great demand from many organizations commensurate with the potentials of VE.

It is not enough if we have the knowledge and skill in the application of VE methodology. It is more important to ensure selling of this concept and/or create a market for it. It is so because VE is not an essential commodity for living, nor a necessary resource or facility, like food, fuel, energy / transportation etc, which satisfy the lowest level of needs of human being (customer) in terms of Abraham Maslow’s hierarchy of motivational needs. This thinking is more relevant to the developing countries, as their prime needs are food and shelter, which themselves are not fulfilled to the satisfactory levels.

The developing countries are constantly struggling to match their limited resources with the essential needs, and hardly find it sufficient to further their development in higher levels of needs. In view of such a climate and economic culture, there is a dire need for creating the market for Value Engineering / Analysis to save and create resources through VE application. Hence comes the major role of VE practitioners, who have the potential and opportunity to popularize Value Management Concepts.

The VE methodology demands a group approach, which is poor in the developing countries, in spite of excellent individual skills and knowledge being available in large measure. The VE effort results in recommendations for change in the existing for reaping the benefits of enhanced Value. But, the Resistance to Change (RC) factor, dominant in peo-
There is also a myth even in the minds of engineers (who are aware of and practicing VE in their product development) that VE is a tool useful only for product/equipment/hardware and also for cost reduction only. However, the real strength of VE is known only to some and not all the VE practitioners, who dare apply VE methodology to non-hardware areas as well in order to reap maximum benefits from the Value Analysis methodology.

**Human Resource Development**

Human Resource Development (HRD) is one powerful process, through which effective VE marketing could be carried out. One of the important interventions of HRD is training. In this context, the gap between the state-of-the-art worldwide and the local status when identified, can help in terms of training needs identification and scope of training. This scope and need identification with respect to each organization (Industry/Society/Company etc.) will help orient the contents of the training program and methodology of training vis-a-vis the level of participants/trainees, both in the hierarchy and knowledge of the participants.

From the experience of the author in a series of VE training sessions, for about seven groups from the same department (defense engineering & manufacturing) with each group consisting of 25 to 30 participants (totaling around 200 executives), hardly two or three executives expressed that they were aware of Value Engineering. Others did not have any opinion about Value Analysis, let alone its potentials and development in this field worldwide.

Also in most of the training programs, Value Engineering stops at knowledge acquisition stage itself and no further effort is made to take-up or apply VE in their work situation. The reasons for this could be any one or more of the following:

1. The trainer adopted a poor methodology for delivering the subject.
2. The trainer/faculty failed to keep in mind, the interests of the participants (particularly when VE is in a buyer’s market with few buyers).
3. The trainer failed to impress the participants because of the use of only the academic examples.
4. The trainer himself was not very clear that VE is an universally applicable concept, that it is not limited only to products, and that VE leads to total resource optimization. This potential of the VE methodology will create interest in the participants, if explained appropriately.

**Faculty Skills/Approach**

To enhance the quality of Marketing of Value Analysis, it is worth the efforts improving the skill in VE training/knowledge transfer. This zeroing in of the approach of faculty certainly demands certain traits in the faculty and methodology followed, in addition to the knowledge on the subject and experience in the VE application.

In the first place, traits and abilities of faculty are very important.

1. The faculty should be very good at communication skills so that his ideas are perceived well by the trainees.
2. He should be good at marketing as a professional to win the hearts of those listening to him by highlighting the merits of VE appropriate to the level of the audience.
3. As a speaker, the faculty should essentially be very good at public speaking and skillful in his opening of the presentation, dwelling on the subject and conclusion, and at the end, call for action to make the audience apply VE in their areas of operation when they go back after the program.

**Training Methodology**

Methodology followed for imparting the VE knowledge is equally important.

1. A monologue for the full duration of the training should be avoided, since it is likely to put-off the audience, or make them drowsy.
2. The training should be highly interactive and participative through exercises and instruments. Combination of ‘experience’ and instruction (theory and explanation) is an ideal method, i.e. involving the participants in live problems, exercise and proceeding to solve it. Case studies are only illustrations and cannot create full understanding of the VE application methodology. In this context, it is worth quoting the famous Chinese saying: “TELL ME, I FORGET; SHOW ME, I REMEMBER; INVOLVE ME, I UNDERSTAND.”

The time required for learning and the risks associated with the gaining of experience are reduced in the combined process, resulting in better knowledge-transfer to the trainees.
3. In fact, a typical VE workshop style is best suited for training. When a live problem is not available, a typical problem can be taken from the suggestion of audience to proceed with the job plan sequence. As the VE job plan demands group work, it is worthwhile simulating such a group work with the advantage of experiencing the group dynamics, the difficulties and interactive deliberations among the members during the course of the group work. It will certainly bring success in the propagation of Value Analysis, as Henry Ford said “Coming together is only beginning, keeping together is progress and working together is success”.

