The Hong Kong Institute of Value Management

Value of VM Facilitation

Tony Toy, Architectural Services Department

Having recently completed a course on Value Management Facilitation in Australia, I found it interesting that there were as yet no recognised performance bench-marking for the ‘value’ of the VM

Table-1 Value Management Strategy Matrix

Value Management Strategy Matrix		Facilitation Mission Statement	Strategic Goals	Tactical Issues	Logistical Aims
		Determine and achieve desired outcomes.	**Problem Facet**		
		Deal with attitudes, build consensus and ensure group congruence.		**People Facet**	
Formal VM Stages	**Informal Usage**	Diffuse communication barriers, align focus and transparently document the process.			**Process Facet**
Information	***Fact Finding***	To assemble and share a common generic representation of the problem/project.	**A**ccrue Information	**A**ssimilate Views	**A**ctuate Communications
Analysis	***Situation Evaluation***	To systematically evaluate and integrate the available information and produce a systemic framework of facts and interrelationships.	**S**ort Information	**S**implify (into) Functions	**S**tructure Order
Creativity	***Exploring Alternatives***	To exploit the potential of the situation through a structured approach designed to motivate, encourage, generate, expand or enhance the available ideas/options.	**C**hallenge Assumptions	**C**hannel Focuses	**C**ause Innovation
Judgement	***Decision Making***	To effectively rate the available choices in the context of the set objectives and determine appropriate strategies.	**R**ationalise Priorities	**R**elate Themes	**R**ate Choices
Development	***Implementation Planning***	To determine and structure the choice proposals and agree a logistic plan for promulgation/execution.	**E**ncapsulate Outcomes	**E**nsure Commitment	**E**mpower Champions
			Base Functions of Facilitation Strategy		

Introduction to Value Management

Ric Grosvenor, Dip.Tech.Bldg, Executive Director-Building, Leighton Contractors

The essence of value engineering is to provide the required function at the lowest cost - to distinguish between needs and wants.

Often this distinction is blurred, but using the structured, disciplined process, embodied in value engineering, ensures that the clients' needs are satisfied in the most economical manner.

Value Engineering in Hong Kong is in its infancy but it is proving to have significant benefits to clients, particularly commercial clients.

Benefits include savings in cost, improved income potential, lower operating expenses and a more appropriate fit between client requirements and design.

Originally value engineering (also known as value management and value analysis) started in the US in the immediate post-war era.

A young engineer, Larry Miles, working for the General Electric Company, was forced to design parts from a severely restricted range of raw materials. Instead of focusing on the actual part he was responsible for designing, he focused attention on the function that it had to perform.

He found that the end result was invariably simpler, more economic and performed better. The emphasis on function remains the driving force in value management today.

Gradually, the use of value management techniques spread throughout North America, and by the early 70s had been introduced in Japan, Europe and Australia. Today Japan, followed by Germany and the U.S. (in that order) are the biggest users of the system.

As has been stated, value engineering differs from other cost-reduction activities in that it is function-oriented, involving a searching analysis of the function of a product as opposed to merely seeking lower costs with methods and processes to produce the same item. Many known cost-cutting techniques are used in value engineering. Organisation of these techniques in a manner which permits systematic application to function represents, in part, the "newness" of value engineering.

Differences of opinion on both philosophy and application exist with the definition of value engineering. This divergence stems in part from an attempt to distinguish between value engineering and other cost-reduction techniques and disciplines, e.g., work simplification and the various approaches of

industrial engineering. Actually, it represents an amalgam.

Recognising that cost avoidance or "first look" techniques are seldom completely effective, a "second look" approach using value engineering can often produce significant savings.

Definitions

Value Engineering: "The systematic use of techniques which identify the required function of an item, establish values for those functions, and provide the functions at the lowest overall cost" - Smith, Hinchman and Grylls.

"A managed, purposeful, orderly methodology for increasing the return of an investment on specific targets of opportunity - with no loss in required performance". - Gorge Fouch, former Deputy Assistant Secretary of Defense (I&L).

"A systematic and creative effort, directed toward analysing each contract item or task to ensure that its essential function is provided at the lowest overall cost." - official DOD (Department of Defense) definition.

Green and Popper (1990) define Value Management as:

- The creative organized approach whose objective is to optimise cost and/or performance of a facility or system.
- A disciplined procedure directed towards the achievement of necessary function for minimum cost without detriment to quality, reliability, performance or delivery.
- The systematic review and control of costs associated with acquiring and owning a facility or system."

Function: The characteristic of an item which meets the need of the user.

Value: The measurement of how well an item fulfils its function, considering both performance and cost.

