

Value Analysis in Purchasing

as spelled out
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VALUE ANALYSIS is like little Tommy's definition of salt. He said, "Salt is what spoils the potatoes if you leave it out!" Value Analysis is what spoils the Value if you leave it out.

Best Combination of Price, Quality, and Service

Today's purchasing people are buying on the best combination of price, quality, and service. The use of Value Analysis in no case lowers quality. It secures either the same or better quality at lower cost.

One-Two-Three-Four

First, "What does the truth show?"

"Why is it so?"

Then, "What can we in Purchasing do about it?"

And, "How can we do it?"

Truth shows that often the function needed can be purchased for from one-half to one-tenth of the cost.

"For example, a perforated sheet steel part (Figure No. 1) cost \$1.75 each. The buyer studied its use and found that the ends were enclosed. By arranging with the vendor for material made as a continuous perforation, cut as needed, the cost became \$1.25 instead of \$1.75."

"Again, a square shaft about twice the length of a fountain pen was costing \$1.07. Determining that its function was simple—to rotate at only 1 rpm—the buyer looked further into the specification and the source of supply, and before long was buying it for 17¢. The same function for 15% of its former cost!"

"A rather heavy steel nut was purchased for 8¢. The buyer studied the function and found that it did not have a heavy load to resist but that its main function was to avoid coming loose. Its job was to hold very light parts onto a shaft. The available palnut was tried, stayed on several times longer and cost 1½¢—one fifth as much."

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"For another example, a stud one-half the length of a pencil contained a thread at each end and a larger section in the center. It acted as a spacer and a fastener. It cost 16¢. A buyer, investigating its function, found that an upset roll thread stud with a centrally located head and a rolled spacer provided the exact equivalent function for 3¢ instead of 16¢."

We could continue with tables full of examples of this type where, as a result of determining "That He Will Know The Function" of each item he buys, the buyer provided the same performance at 1/10, 1/4, 1/3 of the cost.

Why Is It So?

Why are these examples possible through Value Analysis?

It is because, "We daily go where our habits take us." The products we make, the designs we have, the manufacturing methods we use, the suppliers of whom we buy, are the results of habit patterns constantly slightly modified.

For example, it has taken twenty-five years to move away from the "ice box" in the corner of the kitchen. Initially it had to be designed as a box so that water from the melting ice could drain away. Then it was refined. The ice was removed. It was made white. Timers, stainless steel, etc., were added. But, until the new design which is coming out of development now, in which the refrigerator is built in to the kitchen cabinets of shoulder height, we have been 'modifying the ice box.'

Endless habit crutches have developed . . .

"We can never pay for the tools"

"We always make those parts"

"Underwriters won't approve a change"

"No other tool steel is any good"

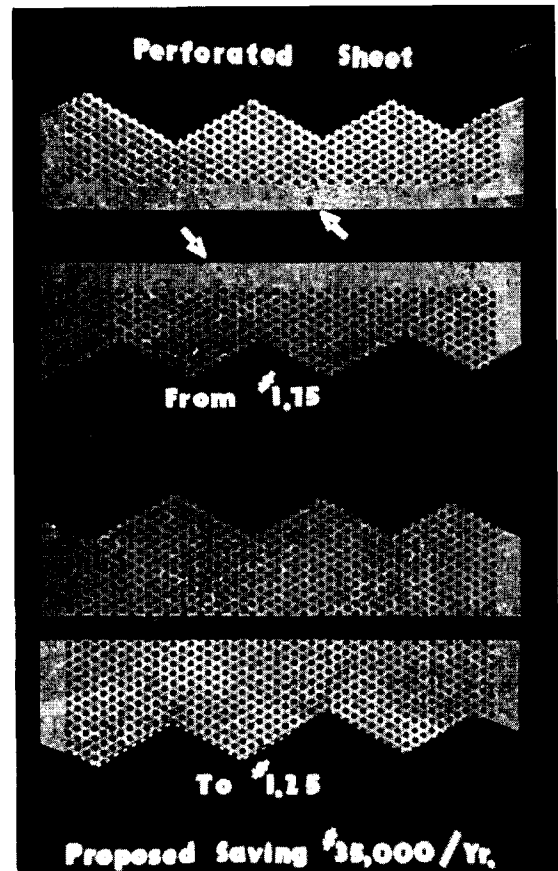


Figure No. 1

"We tried it eight years ago"
 "We always make our own"
 "We can't rely on anyone else"
 "We do it this way and we think it's pretty good"
 "We let that alone—it's a pet project of the boss"

In the aircraft carrier, operations were handicapped because planes always landed parallel to the deck—planes which missed crashed into others, killing pilots, destroying much needed planes, until a couple of years ago an outsider suggested, "Why don't we land the planes slightly across deck so that if they miss they go into the water instead of killing and destroying."