This will also create confidence in the trainees to go back to their work place and apply VE as far as possible, as the understanding of VE methodology stays longer in the minds of those who have worked on live problems during the VE training.

4. During the interactive session, whenever a concept is told before application at that stage, it is better to use a personally influencing example along with the concept rather than typical engineering examples alone.

When Function Cost-Worth Analysis is explained, an example can be as indicated in Table 1.

<table>
<thead>
<tr>
<th>CONTENT → FOOT STUFF ↓</th>
<th>Protein N x 6.25</th>
<th>Fat g</th>
<th>Minerals g</th>
<th>Carbohydrates</th>
<th>Energy(k Cal)</th>
<th>Ca mg</th>
<th>P mg</th>
<th>Fe mg</th>
<th>Price per 100gms. Rs</th>
</tr>
</thead>
<tbody>
<tr>
<td>CASHEW NUT</td>
<td>21</td>
<td>47</td>
<td>2.4</td>
<td>22</td>
<td>596</td>
<td>50</td>
<td>450</td>
<td>5.8</td>
<td>25.00</td>
</tr>
<tr>
<td>GROUND NUT</td>
<td>25</td>
<td>40</td>
<td>2.4</td>
<td>26</td>
<td>567</td>
<td>90</td>
<td>350</td>
<td>2.5</td>
<td>3.00</td>
</tr>
<tr>
<td>SOYA BEAN</td>
<td>43</td>
<td>20</td>
<td>4.6</td>
<td>21</td>
<td>432</td>
<td>240</td>
<td>690</td>
<td>10.4</td>
<td>4.00</td>
</tr>
</tbody>
</table>

*1: Data reproduced from: “Nutrient Composition of Indian Foods” National Institute of Nutrition, ICMR, Hyderabad, India.
*2: Data reproduced from: “Nutrient Composition of Indian Foods” National Institute of Nutrition, ICMR, Hyderabad, India.

Similarly, the evaluation methodology can be explained by using a simple case of four brands of vehicles or TVs etc. with appropriate criteria and weightages.

These are highly influencing examples and such an approach in the selection of examples will enhance the affinity to the VE concepts, as they are useful in personal life of the participants.

From the author’s experience in VE training and lectures, conceptually practical examples oriented towards participants will create greater interest in the participants and attract them towards the subject. This also enhances the understanding and satisfaction of the trainees (customers).

**Subject Content**

Contents of the training program takes important position
along with faculty traits, skills and the training methodology. Unless the product is good, even excellent marketing efforts cannot improve the market share. Therefore, the contents should be properly structured and in logical sequence. The Contents of the program cannot be neglected, because this is the main menu being served to the trainees. The contents and the extent of explanation and exercises depend on the time available for the faculty and the level of participants in the knowledge and hierarchy in the organization. The contents again will be intensive or light depending on the above mentioned levels of participants.

Broadly, the following can be dealt in sequence according to the time available.

**CONTENTS OF THE VE TRAINING PROGRAM**

1. History and introduction of VE
2. VE definition and methodology
3. Function definition
4. Function -Cost -Worth Analysis
5. Creativity and brain storming
6. Evaluation Matrix including weightage and FDM
7. Speciality of VE as function approach
8. Concepts of Life Cycle Costing
10. Objective test to assess the knowledge acquisition

The above list is typical for working level executives/supervisors in a three day (6-7 Hrs per day) training program.

However, it can be managed through a half-a-day session for top management and decision makers in an appreciation seminar, where the emphasis will be on the following:

1) Highlights and introduction of VE
2) Point of view of VE and the potentials of VE
3) Universal applicability to all operations involving resource expenditure
4) Cost of not using Value Analysis and consequently importance of VE Training
5) Advantages of having VE practitioners in all Management Committees and other important functional committees.

6) How other organizations are getting benefited by the use of VE
7) Necessity of top management support for the success of VE to derive maximum benefits.

**Faculty Evaluation**

It is required to continuously update the faculty for any training program and VE is no exception. Therefore, to ensure effective dissemination of knowledge in VE, it is required to evaluate the faculty every time. The feedback and suggestions can be obtained from the participants with the use of the format (ref. Annexure-I) with appropriate modification as required by the HRD/organizer.

The feedback form can be issued to the participants at the end of the training program, and these views can be collected. Consolidation and analysis of this information will give a scope for further improvement in methodology required to be adopted by the faculty to ensure success of the VE training. The feedback form can also include topics dealt, duration for each topic, adequacy of time duration for each topic etc.

