ARIZONA PURCHASING AGENTS

"Value Analysis - The Science of Getting Identical Performance for Vastly Lower Cost"

by

L. D. Miles, General Electric Company

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STARTS WITH SIMPLE PHILOSOPHY

If one man were the engineer, the purchasing agent, the methods man, the boss -- and if he had the "Patience of Job", "Time of Methuselah", "The Wisdom of Solomon" and the "Legions of Caesar" - what would be done to eliminate large amounts of unnecessary costs, without in the slightest lowering quality.

Two of us in the purchasing dept., to a considerable degree totaled this training and experience. We were given the time - but not the legions - we went to work.

We didn't have a thing in the world to do but to find ways to really get extra value into purchased items. One of our sales managers said, "Larry, I just don't understand it. We sell an excellent device, it has always sold well but now we can hardly sell it - our price is too high." He said, "our engineers, manufacturing people and purchasing people each set up a special task force and did all they could. If there is any way that any more cost can come out of that without lowering quality, you'll have something new." That was a challenge, so we started there. Intense study showed that 25-35% of the cost of this product was totally unnecessary.

For example, the clip that only holds on the cover was made of phosphor bronze, a metal that has 30¢ a pound in its cost to provide properties to withstand flexing millions of times, as in switch blades. Still, in service, on the average, it is taken off three times in twenty-five years. Instead of phosphor bronze for their clips, use spring bronze, which would still flex tens of thousands of times. Instead of $7000 per year it should cost $3000. We then started to clearly see that we were not buying quality and spending the company's money for waste. In that case, $3000 worth of quality and $4000 worth of waste every year. Other "functional components" intensely studied yielded similar results.

We were startled and delighted to find such tremendous opportunity and we set about to provide a system that would make it simple and systematic.

WHATS TO COME

1. "How Do I Start?"
2. "What Do I Do Then?"
3. "What Trouble Will I Get Into?"
4. "What Good Will Come Of It If I Do It? ?"

WHAT IS VALUE

First of all, what is value? We found that the concept of value varies like the concept of sin. Its meaning differs with each person. We will develop the answer.

Why call this Value Analysis? We are quite accustomed to other kinds of analysis - Performance Analysis, Weight Analysis, Whiskey Analysis - almost any kind of analysis but Value Analysis is common. In other words, it is a study of what makes up the weight or the performance or the whiskey, so that we will know enough about it to improve it. Value Analysis then is the same - a study of what makes up value, so having these facts, we will know how to improve it. Let's have an exercise on value. What is the value on the steering wheel on a car? What's the value of a chair? What is the value of these items around us? Amazingly, unless we have been thinking in this value science, it's hard to name it. Value jells out to be a dollar and cents figure which is "The lowest cost at which a function can be reliably provided."

The question then comes if a buyer is buying a part for $10 and by finding just the right vendor who has the proper tooling to control his quality and produces efficiently, gets it for $5. Has he cut the value of the part in half? Or has he increased the value of the part? If the engineers are accomplishing a function in a certain way at a cost of $15 and they have a burst of genius and learn how to do it for $10, have they lowered the value of the part or increased it? There is less labor and material in it. Value is something that requires real clear thinking and when we focus sharply it pays big dividends.

Let's take a few examples. First, this stud. It costs $.08. What does it do? It holds something together with threads on each end. It separates something with a spacer in the m ddle. How else might we do it? This sends us on a search of the best methods and the best techniques for making it. If we only knew it, instead of buying this hexagon stock and having it chewed up in the factory on automatic screw machines, a specialist with an upsetter will use wire stock, coin another head on, roll the thread, and its cost goes from $.08 to $.008. Exactly the same performance with vastly lower cost!

Next is the arc chute which was designed as a fabricated part and the people in the area believe that's the way to do it. The buyer called in the best people he knew on shell molding. Here is the same identical part; instead of $7 it costs $3. Next, we will be seeing that to do a real value analysis job means better work in purchasing, in manufacturing and in engineering.