It was tried. It worked. New carriers benefit immeasurably by the simple idea which pulled away from the habit pattern of decades standing.

Our managing engineer, now retired, who developed the sealed refrigerator unit, tells that when he first asked the welding specialist to weld the two halves of the cylinder together in a ring-like weld, he said that it couldn't be done, that there would always be a crack in the weld at the point of finish. The manager then got one of the welders from the floor and told him what he wanted done. The first weld was perfect; in fact, withstood 4000 lbs. pressure.

The potential of the Value Analysis approach is so great because "we all do what we do largely from habit" . . . modified to a more or less degree depending upon whether we think we are "conservative" or "progressive" . . . any "pull-away" from that habit puts us in new fertile areas.

Now What Can We In Purchasing Do?

"Something to break the habit pattern." The entire industrial resources of the United States are available to help.

1. We can evaluate.

Evaluation cannot be done by studying a part or a product or a service. Evaluation means comparison. Only by understanding the function or the service and comparing to it each other means for securing the same function or service can anything be evaluated. Often it will be found by this technique that a material or a product isn't worth more than one-fifth of what it costs because there is something else that will do the same job equally as well for one-fifth the cost.

For example, a circuit breaker was evaluated. Its cost was \$13. What did it do? It contained two circuits each interrupting 15 amperes at 110 volts.

How else can it be done?

"For one way, by using two modern individually designed circuit breakers for \$1.50 each costing \$3 for the same basic function. Obviously the \$13 circuit breaker is no longer worth \$13 or \$12 or \$10 or \$8 because something else will do the same job equally well for \$3 or \$4."

Of course, when evaluating, a buyer will make it his topmost job to protect suppliers who creatively work with him to help him secure better value by the use of their genius and their efforts.

2. We can buy function.

Too often we, in buying, feel that 10% to 15% off makes a good buy. Not so! By Value Analysis, which means studying the function, studying other means of securing that function, we find that 50% to 75% of the cost can often be removed and even with improvement in quality.

"For example, small springs were costing \$11,000 for a year's supply. Study of what was needed bought the year's springs for \$3000."

"Small pieces of copper tubing were being cut off, burred, and used in the factory. They cost 4¢. The buyer showed that specialty suppliers with specialized facilities could provide the same pieces of copper tubing for 1¢."



Figure No. 2

"Again, a small tapped bracket (Figure No. 2) cost \$13/M, but there are specialists who have built entire businesses around automatic tapping even in moderate quantities—so that no intermediate hand operators are necessary with their special equipment . . . Their quotation—\$3 as compared with \$13."

"A buyer was buying gasket material (Figure No. 3) for 15¢ a square foot. He went into the factory to see how it is used. He found they were cutting out gaskets approximately 1' square and the finished gasket with all layout and cutting cost \$4.15. He knew that gasket cutting with steel rule dies was an extreme specialty industry. Soon he was providing the gasket to the identical specification for 15¢ each with no tool cost in minimum orders of \$10."

BUY THE GASKET

FROM 4.15

TO 15¢

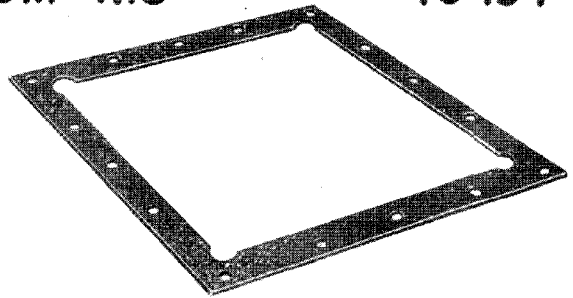


Figure No. 3

It's difficult for us to believe that the things that we are normally doing are so far from "right" but in long lists of examples, high percentages of lower cost are obtainable when the buyer through Value Analysis buys function.

3. We can learn what the material or service does.

"A buyer purchased a screw machine part for 8¢. What does it do? It was a lead screw which held a plastic knob. A miniature zinc die casting did a somewhat better job for 2¢—one-fourth of the cost."

"A brass nut cost 4¢. What did it do? Its job was to receive an adjusting thumb screw. By changing it to a nylon nut, a somewhat better job was done for 1¢—one-fourth the cost."