General

Value Management is a structured, systematic, flexible, team oriented approach for assessing the relationship between function, cost and worth. The crucial factor is the use of functional analysis that is attuned to client value judgement criteria. The philosophy of Value Management is based on the premise that a certain amount of unnecessary cost is inevitable in building design due to the inherent complexity of the process. Significant cost savings can therefore be achieved by
the identification and subsequent elimination of this unnecessary cost.

Value Management differs from the traditional approaches to cost control in that, rather than focusing on simple cost, it concentrates on achieving value. An assessment of value is obtained by considering the cost of components in relation to their function. Cost is determined by what an element is, whereas value is determined by what an element does. Value Management is in no way an attack on the quality or aesthetic appeal of a building for the sake of reduced cost. Value Management can do much more than maintain quality at reduced cost - it can actually improve quality. The "Value of Aesthetics" is important and the proper application of value Management should encourage clients to recognise, and invest in, aesthetic appeal as a worthwhile function.

WHEN IS IT USED?

Value management can be undertaken at any time but best results are obtained early in a program or before a process of change. The **optimum time** is at the stage where there is enough substance in the planned action or design and sufficient cost information or procedure timetable to pursue **realistic** alternatives.

One of the most often asked questions about value management is the question of finding time and of potential delays.

Experience has shown that, because of the intense effort by a number of participants over a short period, time is actually **saved**. The time scale can range from one or two days to a few weeks, the keystone being a **workshop** ranging from one to five days in which relevant personnel interact in a multi-discipline group.

Potentially damaging issues are examined and **brought into focus** before it is too late! The input from external consultants often synergises the process, adding new ideas, and 'outside the box' thinking which can be evaluated without barriers.

WHY USE IT?

"None of us is as good as all of us" Ray Kroc-McDonalds Founder.

"1 German Engineer is better than 10 Japanese Engineers. Unfortunately, 10 Japanese are better than 10 German Engineers. That is the problem!" Dr. Hans Hagen - BMW head of research, Munich.

There is undeniably an advantage to be gained from working in groups.

Working in multi-discipline groups however, is something into which our cultures fit uncomfortably. But to compete with the world's best we must learn to capitalise on the benefits that can be gained by true group participation.

We do live in a structured hierarchical society and the construction/development industry is no exception. The hierarchy within design teams must be broken down if true participation is to occur.

Most meetings contain the vociferous few who dominate proceedings. There are equally experienced others at these meetings.

We must allow the opportunity for all to contribute if we are to achieve true multi-disciplined input.

Crisp, decisive, independent facilitation, coupled with a clear mandate for improving value provides the environment for input from a group, both verbal and written, which ensures uninhibited contribution from all participants in a controlled manner. The synergy created is a very real factor in the success of a value management study.

There must be a variety of perspectives and disciplines involved in the study. To limit the participation to one or two disciplines (as is often done) is to impose an imbalance, a lopsided view, which should not and cannot be called value management.

The value engineering process is concerned with a positive, united team approach, with removing threat, encouraging the challenging of assumptions and obtaining synergy through participation.

The value engineering process is a unique method of harnessing all available data, sorting and assessing the result into a solution, project or program - that has everybody aboard!

HOW DOES IT WORK?

The consultant assembles the resources/people in a workshop, ensuring that a good balance of participants, representing the broad spread of those concerned, is present.

The workshop is an intense forum/think tank/exercise where each perspective is heard in a structured safe environment. The group typically agrees on objectives and criteria, generating alternative ways of satisfying the criteria and agrees on an outcome.

The culmination and final result is a detailed report which holds the essence of the process, findings and results.

By working together to form realistic joint solutions, each discipline is assured that its contribution will be felt and acted upon. Because of this, **communication** is rapid, options can be quickly judged and considerable positive **team spirit is generated.**

The Pareto Principle applies in cost management that 80% of the total cost of a building concerns only 20% of the items required. These areas are targeted in a Value Engineering study.

To illustrate the Value Management process more fully an agenda for a typical 3 day Value Management Study is included.

As can be seen from the agenda there are five major phases in a Value Management study:-

- **Information Phase** - collecting all relevant information such as customer requirements specifications, details of any constraints or relevant policy decisions, costs involved in proposed or existing projects.

- **Analysis Phase** - listing significant functions, and where necessary determining the cost of each function, or, in some cases, who is now responsible for performing each function. It may also be considered appropriate to develop a FAST diagram to determine those functions which are to be subjected to more detailed Function Analysis. In other cases it may be considered preferable for the group/team as a whole to decide which functions should be subjected to a more detailed analysis.

- **Creativity Phase** - using focused creative lateral thinking processes, list, for the selected functions, the numerous alternative ideas or options for performing existing or proposed functions. A large quantity of ideas (and not solutions) should be generated and recorded at this stage, without any stoppages for judgment or criticism.

- **Judgment Phase** - apply analytical judgment to the lists of ideas or options, to select the alternatives which will achieve the necessary functions at lowest total cost, consistent with required levels of quality and performance. Specialists or experts may be called in to assist in deciding the alternatives which will be developed as recommendations.