Here is an example of a capacitor which was used on one of our products. The purchasing agent said, "I know I have the best deal available on that - I handle it myself." Here the simple technique is calling another purchasing agent, in this case of a Television operation where they buy millionsof condensors each year. The telephone call paid off $8500.

Next is this insulating plug which was made at the cost of $1.24. The purchasing people were buying round material from which it was made. They studied the function of it and the way it was made in the factory, changing to a process of making it from flat material by buying a different raw material. Its cost went from $1.24 to $.25.

Value Analysis then becomes an intense creative study of whatever the company's money goes for, and it's such a natural for purchasing because the purchasing man is right where the money is being handed out. To get good results with Value Analysis we must do intensive work, make real studies, instense studies, which then uncover startling possibilities.

What is so different about Value Analysis? "The buyer stops flying blind". When he gets a requisition for something, he doesn't just jump and buy it. He wonders "What is it for", "how is it going to be used?", "What function is it going to bring into the company?"

Now let's clarify a point on what function is. We don't believe that any buyer ought to spend a penny of his company's money unless a function is clearly coming in. Let's define function. What is the function of a necktie? Now that's a tough one, and I use it especially. We in our personal life are used to paying money to conform to custom. And one of our biggest problems in evaluation is we find that people carry that habit right into their activity and pay money or they put money into their products to conform to their own customs. The function that the buyer wants to pay for is "Something that either makes the product work better or sell better". Does a particular expenditure make it work better? No. Does it make it sell better? No. Then it's waste! It's not quality!

One of the first thoughts when people hear of Value Analysis is - and we quote one - "After all how thin can you make steel?" This shows that thty have no conception of the wide open fields for taking out costs without lowering quality.

LET'S TIE IT TOGETHER

Let's take a product in a molded plastic box with a molded plastic cover on it. Let's take the cover. In order to evaluate, we use five questions:

1. What is the thing? Well, it's a plastic cover.
2. What does it cost? 4¢ ea. That's $40,000 a year for the function.
3. What does it do? It covers the contacts back in the equipment.
4. What else will do the job? What else might cover? Intense study brings forth the alternate, a piece of flat laminated textolite.
5. What would that cost? 1-1/2¢ instead of 4¢.--$15,000 each year instead of $40,000.

It appears to be $25,000 of waste, $15,000 of quality in the part. But the engineer on it says, "wait a minute. That is a molded plastic box, it needs a molded plastic cover to look right, and to be right". Now let's come back to our simple formula, Any function must either make a product work better or sell better. Ask the question, "Does that extra $25,000 make it work better?" The answer is "NO!" Next, did anyone ever buy one equipment because of the lock-up of that $25,000 back inside. The answer - "I suppose not". Now we are clearly differentiating between waste and quality. There is $15,000 worth of quality and $25,000 of waste. That little formula again has stood up.

That then embraces all methods, different material, different ideas, different suppliers. In other words, "How in the world else can that job be done?"

For purchasing people to come up with that kind of thinking, they have to become broad, they have to know what it does, - what it really does.

WHAT ISN'T VALUE ANALYSIS?

1. Value Analysis is not lowering quality. It's ruled off bounds in our program to lower quality. It is not necessary at all. That is like cheating in a golf game.

2. It's not just competitive bidding. That's a normal purchasing procedure that's already well done, part of good buying.

3. It is not price chiseling. We are not trying to get out 5-10%. We are going after 25-50%. By smarter thinking we are going to add that to the company's profit, or reduce the selling price.

4. It does not mean to buy instead of make. It means to develop the facts so we will buy what we should buy, make what we should make.

5. It does not mean changing suppliers. It does mean changing philosophies.

Let's further illustrate. Note the clear, unhampered thinking that goes through these. Insulation Strip. This is a very precise part. High dielectric strength is necessary with low moisture absorption. The part costs $3. When the purchasing man looked into it, he found we were buying the bulk material and building each up individually. He changed to a large sheet of partly cured material which is cut off and finish cured costing 75¢.