The overall rating of the faculty should not be less than ‘very good’, (ref. item 3 of Annexure I) in case of a single program on VE, and should not be less than “better than many” in case of comparison with other faculty members, who dealt other subjects during a multi-subject training program. These ratings point towards a successful speaker. This will ensure the creation of liking in participants for the subject as compared to other subjects dealt during training and VE stands as one of the few liked subjects.

**VE Department Leader**

Last, but not the least, requirement for successful marketing of VE is the quality of VE group leader. The requirement for the success of VE as a group process is that the VE group leader should be good in marketing public relations, highly amenable and acceptable, free from ego problems and other complexes and should be looking for co-operation, collaboration, and interdependence. Otherwise, VE will not find any ground to grow in spite of good staff in the department, and many prospective customer departments in the organization.

The top management has the responsibility to identify such an executive with human traits and qualities to head the VE activity. Otherwise there will be loss of potential customers for VE. Alternatively, in spite of demand, they will be left unattended. HRD should, in such a case, train the VE group leader to imbibe the required qualities.

One more effort in marketing VE is of the VE department leader to interact and convince the seniors in the hierarchy and the committees which are relevant to the VE project for
successful completion and implementation of change proposals. Thus, the VE can become a very powerful management process enhancing awareness and application.

Conclusion

Human Resource Development department has a lot of opportunities to organize knowledge transfer process through development programs and, hence, a potential media for marketing VE. Training approach, faculty traits, skills in presenting, including body language, play major role in VE marketing. Continuous evaluation of faculty is inevitable to update and ensure high and relevant standards of HRD process in marketing Value Engineering.

A highly amenable and acceptable leader of VE group, seeking collaboration and interdependence with good image and salesmanship, will go a long way in the acceptance, survival, and growth of the unique management concept - Value Engineering. He has direct influence on the VE acceptability commensurate with his acceptability, in terms of his traits, amenability, humility, and his individual ego states. In Thomas Harris terms, he should tend to be an ‘I am ok you are ok’ person for the VE to be successfully marketed.

Acknowledgements

The author expresses his sincere thanks to BHEL Corporate Research and Development management for giving permission to publish this paper.

The author gratefully acknowledges the encouragement and guidance provided by Sri NVLS Sarma, DGM/HRD in the preparation of this paper.

The suggestions provided by Dr. P. Jagannathan, AGM/M, Sri. PV Bhat, AGM/PHQ, Dr. SN Saxena, Sr.DGM (ITP & Projects), Dr YVLN Murthy, DGM/VBL, and Sri S Rangarajan, Sr. Manager (HVE) in the presentation of the subjects are sincerely acknowledged.

Thanks are due to Mr. M. Srinivas, Dy. Manager (CSG) and Mr. M. Swamy, Engineer (MTL) for their meticulous work in bringing out this paper.

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He is a recipient of the best paper award in the International Conference on Value Management during January 1991 at New Delhi, organized by Society of Indian Value Management.

He is a visiting faculty instructor to many private and public sector industries and academic institutions in India on Value Engineering and Time Management.

His mission in HRD is to make Value Engineering a way of life in every walk of life and as a popular Total Resource Optimization Technique (TROT).
Annexure - I

Faculty: RL Narasimhan, Manager (HRD) BHEL Corporate R&D, Hyderabad.
Suggestion & Feedback *3
for improving the presentation in future programs

Date:

Program Title: Value Analysis

Note: Frank reaction and comments of the participant will enable us in evaluating this program and possible improvements in future programs.

1. a) Was the subject pertinent to our needs and interest
b) Any constructive suggestions

2. Rate the faculty on the following [check what you consider as the most appropriate response by putting a tick in the box].
   a) Practical approach to subject matter, including dealing with reference to work situation/problem.
      □ □ □ □ □ Excellent Very good Good Fair Fair
   
   b) Keeping the session alive & interesting
      □ □ □ □ □ Excellent Very good Good Fair Fair
   
   c) Using audio visual aid
      □ □ □ □ □ Excellent Very good Good Fair Fair
   
   d) Maintaining a friendly & helpful manner
      □ □ □ □ □ Excellent Very good Good Fair Fair
   
   e) Illustrating & clarifying points
      □ □ □ □ □ Excellent Very good Good Fair Fair
   
   f) Interaction & level of participation
      □ □ □ □ □ Excellent Very good Good Fair Fair

