A Closer Look at Value Standards

Abstract:

The purpose of this paper is to clarify the understanding and use of value standards. The similarities and differences between cost and value standards are discussed along with the pitfalls that exist. The development of historical and theoretical value standards are reviewed and the practical applications of each is placed in perspective. Finally simplified formulas are developed which will provide guidance to the design engineer in following the shortest path for economical consideration of materials.

Introduction:

This is a sequel to my presentation "A Closer Look at Value and Function" made at the 1968 SAVE Convention.

The purpose of this paper is to clarify and correct misunderstandings which have been generated by the use of the term "value standards."

Value standard is a value engineering jargon term which has perpetrated the semantic confusion that has developed by the tieing word "value" to anything that has had successful application by the value engineering fraternity.

The "value standard" of value engineering is the same thing as the more universally understood term cost standard, which in fact correctly defines the standard of value involved as a cost (value) standard.

The connotation often given, that "value standards" provide a measure of "use value" is erroneous thinking. The "value standard" hopefully depicts a cost value for achieving a "use function." The use value of an item, as I noted in my presentation at the 1968 SAVE convention "A Closer Look at Value

and Function" is a measure of individual judgment which has little or no relationship to the item cost.

Instead of fighting windmills and creating linquistic confusion, value engineering should use the accepted and the more generally recognized terms. Value engineering success is so closely associated with its integration into the complete fabric of an organization that we cannot afford to "build-in" communication roadblocks of cult jargonism.

I know value engineering has made greater use of cost standards than has been ~~the standard~~ common practice. However, the mark of distinction has been in the application and not the cost standard per se. A horse is still ahhorse whether it is used for plowing or racing.

Defining Cost (value) Standards

Cost standards or Cost Value Standards, if you prefer, are presentations of costs relative to some item or item parameter.

Cost standards are basically of two types, namely:

1. Historical cost value standards which are presentations of actual or composite costs that have been historically recorded and established as a standard for comparison.
2. Theoretical cost value standards are often mathematically derived and interpolated, extrapolated or ~~empherically~~ empirical derived from historical costs presented relative to some parameter of the item which is established or selected for the standard of comparison.

Historical Cost Value Standards

Historical cost standards are presentations for recorded costs which usually compare costs of an item or group of similar items, i.e. cost of a house, cost of food, cost of materials, etc. Historical cost standards are useful tools for

the value engineer but like all tools they have their limitations. Each cost standard is based on a specific set of conditions and a change in any of the conditions can distort the "picture."

Quantity is just one condition that can have a great effect on the cost standard and one for which the danger of misusing a cost standard is readily recognized. The use of cost standards which give unrealistic cost comparisons, high or low, result in poor value decisions and are dangerous to the value engineering program because they tend to discredit and discourage the use of worthwhile standards.

The limitations of any cost standard should be carefully noted before using. Maybe each standard needs to have a warning label similar to a medicine bottle instead of reading "Call a physician immediately" only instead of saying ("Dangerous if used internally") it should say "dangerous if used externally, call a VE man immediately."

Theoretical Value Standards

While most everyone can relate to historical cost standards, the area of theoretical value standards has been publicized mainly by value engineering in their pursuit of the Basic Function Value Standard (BFVS).

Although it may seem to have originated in Value Engineering, Professor Eugene L. Grant in his book "Principles of Engineering Economy" established the principle for determining minimum cost. Professor Grant also was careful to note the disadvantages in using the minimum cost approach. The BFVs approach is supposed to provide the theoretically lowest cost independent of human variables and condition constraints. The intent is to provide a cost

reference point for achieving a single "use" function. It excludes consideration of any costs due to form factor, customer requirement, manufacturing limitation, etc. The BFV# for the function "transmit torque" is well known. It was derived in the same basic manner outlined by Professor Grant for "conduct current" in his book. Since it is so seldom that an item has only single functional requirement, to be useful it is necessary to develop numerous BFVS's and then combine them into Multiple Function Value Standards (MFVS). This of course is not a simple case of addition. As an example it is quite possible to "conduct current" in the same part that (assuming the MFVS) would be required to "transmit torque" it is possible and practical it would ~~equire~~ require a digital computor and complex equations to solve them.

The MFVS would in most cases give a figure which represents only 1-100th to 1-1000th of the actual cost of the item. The benefit of determining, establishing and using the BFVS and MFVS giving only a one per cent indication of the total cost must be carefully considered against the time and cost of data development. The BFVS establishes a cost value basically representing the "raw material" cost with no consideration for conversion of the material to usable form. This is much like establishing the value of a house at the cost of the lumber. The value of the house that is of interest to the value engineer is or should be the exchange of value and the exchange value of the house is determined less by the cost of the lumber than by how it is used. ~~At the present~~ I think you will agree that most of our best VE solutions come from the efficient use functions. At this point in time the BFVS is a psuedo-scientific exercise useful mainly for training and mentally conditioning value engineers.

Practical Application of Cost Value Standards

The proper use of cost value standards ~~equi~~require first that we recognized the fact that they are averages and are not a single ~~unchangable~~ universally applicable figure. The average man may be 5' 9" and weight 150 pounds but a standard suit for the average man will fit fewer than 10% of the male population.

Why then do we want cost value standards? Is it so that we can determine the cost of the design that will be most economical? or is it so that we can find direction?

I think you will agree that we're trying to determine the design direction. That being the case. ~~are we interested in~~ the fact that steel is 10¢/property or aluminum is 30¢/property ~~or do we want~~ is not as important as to know that if we design ~~it~~ our item using aluminum it will cost less than steel or vice versa.

The designer only wants and needs to know if he is going in the right direction and on the shortest path, he already knows his destination which is his performance requirements.

It's like ~~looking~~ looking at a Pert/Chart you can study all the different paths and perform the analysis of selecting the shortest path or merely follow the one labeled Cirtical Path.