

VALUE MANAGEMENT: AN OPTIMUM SOLUTION

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Key words:

1. INTRODUCTION

“Value Management” may be equated to the North American term “Value Engineering”. I prefer the term “Value Management” as it has to do with “value” and “management” and has very little to do with “engineering”

“Value Engineering” was first introduced into the United States Department of Defense, Navy Facilities Engineering Command in 1963 and has been used to fine tune mainly government and semi-government developments in that country ever since

The private sector in North America has not embraced “Value Engineering” to the same extent as the public sector. One reason probably being that “Value Engineering” has tended in that country to concentrate on functionality and cost only rather than on functionality, cost and return on investment, the latter being vital to any commercial developer

Other countries, notably Australia and Japan and to a lesser extent the United Kingdom, have also embraced VM

We are using much of the Australian model as it tends to be more flexible in use

In this paper I extensively use extracts from available literature with my own thoughts and ideas intermingled. The reader is referred to the bibliography hereinafter

2. WHAT IS VM?

Let us consider a few definitions and concepts:

1. VM is a service which maximises the functional value of a project by managing its development from concept to completion and commissioning through the audit (examination) of all decisions against a value system determined by the owner/developer
2. VM is an organised approach to providing the necessary functions at the lowest cost
3. The straight omission of an enhancement is not VM. The VM procedure takes into account that an enhancement may have a value whether it be a functional value or, for example, an aesthetic value. Merely omitting such enhancement may result in a stereotyped development with perhaps functionality but no aesthetic appeal

4. VM is an organised approach to the identification and elimination of unnecessary cost. Unnecessary cost provides neither use, nor life, nor quality, nor appearance, nor customer features to a development
5. VM is *a systematic, multi-disciplinary* effort directed towards analysing the *functions* of projects for the purpose of achieving the best *value* at the lowest overall *life cycle project cost* (B R Norton and W C McElligott)

3. WHAT VALUE MANAGEMENT IS NOT

From the above it is clear that VM is not:

1. A conflict orientated design review
2. A cost cutting exercise
3. A standardisation exercise

If not properly handled VM could become what it is not supposed to be

4. WORLD BEFORE VM

There has always been a need for VM and VM has always been practiced in one form or another, but not necessarily in a structured manner and not under the title of VM. The structured approach of VM together with functional analysis and the brainstorming creativity sessions, which form an integral part of the process, gives VM an edge on the methods adopted in the past

Many governments all over the world have in the past set treasury cost norms in order to force the building professions into adopting some form of discipline when developing a design. Some of these cost norm systems are very elaborate and are complex to implement. Treasury cost norms could in many cases be replaced by VM or VM could be used to ensure that the development cost and space utilisation is within the cost norms that have been set

It is natural for the design team to relax their cost saving exercises as soon as they find that they are within the set treasury cost norm. There is no incentive to proceed beyond that point. VM addresses this problem as it is open-ended

In commercial development the desired return (yield) on the investment has always acted as a yardstick to measure the efficiency of the design. Again it may be argued that the design team may tend to relax their efforts once the acceptable return is reached. VM, by virtue of it being open-ended, addresses this problem

Many of us look for a quick-fix solution. Some major item(s) which, when set right, solves the problem instantly. This is usually not the case. It is usually many small solutions that together do the trick

One often hears that a project team (or part of a project team) has been involved in a value engineering (or value management) exercise. Most often this is not so, they have gone

through a cost cutting exercise, or in the more sophisticated cases, they have applied some financial design criteria

5. INTERVENTION POINTS

The following are popular VM intervention points for a building development:

1. Pre-brief stage

Duration: ½ to 1½ days (4 to 12 hours)
Participants: senior level client representation

2. Brief stage

Duration: 1 to 3 days (8 to 24 hours)
Participants: design team, client representation

3. Concept design/sketch design stage

Duration: 2 to 4½ days (16 to 36 hours)
Participants: design team, project management and client representation

4. Detail design stage/construction stage

Duration: 2 to 4½ days (16 to 36 hours)
Participants: design team, project management and client representation

Whilst the actual workshop time is as stated above the process is spread over a one to three weeks period

6. THE VM PHASES

Different facilitators use different methodology for VM but it generally covers the following phases:

1. Information phase

The initial segment of the study is devoted to developing a comprehensive understanding of the project and proposals. This is the information phase of the study. Brief presentations are made by the key stakeholders to ensure that the entire study group is fully aware of the rationale behind the project and the amount of planning and preliminary work completed to date

The information previously generated in getting the project to its current stage forms part of the information underpinning the VM study and should be reviewed prior to the workshop

Prior to the VM workshop an information pack is issued to the VM team

2. Objectives phase

Using the data provided in the information stage as a platform, detailed analysis of the project is undertaken. The VM process focuses on the analysis of objectives which the project must satisfy

The common ground already established, the decisions that are “locked in” and the constraints within which solutions must be found will be defined. The participants will be asked to spell out the project objectives, basic assumptions, underlying performance criteria, risks, assumed standards, etc. Opportunities and constraints are explored

With regard to areas/issues which are not clearly defined or quantifiable, the analysis centres on establishing what actual performance, features, etc are required so that appropriate specifications and/or recommendations may be developed

3. Functional analysis phase

Functional, rather than the physical characteristics, of a development is analysed. This phase is concerned with identifying those items/procedures, which most likely, through further investigation, would yield the required results

Refer to 10 hereinafter for further thoughts on functional analysis

4. Creativity phase

Concentrating on the objectives/functions identified during the previous phase, appropriate techniques are employed to assist the group to generate alternative ideas of achieving the required outcomes. In this segment of the study, the emphasis is on creating a large quantity of ideas **with discussion and assessment held over to the next stage of the process.** The Australian methodology particularly prescribe that discussion and assessment be held over to the next phase as it would otherwise tend to inhibit the free flow of ideas

The creativity phase (brainstorming phase) is probably the most important phase of a VM exercise but it should be emphasised that all phases should be properly dealt with

5. Evaluation phase

It is during this phase that detailed assessment of possible alternatives identified during the creativity phase takes place. Ideas are examined from a range of perspectives including capital cost, recurrent/maintenance costs, impact on service delivery, aesthetics, functionality and overall performance

Ideas to be recommended for implementation or for further investigation are identified with responsibility for such investigation allocated to the VM participants

6. Development phase

The ideas/alternatives identified in the evaluation phase are technically developed and analysed during the development phase by the participants and/or members of the professional team. The development phase is generally not a workshop activity but is dealt with in the office environment

7. Reporting and recommendation phase

In this phase of the VM study the participants agree the outcomes and recommendations flowing from the study and identify the actions necessary to keep the project on track and to meet key milestones. Each recommendation is to be tested against the objectives determined earlier

7. QUOTATIONS PARTICULARLY SUITED TO VALUE MANAGEMENT

1. Team work – **NONE OF US** is as smart as **ALL OF US**
2. Why team work?
 - Together
 - Everyone
 - Achieves
 - More
3. Dare to think differently!!
4. “The bottleneck is at the top of the bottle.” This is to encourage younger team members to participate. Some senior people are inflexible and may tend to stifle younger people to be maverick with their ideas
5. “Ideas, like eggs, need time to hatch”
6. “The reasonable man adapts himself to the world; the unreasonable man persists in trying to adapt the world to himself; therefore all progress depends on the unreasonable man”

George Bernard Shaw

8. REQUIREMENTS OF A VALUE MANAGEMENT WORKSHOP VENUE

Some important requirements are as follows:

1. Independent venue

The venue must be an independent location suitably remote from any stakeholder's office. Ideally conference type venues should be used

It should be clear to participants that they are dealing with a serious matter. It is not just another quick meeting in their office or in an office of a colleague

2. Table and chair lay-out

The room should preferably be set up with tables and chairs in a "U"-formation with a head table in the opening of the "U"

3. Name places

Name places should be set out prior to arrival of the participants to ensure that no conflict or collusion can take place during the proceedings

4. Refreshments

There should be a separate room or foyer for tea or coffee. The venue should be able to cater for lunch or a finger lunch. Bar facilities may be useful if the workshop is over two days and is breaking prior to the creativity phase

Social interaction can assist in the informal gathering of information, breaking down of barriers and generally creating an ambivalent atmosphere for the next day's proceedings