3. What is your overall rating of the faculty?
   □ □ □ □ □ Excellent Very good Good Fair Fair

4. What benefits do you feel you have gotten from the training (check as many as you wish)
   a) New knowledge and exposure to practical aspects that are pertinent
b) Specific approaches, skills and techniques that I can apply on the job
c) Change of approach/attitude that will help me in my job
d) Appreciating the problems/views of others/team work
e) Any other

5. Which are the topics you felt most useful to your work situation/personal life.
   List in order of merit
   1) 4)
   2) 5)
   3) 6)

6. What would have made the session more effective?

7. How many Faculty members have addressed you in this program (including this session). Please tick appropriate box.
   □ □ □ □ □ □ □ □ □ □ 1 2 3 4 5 6 7 8 9 10

8. Rate the overall performance of this Faculty compared to others.
   □ □ □ □ □ Worst Worse Almost Better Best
   of all than many equal than many of all

Name: (optional)

*3: Format adopted, modified and used by the author from page 88, 'Handbook of Training and Development' by N. Ramaswami, TR Publications, India.
Thunder: How Not To Deliver Constructive Criticism

Thomas R. King, CVS, FSAVE

If you find a trace of redeeming value in this article, it will come in the form of remembering three little words: Packaging, Often and Softness.

For openers, the word constructive has a bad ring because the descriptor is usually defined from the sender’s point of view; not the receiver. When one hears the word constructive, they normally get the same feeling as that of a cat who has sat on a hot pot bellied stove. Something is coming. That something is every bit as welcome as a proctoscopic exam and motivates a dive for the softest pillow one can find.

So my first tips for you to consider regard packaging the announcement. These are do nots:

Do not start your delivery of appraisal with “I’m going to give you some constructive criticism” or “You’re not going to like this bit of news” (but I’m going to give it to you anyway because I enjoy sticking you). In retrospect, you might want to think of this approach as the castor oil treatment. There is something wrong with you, so swallowing this treatment and reacting to it, you will be whole again. And I’m the good doctor.

The second word I mentioned is often. Valuable feedback, or constructive criticism, becomes greatly diffused and ignored if it is given all too often.

Touring the Louvre in Paris and looking at all the people paintings, I could only marvel “Wasn’t anybody ever happy?” Cold, unsmiling faces, many with agony. No wonder Mona Lisa was so popular.

People who forever dish out criticism are plain not happy people, and operate from a not ok life style position.

It seems that one way to elevate their own feelings of esteem is to find the weakness in others, and dwell on it. One theory that I’ve often heard is that individuals who come down hard on others, really are harder and more critical of themselves.

If this theory is sound, the fact is well hidden from my empirical observations.

The last word I wanted to focus on here is softness or gentleness. Delivering the message in softer tones will be more likely absorbed than a harsh message resembling a hardball bouncing off a brick wall. The tone will not be condescending, judgmental and overly critical. It will be as though your grandmother was talking to you in endearing tones.

Saying all this I would hasten to advise that throughout life, I have been the benefactor of some good genuine constructive criticism. You know, just as there is bad cholesterol and good cholesterol, there is both bad and good constructive criticism. Good criticism helps. Bad criticism kills the spirit. And yes, sometimes I have listened and reacted favorably to feedback given sternly, seriously and in harsh tones. But this feedback was usually provided by loved ones in whom blood lines and trust ran deep. You know they had, always did, and always will, have your best interest in mind.

Thomas R. King, CVS, FSAVE, author of Thunder articles is located in Franklin, PA. Mr. King is Past President of SAVE.
Development and Status of VE in the Hungarian Industry

Prof. Ferenc Nadasdi and Zsuzsanna Udvarhelyi

Introduction

In Hungary the change of the political system took place relatively fast. However, the change of economic system will take a relatively long time. The main problem is that not only the economy needs modernization but a new kind of operation must also be developed. Naturally, the new kind of operation requires the transformation of the institutional system and legislation. The most difficult thing is to change human thinking.

Looking at the conditions of the Hungarian industry, the following major problems are paramount.

- The majority of the capacities of the Hungarian industry was established for former socialist countries’ “COML-CON” demand. Hungary has lost the majority of these markets.

- The former “closed” market has ceased to exist and Hungarian entrepreneurs face very hard competition even within their home country in the new “free” market economy.

- Lack of capital, which is partly due to the Hungarian national debt is a general problem in the Hungarian economy.

In order to solve our problems as fast as possible, we must use all methods and procedures which are suitable for the more economic utilization of our resources and more effective operation of the economy.