- **Development Phase** - consider the problems involved in implementing the developed recommendations, how they can be overcome, recommend action by whom and by when, and, as required, prepare the Value Management report.

WHAT ARE THE BENEFITS?

The results of Value Management studies vary, but potential cost savings generated are usually within the range of 3%-15% of the estimated capital cost of the project and 3%-7% of annual operating costs. In addition, savings in construction time and increased revenue from enhanced facilities can provide additional tangible benefits.

WHERE IS IT HELPFUL?

General Description

Value engineering's basic principle - function analysis - is not limited to hardware, although this was the original application when value engineering was first used and is the application most commonly thought of for value engineering.

Value engineering can be applied to any of the following general types of items: hardware; construction; software; methods and procedures; services.

As a Function of Size or Type of Business

The application of VE is not limited by the size or type of business or organisation -only by the methods of implementation, organisational structures, reporting procedures, sources of value oriented personnel, and degree of required cost reduction. The greater the competition, the more is the need for value engineering.

VE in Recurring vs. Non-recurring Cost Categories

Value engineering can be very effective for cost categories such as quality control, administration, clerical, maintenance, and sales because of the recurring savings which reduce overhead expenses and increase profits.

Areas in Which VE Can Be Efficiently and Profitably Utilised:

Engineering Design; development; product improvement.

Manufacturing Methods, materials handling and production; tool design.

Purchasing Manufacturer's vendor alternate proposals; new product information and price vs. function evaluation.

Sales Slow selling products; VE services to customers.

Systems and Procedures Paperwork; forms processing; reproduction services.

Maintenance Procedures; materials; mechanisation; work scheduling.

Energy Conservation Procedures; trade-offs; life cycle analysis.

Construction Programming; planning; design and construction.

AGENDA OF A TYPICAL 3-DAY VALUE MANAGEMENT STUDY

DAY ONE		**PARTICIPANTS**
9.00am	INTRODUCTION TO VALUE MANAGEMENT STUDY	
	- Principles of Value Management	Complete Team
	- Outline of study format	
9.15am	DESCRIPTION OF PROJECT	
	- Project scope and status as described by:	Complete Team
	- Client, Poject Manager, Design Team members	
10.00am	PROJECT/VM OBJECTIVES AND ASSUMPTIONS	
	- Project objectives and assumptions	Complete Team
	- Team decision on VM study objective	
11.00am	IDEA GENERATION	
	- Team identification of:	
	- items extending construction time	Group and
	- items tending to push up cost	Individual
	- alternatives that satisfy objectives	Brainstorming
12.30pm	LUNCH	
1.30pm	IDEA REVIEW AND RANKING	
	- Ranking of ideas and allocation of tasks	Complete Team
	- Listing of ideas for development	
5.30pm	ADJOURN	

DAY TWO		**PARTICIPANTS**
8.30am	ANALYSIS OF IDEAS	
	- Team analysis of ranked ideas through:	
	- sketches, cost estimates, calculations	Individual work
	- preparation of preliminary proposals	in own office
3.00pm	REVIEW STATUS	
	- Team review of ideas and allocation of further development	Complete Team
5.30pm	ADJOURN	

DAY THREE		**PARTICIPANTS**
8.30am	GENERATION OF PROPOSALS	Individual work
	- Further development of selected ideas through:	in own offices or
	- sketches, cost estimates, calculations	sub-groups as
	- cost/benefit analysis/estimates	necessary
1.30pm	PRESENTATION OF PROPOSALS	
	- Team or individual presentations	Complete Team

4.30pm	ACTION PLAN - Priorities and programme for future actions	Complete Team
5.00pm	ADJOURN	

Value Management at the PolyU

**David Picken, FRICS, Department of Building and Real Estate,
Hong Kong Polytechnic University**

The Department of Building and Real Estate (BRE) at the Hong Kong Polytechnic University (PolyU) will be offering a Masters Programme from September 1995. The MSc in Construction and Real Estate is part of the PolyU's modular Masters in Construction and Engineering. Students will study eight taught modules and complete a dissertation (counting for four additional modules) for the 12 module course. In order to receive the named award MSc in Construction and Real Estate students must complete at least four of the modules offered by the BRE department. The department has had a few modules in the overall PolyU scheme for a couple of years, and during the last year has had its full set of modules accredited (10 in all) so as to be able to offer a named award.

One of the earlier modules was in Value Management for Construction. Whilst this has yet to achieve a strong following of 'subscribers' when offered as a discrete module it is expected that when the department's MSc proper (with the named award) comes on stream in September the VM module will prove a popular choice.