5. Other

A ban on cell phones and smoking, comfort breaks every hour and pinning boards for the display of drawings are other considerations

9. VALUE MANAGEMENT STUDY PRE-REQUISITES

There are a number of pre-requisites to ensure a smooth running study eg:

1. Willing participation

There must be agreement amongst all parties to willingly participate. Each participant must be convinced of the probable benefits of the VM study

2. Management support

Participants must have the support of their senior managers/partners/ supervisors, etc for the process

3. Appropriate study team

Selecting the right VM study team is extremely important to ensure that the study is successful and to achieve maximum implementation

The client and the VM facilitator should discuss the composition of the VM study team. A broad representation of key stakeholders is important

It is recommended to use selected members of the existing professional team augmented with other experts such as a facilities manager, independent property developers, specialist engineers, etc. Some North American VM experts have the opposite view and are of the opinion that the professional team should only be used during the information phase but that the creativity phase should be comprised of outsiders only. There are obvious advantages and disadvantages in employing the one or other participant selection

4. Experienced facilitator

Experienced facilitators are paramount for a successful VM study. Key `skills *inter alia* include:

Setting the study agenda

Managing the process of the study

- Dealing with hidden agendas
- Questioning and summarising
- Proving direction and a sense of common purpose
- Sensing interpersonal relationships within the team
- Utilising techniques to ensure the best outcome in the brainstorming session
- Communicating verbally and producing the required action lists and/or reports

For obvious reasons it is strongly recommended that an external facilitator be used

A good facilitator should have the following attributes:

- Good presentation and public speaking skills (communication skills)
- Authoritative leadership attributes
- Sense of humor (but not flippant)
- Tolerant towards irritating participants
- Good motivation skills – the ability to encourage and engender team spirit
- Self-confident (but not “pushy”)

- Sensitive to organisational politics and hidden agendas and the overall climate of the study
- Broad construction experience with a fair amount of building and property economics exposure
- Able to achieve consensus and conclude issues
- Can act as a team co-ordinator/coach
- Guides the team through the tools and techniques best matched to the project
- Creates a feeling of esprit des corps amongst the team members which will assist the project in the future
- Sticks to the agenda and completes the study in the time allocated
- Is an active listener
- Assists in team problem solving

A facilitator should only actively intervene when it is absolutely necessary, such as when:

- There is a general breakdown of discipline
- The participants are side-tracked
- There is a lull in the proceedings
- It becomes necessary to stimulate another line of thinking

Would-be facilitators have to learn how to deal with such VM team members as the “corpse”, the “windbag”, the “rambler”, the “mountain”, etc

Number of participants

Whilst it is possible to deal with thirty or more VM participants we find it useful to limit the team to a minimum of seven and a maximum of twelve members for a building development study. Other types of VM studies may require more participants in order to accommodate all stakeholders

Pitfalls

Pitfalls include:

1. Big information packs which will not be studied/absorbed before the workshop commences
2. Information packs which are issued too early or too late. Such packs should be issued about seven days prior to the start of the VM workshop
3. Latecomers to the workshop. Such latecomers will not be properly briefed and will lack important information that has already been discussed. They put the study back and destroy the team's drive and enthusiasm

10. FUNCTIONAL ANALYSIS

It is not the intention of this paper to provide an in-depth lecture on functional analysis but rather to give the reader some understanding of the importance of functional analysis. Functional analysis forces a broader and more comprehensive understanding of the project by stimulating intense discussion and by compelling team members to view aspects they might not normally have considered

If a function is not necessary then it may be eliminated. If a function is essential then other more cost effective methods may be found to perform the same function

Many facilitators use a verb/noun method of describing functions. The function of an item or a system is generally expressed in as concise a phrase as possible, generally using a single verb and a single noun. Typical verb/noun relationships are:

Door: control (verb) access (noun)

Electric cable: conduct (verb) current (noun)

Waterproofing: inhibit (verb) leakage (noun)

Basic functions are essential and must be maintained but it is often alternatives to the manner in which basic functions are performed that yield the greatest improvements in value. Secondary functions may at times be eliminated altogether or may be performed in a more cost effective manner