Development and Status of VE in the Hungarian Industry

Value engineering has been used in Hungary since 1964. Universities have taught the main principles of the method since the beginning of 1970’s and the government agencies began to support the distribution of value engineering with specific programs relatively soon. The ministries issued several tenders. Even with a very low level of utilization, the investments were very effective, and exceeded the return on average investments several times. Despite the first positive results, value engineering remained unknown to the Hungarian economy. The centrally controlled economy did not “accept” the generated extra profit. If a company exceeded the required profits, it was punished for “unfair profits”.

On the assignment of the Ministry of Industry and Trade a university survey was performed on the use of value engineering between 1975 and 1989. The questionnaire was sent out to 460 companies representing Hungarian industry. The questionnaire included 20 questions requesting answers of how the Hungarian companies knew value engineering and whether they used the method or not. Information was requested from those who used it about the typical features of the value engineering projects (reviewed areas, expenditure and results, etc.). Of the 460 questionnaires sent out 100 were returned which showed that 56 companies had 215 value engineering projects. (We did not have full records about the projects organized in industry, but according to our estimates the actual value engineering projects increased the reported amount 3 or 4 times.)

This survey could be considered as statistical example reflecting the value engineering activities in industry. Therefore the following statements are mainly indicative statements or information determining sizes.

The major findings of the survey were the following:

1. The number and sectoral breakdown of companies involved in value engineering are included in Table No. 1.

2. Composition of projects according to types. The processed answers indicated that the majority of the completed work involved the value engineering of products (50%) and technologies (33%). Value engineering of organizations is still at the beginning and the remaining 15% was related to various activities (transportation, packaging, stock management, etc.) (Figure No. 1)

3. Classification of value engineering analyses according to sizes. The data of the survey are shown in Tables No. 2 and 3.

The average size for the entire group was HUF 218.6 million/each, without the last group - which represents only 2% - HUF 148.3 million/each, and without the last two groups (representing 10%) it was HUF 93.1 million/each.

4. Achieved results

In the process of value engineering efficiency is one of the key questions. The majority of the given data related to one year and even if the participants of the survey did not give their data for one year, they were converted into annual figures.
Table 1

Number of Companies Performing VA/VE and their Sectoral Breakdown

<table>
<thead>
<tr>
<th>Sector</th>
<th>Companies performing VA/VE</th>
<th>number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining</td>
<td></td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Electrical Industry</td>
<td></td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Metallurgy</td>
<td></td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>Machine industry</td>
<td></td>
<td>21</td>
<td>38</td>
</tr>
<tr>
<td>Chemical industry</td>
<td></td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>Light industry</td>
<td></td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>Construction materials</td>
<td></td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>industry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other industry</td>
<td></td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>56</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 2

Breakdown of Performed VA/VE According to Sizes and Average Project Sizes

(USD ≈ 50 HUF)

<table>
<thead>
<tr>
<th>Projects size groups</th>
<th>Number and breakdown of VA/VE</th>
<th>Total project size and breakdown</th>
<th>Average project size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HUF m</td>
<td>number</td>
<td>%</td>
</tr>
<tr>
<td>-20</td>
<td></td>
<td>53</td>
<td>37</td>
</tr>
<tr>
<td>21-50</td>
<td></td>
<td>18</td>
<td>12</td>
</tr>
<tr>
<td>51-100</td>
<td></td>
<td>25</td>
<td>17</td>
</tr>
<tr>
<td>101-200</td>
<td></td>
<td>17</td>
<td>12</td>
</tr>
<tr>
<td>201-500</td>
<td></td>
<td>18</td>
<td>12</td>
</tr>
<tr>
<td>501-1,000</td>
<td></td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>over 1,000</td>
<td></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>146</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 3

Breakdown of Results of the Completed VA/VE

<table>
<thead>
<tr>
<th>Result group</th>
<th>Number of VA/VE</th>
<th>Achieved result</th>
<th>Average result</th>
</tr>
</thead>
<tbody>
<tr>
<td>HUF m</td>
<td>number</td>
<td>%</td>
<td>HUF m %</td>
</tr>
<tr>
<td>-2</td>
<td>16</td>
<td>16</td>
<td>23</td>
</tr>
<tr>
<td>2.1-5</td>
<td>28</td>
<td>29</td>
<td>114</td>
</tr>
<tr>
<td>5.1-10</td>
<td>8</td>
<td>8</td>
<td>306</td>
</tr>
<tr>
<td>11-20</td>
<td>22</td>
<td>23</td>
<td>306</td>
</tr>
<tr>
<td>21.50</td>
<td>15</td>
<td>16</td>
<td>497</td>
</tr>
<tr>
<td>51-100</td>
<td>5</td>
<td>5</td>
<td>351</td>
</tr>
<tr>
<td>101-200</td>
<td>2</td>
<td>2</td>
<td>285</td>
</tr>
<tr>
<td>201-500</td>
<td>1</td>
<td>6</td>
<td>202</td>
</tr>
<tr>
<td></td>
<td>97</td>
<td>100</td>
<td>1,848</td>
</tr>
</tbody>
</table>