The inclusion of VM in the Masters programme has its roots in the BRE department's staff development and research programme. The intention is to provide an introduction to the subject, its development and practice, together with a grounding in VM techniques. The study of the module will offer the opportunity to examine the concept through case studies and to test the ideas in group project work. A combination of learning strategies will be used ranging from self learning video aided sessions and project studio sessions to lectures and group discussions.

The idea for the module came from David Picken (an Associate Professor in the BRE department's Construction Economics section) following his experience during a research project investigating the use of life cycle costing (LCC) techniques in the construction industry. It was through the study of LCC that he discovered value engineering and value management. This discovery revealed that whilst design professional in the United Kingdom were preoccupied with LCC and its potential, or otherwise, in construction cost management, practitioners in the USA saw LCC merely as one of the tools in the overall VE kit.

Through the LCC study David met Al Dell'Isola (one of the godfathers of the use of VE in construction in the USA). As far as Hong Kong goes an important outcome of this meeting was one of the first value engineering training workshops held here in June 1988. This was organised under the auspices of the Royal Institution of Chartered Surveyors (Hong Kong Branch) Quantity Surveying Division following the prompting of the then Division chairman K K Chan (of Hsin Chong Construction).

Twenty five attended the three day workshop. This was a truncated version of the five day workshop required by the Society of American Value Engineers as the initial training towards the qualification of Certified Value Specialist (CVS). Five days out of the office was viewed as not being viable for Hong Kong's busy construction professional. The workshop instructors were Al Dell'Isola and his associate Stephen Kirk, who are in fact the authors of the classic text in the USA, *Life Cycle Costing for Design Professionals* (published by McGraw-Hill).

The next step in the process was staff development funds becoming available for an industrial attachment. This was used to help finance a three week stint working with the Hanscomb Group in the USA. The three weeks comprised studying Hanscomb's VE techniques, recording and analysing data on their workshop performance over an eight year period, as well as taking part in a live VE study. A copy of all the materials related to this live study was brought back to Hong Kong and will be used for the case studies in the masters VM module.

The focus of our VM module is the use of VM/VE in construction cost management. The module aims to meet the need for construction professionals who can implement procedures which obtain value for money yet still maintain quality in construction.

In addition to the overall course accreditation process all modules on the MSc course have to be vetted and approved by an external assessor. For the VM module this was carried out by Dr Stephen Kirk, a well known practitioner and author on VE from the USA, where he is Vice President of Facility Economics Division of architects and engineers Smith Hinchman Grylls in Detroit. Since his first trip to Hong Kong for the 1988 workshop, Dr Kirk has completed his PhD studies at the University of Michigan where he focused on alternative procedures for conducting value engineering workshops.

At the PolyU there have been two recent additions to the staff of the BRE department who particularly strengthen the department's ability to offer the VM module. Patrick

Fong who has completed a research Masters in the subject area and is well on the way to completing the requirements for the CVS qualification, together with Geoffrey Shen whose doctorate involved studying the use of expert systems in the VM process. Both these research projects were conducted at the University of Salford in the United Kingdom. They join with John Gilleard, who has taught VE/VM at Georgia Tech in the USA as well as in Hong Kong, and David Picken to form the team who will be involved in teaching the MSc module.

Two final points of note regarding the students who will be studying the VM module. Subject to properly satisfying the entrance requirements an attempt will be made by the module leaders to 'design' the intake to an extent. The idea will be to achieve a reasonable spread across the construction disciplines. This will be especially useful in the case study and project sessions where students can be organised into multi-disciplinary groups in an attempt to replicate a VM team as it would be in practice.

With regard to student numbers and eligibility it should be noted by anyone interested in the studying VM that the PolyU has the category of *Visiting Student*. This means that a student can take a discrete MSc module without being registered on the overall MSc programme. Strictly speaking it is possible to design your own continuing professional development in this way.

Enquiries about the Value Management for Construction module to be taught at the PolyU may be directed to either Patrick Fong or Geoffrey Shen on (Tel) 2766 5801 and 2766 5800 or (Fax) 2764 5131.

♦ Forthcoming Events

21-24 May 1995, Society of American Value Engineers (SAVE) 35th Annual International Conference, The Pointe Hilton at Tapatio Cliffs, Phoenix, Arizona. Contact SAVE Headquarters (60 Revere Dr., Suite 5000, Northbrook, IL 60062, Tel: 708-480 1730, Fax: 708-480 9282) for further information.

Application for Membership of the Hong Kong Institute of Value Management

If you are interested in knowing or joining the HKIVM, please fill in the slip below and return it to the membership secretary of HKIVM, Mr Patrick Fong, c/o Department of Building and Real Estate, Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong. Fax: 2764 5131.

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Please send me application form for membership to the undersigned:

Full Name: _____ Company: _____

Address : _____

_____

_____ Position: _____

Tel: _____ Fax: _____ Signature: _____