"A buyer was purchasing 2" diameter steel rod. When he exclaimed, 'What does it do?', he found that it was machined into special pulleys (Figure No. 4). He was able to provide a pulley

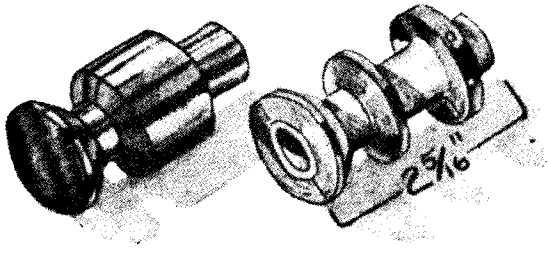


Figure No. 4

which performed the identical function as a die casting and the cost dropped from 60¢ to 23¢."

Try as they may, there are so many special skills, special materials, special ideas that no one in engineering, or manufacturing methods, can possibly know of all that would benefit his item—that's why the buyer is a key man—he can always add more.

4. We can bring new information into specific jobs.

"J-bolts were used for a support job. When the buyer took one of his best suppliers to study the job, suggestions for using the supplier's specialized facilities bought the J-bolts for 2¢, not 11¢."

"A stud about the size of a cigarette contained a thread on each end and a thick section of material in the center. The buyer in his "new information" activity invited in a specialty vendor and found he could upset two heads on a nail or a stud when desired. Their suggested design accomplished the identical purpose and the cost dropped from 8¢ to 1¢."

"A cover (Figure No. 5) was being made as a die casting for \$1.07. The general feeling was that it could not be made as a stamping. However, when the specific problem was given to a competent supplier, he provided a proposal which made a somewhat superior cover at 57¢, not \$1.07."

Purchasing operates in an area where through Value Analysis from 50% to 75% of the cost of many items can, as you see, be removed with no reduction of quality.

5. We can bring new general information.

Rubber compound has, for some time, been "squirted" into the recess on the underside of certain jar lids. A purchasing man reasoned, "Won't that fit into some industrial uses?" By inviting the supplier in and showing him the wide variety of applications, several dozen productive projects were at once started. To cite one of them, for example . . .

"Instead of buying a molded rubber part costing 11½¢ and



Figure No. 5

fitting it into a metal part, the 'flowed-in rubber compound' could be put right on to the part and the cost dropped from 11½¢ to 1¢."

In each area, general information (or mis-information, or lack of information) exists.

"A buyer was buying tubing which was cut off and used in short sections. By showing the people in that area that rolled spacers were available as a 'commodity' on the market from specialist suppliers, the costs were reduced to one-half and the same function provided."

"Again, in one manufacturing area, men believed—'We must machine out and hand fabricate certain parts. We can't afford the tooling for the small quantities.' A buyer provided information on 'small lot stamping sources' and the cost of several parts dropped to between one-fifth and one-half. For example, one special spacer with quantities of several thousand per year dropped from \$1.39 each to 29¢ with \$75 tool cost."

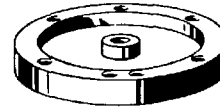


Figure No. 6

"A gear assembly cost 80¢. What parts of it were functioning? A large gear on one end, a small gear on the other end, and a connecting linkage, were the three essential functions. By providing them in three inter-locking pieces, a self-aligning assembly which avoided noise and binding resulted and the cost dropped from 80¢ to 6¢. An entirely different approach does the job for one-tenth."

"A steel hub (Figure No. 6) the size of a small pancake cost \$1.27. What did it do? It spaced and mounted two dials and provided a mounting hole in the center. Aluminum companies provide aluminum blanks as standard products throughout this range of sizes. By buying an aluminum blank, then drilling it, the cost went from \$1.27 to 13¢ each. Avoid 'just making the part' . . . use some better approach."

6. We can use good human relations.

In providing vastly new and better value opportunities to his area, the buyer must use great care that people who have made the decisions based upon lesser information in the past are not embarrassed. Their embarrassment brings immediate and continued opposition and lessens the effectiveness of the buyers' work. Therefore, it must be his personal responsibility to see that no one in engineering or in manufacturing methods or elsewhere is "embarrassed" when he provides new information or new specialists which make it possible to accomplish the same job for one-fifth or one-third or one-tenth of the cost.

We must realize that we are all average people doing some things right and some wrong so it is not surprising that large cost improvements can be made by this approach; it would be surprising if it were not so. But in the human relations environment, the buyer must thoroughly establish himself as one who is understanding and who is competent to prevent his new information from erroneously being interpreted as criticism by any man or by the boss of any man.

Truly—if we rise to our opportunities—no function has more opportunity than we have.

Now, How Can We Do This?

Purchasing people are notoriously hard workers. They are expediting, fire fighting, searching out sources of supply for es-

sential materials—they have no available "time."

However, we cannot be haphazard. We must "make regular time."