Table 4

Breakdown on the Expenses of the Completed VA/VE

<table>
<thead>
<tr>
<th>Expense group</th>
<th>Number of VA/VE</th>
<th>Volume breakdown of expenses</th>
<th>Average expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>HUF m</td>
<td>number</td>
<td>%</td>
<td>HUF m %</td>
</tr>
<tr>
<td>-0.25</td>
<td>22</td>
<td>18</td>
<td>3.4</td>
</tr>
<tr>
<td>0.26-0.5</td>
<td>39</td>
<td>33</td>
<td>14.7</td>
</tr>
<tr>
<td>0.51-1.0</td>
<td>29</td>
<td>24</td>
<td>21.7</td>
</tr>
<tr>
<td>1.1-2.0</td>
<td>18</td>
<td>15</td>
<td>26.1</td>
</tr>
<tr>
<td>2.1-5.0</td>
<td>8</td>
<td>7</td>
<td>25</td>
</tr>
<tr>
<td>over 5</td>
<td>4</td>
<td>3</td>
<td>41.1</td>
</tr>
<tr>
<td></td>
<td>120</td>
<td>100</td>
<td>132</td>
</tr>
</tbody>
</table>
Figure 1. Breakdown on the completed VA/VE according to types

Altogether the questionnaire showed some information from 170 value engineering analyses but in 73 cases companies stated that the results of the work could not be quantified.

Below we shall use the data from 97 value engineering projects with quantified results (see Table No. 3 and Figure No. 3). The total of all the completed projects amounts to HUF 1,848 million. The average result of the various value engineering analyses was HUF 19.1 million. Comparing this to the average, HUF 218.6 million size of projects, the average result could then be expressed as a percentage. One value engineering analysis resulted in 8.4% of the size of the project.

5. Expenditure

In addition to the size of the project and the achieved results, the third major factor is the amount of expenditure.

According to the figures 120 projects required altogether HUF 132 million expenses, which meant an average HUF 1.1 million in a project.

The data of the survey indicate other data which help the consensus between micro and macro control levels in order to improve the conditions of value engineering.

It may be concluded that in the Hungarian industry HUF 100-200 million product volume, HUF 19-20 million/project savings, + HUF 1-2 million/project expenditure need to be assumed as average figures in products and product planning.

Result of Using VE in the New Areas

In addition to traditional use, the method of VE was successfully applied in several new areas. The method can be successful in these areas too but the technical features of the different areas need to be revealed.

This effort was necessary because during the VE of industrial products and technologies often energy savings were realized. The Hungarian energy demand figures to produce products are significantly worse than international experience. Therefore several projects were launched in the power sector. R+D and investment problems also contributed to putting emphasis on these areas.

Of course we are also aware of the fact that these problems are mainly due to the inadequate efficiency of the Hungarian economy but we must solve specific tasks in specific areas.

a) Value engineering and energy

Energy has become a determining factor for economic and social development. The so called traditional issues have been supplemented with environmental, social and economic aspects. For example, environmental requirements may prohibit the use of equipment or processes that are being used under other conditions. A further special feature is that the framework of the power sector is significantly influenced by international expectations, requirements and contracts.

The various operational spheres (technical-scientific, market, social, economic, etc.) are relatively independent and define the conditions of operation within their own systems. However, considering these special features as well, the potential features of the total operational sphere must be taken into account together. It is impossible to use an environmentally friendly mass technology for a given area if it does not exist yet or is too expensive.

The priority issues are also interesting as compliance with some environmental regulations (e.g. NOx, SOx, etc.) will exclude some technologies in future.

Planning is made even more difficult through the fact that the economic development of the country, which basically determines the energy demand, can only be determined with difficulty. That is, the basic figures of planning could be considered as variables. The risks involved in the different development paths (political, economic, technological, etc.) must also be considered.

The reduction of the energy demand is mainly related to the changes in the product structure. It may also be seen that the energy issues are somewhat related to the entire economy. It seems that the application of V.E. could be especially useful in:

• cost benefit analyses on the basis of Value Opt. =
Figure 2. Frequency of completed VA/VE according to size and their aggregate project sizes

Figure 3. Frequency and amount of the results of completed VA/VE according to size groups

Figure 4. Frequency and amount of the expenses of completed VA/VE according to size groups
Value engineering may be an excellent means to increase the efficiency of innovation processes. The issue arises how the method of value engineering can be used in a process which basically consists of heuristic elements and often the secondary research results (new, accidental knowledge and solutions alongside the tasks included in the target) become more valuable than the solution of the original task. It seems that the application of the value engineering methodology - considering the importance of the specific features of the professional area - may also be useful in solving these tasks.

b) Value engineering in R+D areas

The value engineering subjects within the capital investment process requires an adequate marketing strategy. In this case the "final product" is an R+D result (new production technology, instrument, information system, etc.) which itself uses various R+D results or basic research solutions.