The definitions of cost and worth are important. Cost is the price paid or to be paid. Worth is the least cost to perform the required function or the least cost functional equivalent. VM focuses on areas where costs are considered excessive by using the concept of a cost to worth relationship. The opportunities for improving value do not necessarily lie only in the areas of high cost

Functional analysis is a complex and many-faceted matter. The experienced facilitator will decide to what extent functional analysis is required in a specific circumstance

Whilst functional analysis certainly contributes to the understanding of the project and its constituent parts some techniques such as FAST (functional analysis systems technique) takes time to complete and there is a tendency to give up on partially completed FAST diagrams when difficulties are encountered or time runs out. This will have team members wondering why they started in the first place

11. DECISION MAKING

There are available some tools to use when it is difficult to make a decision. One may, for instance, set up a “value tree” or draw up a “decision making matrix”

12. LIFE CYCLE COSTING

Life cycle costing is a tool to be used during the development phase of a VM study

13. THE PARETO PRINCIPLE

It is well worth reading Richard Koch's book *The 80/20 Principle* (1998)

The Pareto Principle or 80/20 Principle asserts that a minority of causes, inputs or efforts usually lead to a majority of results, outputs or rewards

A good benchmark or hypothesis is that 80 per cent of results usually flow from 20 per cent of causes. This is not, however a magic formula. Sometimes the relationship between results and causes is closer to 70/30 than 80/20. But it is very rarely that 50 per cent of causes lead to 50 per cent of results. The universe is predictably unbalanced

The theory of imbalance or maldistribution can be applied to many circumstances and is used in VM to determine the relatively small amount of elements or functions that comprise 80 per cent of the project cost

14. VALUE MANAGEMENT IN PRACTICE

We generally issue an information pack about one week before the VM workshop is to commence. To speed up the process we usually formulate the objectives of the VM study in advance but obtain consensus in the objectives phase

We have generally spent too little time in performing the functional analyses, although functionality has always been a priority

A system which works well in practice is to record on computer all the ideas generated in the brainstorming session as we proceed and to display it on a screen as it is recorded. This saves time and gives the VM team member an opportunity to check whether his/her suggestion is correctly recorded

A very straight-forward system has generally been used for evaluating the alternatives identified during the creativity phase, namely:

- 1 = definitely worth investigating further
- 2 = probably worth investigating further
- 3 = definitely not worth investigating further

The sorting of the above and an action list is generated on the computer

Most VM workshops where I performed the duties of a facilitator were done at the advanced sketch plan stage. In the first few VM brainstorming exercises only from 60 to 80 ideas per session were generated but as we became more expert in the Australian

approach it was fairly common to obtain well in excess of 100 per session and, on occasion, up to nearly 200 suggestions

In all cases we used the core of the professional team as members of the VM study but we also included facility managers, external quantity surveyors, retail centre managers and others as the needs dictated

Not in all the commercial cases were the return on the investment improved but in those cases the developer was nevertheless very pleased with the outcome of the exercise as the functionality of the developments were improved and many shortcomings, some minor and some major, were highlighted and attended to

Only once did a participant cause a problem when he took a hardliner stance, but this was fortunately quickly brought under control

We definitely recommend an outside venue with a U-shape table configuration

Participants who join the study half way through or leave before the study is complete disrupt the process. Such participants should not be allowed to participate

15. BENEFITS AND ADVANTAGES OF VALUE MANAGEMENT

The following are some benefits and advantages that could accrue to a development if VM is utilised:

- It provides a forum for stakeholders
- Generally the team spirit is enhanced
- It provides an overall review of the project which many stakeholders previously may not have had access to
- It identifies constraints, issues and problems which might not otherwise be obvious or have been considered
- It provides an optimum value for money project with improved functionality
- It identifies any deficiencies, omissions or superfluous items and any unnecessary costs
- Assists in crystallising a client's brief (if done at pre-brief, brief or concept design stage)
- Creates a large return for a minimal investment in the VM study. VM generally pays for itself

16. CONCLUSION

VM is a worthwhile exercise if properly facilitated. It is bound to become more popular in the future

Those who conduct cost cutting exercises under the guise of VM may cause developers to distrust VM. This will be a great pity

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