1. Use one hour each day.

"The buyer using this system on a daily tour, saw large special bolts being machined from bar at \$11. He was then able to buy an 'upset' blank requiring little machining bringing the total cost to \$3."

"In the same area, he saw some large parts purchased as sand castings and requiring a considerable amount of machining, costing \$19. He was able to provide them as permanent mold casting arriving at the same results with little machining at a cost of \$4."

2. Go into the plant or warehouse or service area twice each week—say, Wednesday noon and Friday noon—to find out what is actually being done there.

3. Work from the product back.

"In the shipping room was a control device. The buyer observed the cover screw, looked it up, saw it was a screw-machine part costing $2\frac{1}{2}\phi$, consulted roll threading specialists, and provided the same function for 1ϕ ."

"Also on the device he found special binding screws. His examination of costs which followed showed that their cost was three times that of a standard screw because of an unusually small head. As a result, he could suggest a small modification in another part which made the use of standard screws practicable at one-third the cost."

4. Work from the raw material ahead.

"A buyer was buying steel rod in two diameters—1" and 2"—for one operation. He followed it through and found a shaft was being made from one part and a hub from the other, then they were assembled. The cost of the assembly was 55¢. By making the shaft, die casting the hub onto it (Figure No. 7) with the shaft as an insert, the assembly could be provided for 25¢."

5. Bring in one good supplier each week.

"A buyer brought in a specialist on 'rolled formed' parts. He saw hinges that were purchased from a supplier using conventional methods. Shortly he provided a design based upon using his specialized skill of roll forming the material in long strips which resulted in the same hinges at 27¢ instead of 37¢ each."

6. Do something about what doesn't make sense. (You may be fired, but you'll have lots more fun.)

5000 parts cost 10¢ each . . . \$500
15000 parts cost 2¢ each . . . \$300

The general instruction in the area was that Purchasing "Can't buy more parts than are needed."

The buyer purchased 15,000 for \$300 instead of 5000 for \$500, enabling the supplier to put it on "header equipment instead of screw machines and saved \$200. In this case, the only trouble was that he didn't "throw away" the remaining 10,000 promptly enough and later on the Finance Dept. questioned him seriously on the circumstances surrounding having 10,000 of the parts in obsolete inventory!

7. Start with some small items. "Every big league pitcher starts in the back lot."

"Screws—bolts—hammers—anything—the savings may be from \$50 to \$500. But don't stay in the back lot."

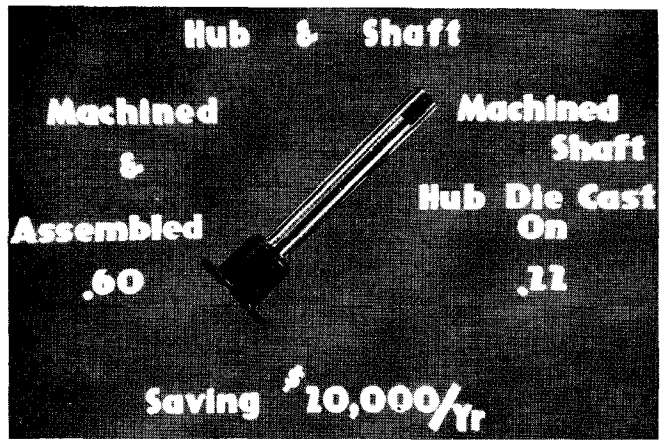


Figure No. 7

8. Now, with a new view of our job, we need much new help. In every area, because of the impossibility of perfect communications through industries as diverse as those in the United States, the wheel is being re-discovered—make that unnecessary!

"A piece of sagged glass cost \$1.25. It was the only one used by that area but the buyer called a manufacturer of clocks who used millions of pieces of sagged glass and an even more reliable supplier was at once available for \$.50."

"Again, a precise machined valve cost \$7 and considerable quality trouble was experienced. By calling a Purchasing Agent in an area which contained many excellent machine shops, a thoroughly reliable supplier was provided and the cost immediately became \$5."

Conclusion

Decide now that you will know "what it really does" before you commit your company's money for any material or service. Set up an organized program that will bring you vastly more information than you have had. Find a way to use the valuable special services of others in your products.

We close by listing the "Ten Tests for Value" which we are told have been of large assistance.

1. Does its use contribute Value?
2. Is its cost proportionate to its usefulness?
3. Does it need all of its features?
4. Is there anything better for the intended use?
5. Can a usable part be made by a lower cost method?
6. Can a standard product be found which will be usable?
7. Is it made on proper tooling—considering quantities used?
8. Do material, reasonable labor, overhead and profit total its cost?
9. Will another dependable supplier provide it for less?
10. Is anyone buying it for less?

And now we will say, "good buying."