In R+D we must have a special marketing strategy due to the unique features of this area. The R+D process basically uses intellectual products for the generation of intellectual products or their carriers. Intellectual products - he description of which exceeds the framework of this paper - are special products. The traditional "production" concept is almost entirely unsuitable for modeling the technical and economic framework system. Unfortunately - according to domestic and international analyses, we cannot even state that the fixture results can be defined from the expenses. (At the level of a company or a country the framework system and the expenses naturally determine the expected results significantly.)

The method of value engineering can be used in two areas:

• to improve the operation of the institution, organization or team generating the R+D results and/or
• for the production of the ordered R+D results using the value engineering methodological line.

According to practical experience both areas are equally important. Naturally, the establishment or review of an institution or a framework using value engineering can only be justified after a longer period (4-5 years).

b2) Experiment to use Value Engineering in R+D

With the financial and moral support of the Ministry of Industry and Trade an experimental project was organized in an R+D organization.

The main objectives of the work included:

• shortening of processing,
• shortening of return on investment,
• improvement of decision making procedures.

This project was not aimed to improve the efficiency of a specific R+D task, but rather the R+D organization. The approved proposals indicated significant potential costs savings, but we consider that the better operation of the system is significantly more important. This better operation was reflected in the shorter processing time of developments projects, more efficient reflections and realization of the market demand.

c) Value Engineering in Capital Investments

In the centrally planned economy the low return on investments was a general problem. Inadequate assessment of market demand and the delays in capital investments often caused losses later. On the basis of this recognition and on the basis of the initiative of the Ministry of Industry and Trade, in 1988 Value Analysis Inc. (USA) did some experimental value engineering on capital investments at 4 Hungarian companies. The projects were successful and the experience gained from them contributed to the development of a joint methodology. During the last few years Hungarian value engineers were successful in several adaptations but such use of the method has not yet become an integrated part of business activities. Below we shall describe the theoretical and practical experience of the work. It could be assumed that some of our problems have not even occurred in the American practice but among the Hungarian condition this methodology is definitely a pioneer one.

Typical Features of VE in Capital Investments

From an organizational point of view in case of value engineering of a capital investment project requires the assignment of an expert with experience in capital investments and value engineering in order to coordinate, and manage the value engineering and capital investment activities.

On the basis of the objectives stated by the management, the value engineering of a capital investment process begins with the development of the overall criteria aimed to measure the efficiency of the capital investment.

The value engineering subjects within the capital investment
The value engineering efforts should be concentrated on the phase of capital investments in which the biggest results may be expected compared to the expenses.

The value engineering of a capital investment project means that the planned status is reviewed. It is essential that value engineering should begin at the earliest possible stage of planning (20-30% completion) because there is a better chance to avoid superfluous costs. However, at this stage it is still difficult to define the expenses well therefore the review should be repeated at 60-80% completion when the plans and expenses are more planned. Thus the time and expenditure required for re-planning may be avoided.

If possible, the value engineering review should not be done by the experts doing the given planning because other experts not influenced by the original concept can better spot the possibilities for improvement and sophistication included in the plan.

Concurrent value engineering activities performed with overlaps or with several subsequent teams integrate the activities pursued in various areas and thus provide an opportunity for the optimization of the technical contents and expenditure. In order to coordinate such complicated activities a “value management program” needs to be drawn up which includes all activities and tasks related to value engineering.

It is well known that costs are best influenced by the investor and the designer through the objectives, demand, requirements, applied solutions, tolerance and regulations. Technical planning is an area where the necessary functions may be examined in the basis of specific technical parameters. The necessary and sufficient installation level of functions can be established on the basis of objectives and technical parameters. This is where costs can be best controlled so the review should concentrate on this area.

**Result of VE on Capital Investments:**

- in case of capital investments which have been prepared to a certain extent it could be shown in the savings compared to the original cost budget and time schedule, directly after the completion of the capital investment project,
- in case of capital investments prepared and planned using value engineering it may not, or may only relatively be shown as there is no basis for comparison. In such cases the result is guaranteed by the fact that in each step the technically and economically optimal solution is selected. The capital investment project does not involve superfluous costs. The total costs of the capital investment is the minimum costs at which the required function may be generated, therefore the capital investment represents a higher value compared to traditional planning.

**New tasks: National Project of Value Analysis**

Summarizing the efforts of the last few decades, it seems that we have managed to achieve important partial results and progress in the industrial use of value engineering. However, the centrally planned economy was not able to accept the efficiency of value engineering. In our views the best results were achieved in training. In this area co-operation with the American value engineers should be stressed. In the 1980s, upon the initiative and with the financial support of the Ministry of Industry and Trade, Value Analysis Incorporated held several successful workshops for Hungarian companies. More than 200 employees of approximately 40 companies learned about this up-to-date method. The return on the investment was approximately ten times.

At this point we would like to thank Mr. J.W. Bryant for his effective support, which had an outstanding role in the Hungarian development of value engineering. My colleagues and I are happy to remember the hard but very efficient methods of Mr. Rudrick G. Otto and the kind cooperation of the knowledgeable Mr. S.S. Venkataramanan.

At the moment we have a new situation. The efficiency of the Hungarian economy is not sufficient, and the export abilities of the industry are also very low. Unemployment is around 12%. For the past few years inflation has been 25-30%. We consider that value engineering could be an excellent tool in solving our problems. The Act on Public Procurements created in 1995 made it possible to require value engineering as a condition. But we only look at this as an initial step. In order to take the further steps fast, we must go back to the original source: we must study and adapt the American experience.

Of course we have no illusions. The biggest and most developed economy of the world has different problems than the problems in Hungary. We would like to learn a device better which promotes the faster transition of the economy. We also think that the other European former socialist countries have similar problems. It may be interesting for you to see how difficult the transition from a controlled economy to a market economy is. The future tasks have been summarized within the framework of a National Value Engineering Project. This project covers the issues of training, certification, standardization, and deals with the allocation of public resources on the basis of value engineering.

In the first step we received an aid from the Hungarian-American Joint Fund. We requested Mr. J.W. Bryant to return to Hungary, and advise on the development of a new government strategy and promote its implementation.
Summary

Value engineering has been used in Hungary, primarily in industry, for more than 30 years.

Even the Hungarian experience has proven the method. For the Hungarian economy in transition value engineering could be an effective tool in reducing inflation and fighting unemployment. Hungary may obtain extra resources which cannot be organized in other ways.

During the last ten years various foreign methodologies were adapted in Hungary. From international co-operation we focus on Hungarian-American co-operation.

If we are successful with our first steps during the next few years the Hungarian government agencies will support more Hungarian application of value engineering. The opportunities are unlimited and we look forward to greater Value Engineering cooperation world wide and we hope to have the full and active support of our American colleagues in those endeavors.

References


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The Path of the Calf
by Samuel Foss
1895

One day through the primeval wood
A calf walked home as good calves should;
But made a trail all bent askew,
A crooked trail as calves do.
Since then, three hundred years have fled,
And I infer the calf is dead.
But still he left behind his trail,
And thereby hangs my moral tale.

The trail was taken up next day
By a lone dog that passed that way;
And then a wise bellwether sheep
Pursued the trail o’er vale and steep,
And drew the flock behind him, too,
As good bellwethers always do.
And from that day o’er hill and glade,
Through those old woods a path was made.

And many men wound in and out
And dodged and turned and bent about,
And uttered words of righteous wrath
Because ’twas such a crooked path;
But still they followed - do not laugh -
The first migrations of that calf.
And through this winding wood-way stalked
Because he wobbled when he walked.

This forest path became a lane
That bent and turned and turned again;
This crooked lane became a road,
Where many a poor horse with his load
Toiled on beneath the burning sun,
And traveled some three miles in one.
And thus a century and a half
They trod the footsteps of that calf.

The years passed on in swiftness fleet,
The road became a village street;
And thus, before men were aware,
A city’s crowded thoroughfare.
And soon the central street was this
Of a renowned metropolis;
And men two centuries and a half
Trod in the footsteps of that calf.

Each day a hundred thousand rout
Followed this zigzag calf about,
And o’er his crooked journey went
The traffic of a continent.

A hundred thousand men were led
By one calf near three centuries dead.
They followed still his crooked way,
And lost one hundred years a day.
For thus such reverence is lent
To well established precedent.
For men are prone to go it blind
Along the calf-paths of the mind,
And work away from sun to sun
To do what other men have done.
Value World is published three times a year by SAVE International normally in the months of February, June and October, and is distributed internationally.

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**Subscriptions:** A yearly subscription for SAVE members is included in their annual dues. The yearly rate for nonmembers in the U.S. is $75.00; international is $100 including airmail postage.

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