Let me take the example of a "dust cover" inside one product. The entire product is sealed in with a cork gasket. The "dust cover" cost $5 to make. When the purchasing analyst was studying it, he asked "what is the function of this dust cover?" He was told "it doesn't have any function, but the customers demand it. He then carried his questioning to the marketing manager saying, "this dust cover costs $5." The marketing manager said, "Five dollars!", "we only have one customer who uses it. Take it off and we will charge them $10 as extra equipment."

A spring costing 9¢. What is it worth? To evaluate, we must compare. Comparing it to a standard spring. A standard would cost 3¢. So it means that that special end costs 6¢. By studying the application, it was found that the special end was no longer needed and the spring should be standard at 3¢.

For another example, the buyer was buying the tube support on the left. This large structure holds the television tube. He thought of the E.H. Titchener Co., Binghampton, New York who fabricate from wire form, so instead of just sending the drawing out, he called them in and he said, "couldn't you make us of wire forming something that would support this tube just as well as the steel and assembly?" They took the set to their engineer. They submitted a sample and quotation. That's the way they get their business. Here it is, it takes 71¢ a set, $71,000 out of every 100,000 television sets and does the same job. The supplier is pleased to have the opportunity. He has a chance to do something he is able to do.

VALUE ANALYSIS - ENGINEERING TOO!

Our vice president in charge of engineering, when he saw Value Analysis, aaid, "Value Analysis is the best method yet found to help the engineers to eliminate unnecessary costs from their products." So, with that backing, real opportunity was provided.

POPULAR MISCONCEPTIONS KEEP ADDED COSTS IN PRODUCTS

If a man is value conscious, he has some ability along lines of value. It's totally false. Suppose we are air conscious. Does that mean we can fly a plane? or repair a motor? If we are health conscious, can we prescribe pills or set a bone? Why have we accepted as a matter of fact that if a man is value conscious or cost conscious that he has any particular ability to remove any unnecessary costs? He doesn't have! When a man is value conscious, he is just up to the zero point. Let's fact it. Let's give him value ability. Let's have a program that gives him the skill that he requires.

It won't work for us. "Ours is a small business - or ours is a job shop - Value Analysis is for large volume!" or "Ours is high volume" - "Value Analysis fits a job shop operation where ones or fives or tens are made, but for our volume we've already had specialists comb everything. I don't think it fits high volume work like ours".

"We are already doing it."

"It comes too late."

A FEW OF HUNDREDS OF POPULAR MISCONCEPTIONS ABOUT MATERIALS.

"Plastics are brittle." Yet I want to show you a piece of plastic that has nails driven in it without damage.

"Plastics are weak." Yet glass reinforced plastic that will bounce 50' high off a concrete floor without injury.

"For an upset process our quantities are too low." Yet specialists in low quantity upset parts would like their 5000 lot job.

"It costs too much for tools." Three thousand steel plate pieces per year were sawed out. They cost $1.41 each. And how much do you suppose, when facts were known, the tooling for that part actually cost? $75. And the cost goes from $1.41 to .39...$3000 a year for spending $75.

"If the part can be made of thin material and weight is not important, steel is probably the most economical." Die castings 1/32" thick do some jobs more economically and just as well.

Decisions are not based upon fact. Decisions are based upon what men think are the facts, not upon the facts themselves. Thus when we bring information we get decisions made more nearly on the facts. That's where value analysis profit comes from.

HOW DO WE START

Decide, "I will know the function of what I buy." "I will know what it does."

Start with something and learn more about it. It could be a piece of metal or a barrel of paint or a bracket or a gasket or a forging or some steel. What does it do? How is it fabricated?

Maybe look at maintenance service. We have one operation where a buyer had Value Analysis training and is in charge of maintenance buying. He says that the percentage yield in maintenance will outshine the yield anywhere else.

Get the National Association of Purchasing Agents Book on "Cutting Costs by Analyzing Values."

Determine that you will know the function of everything that you buy.

Determine that more information will be brought into each area than has been there before.

Determine that some way will be found so you can invest a little time on it. You will be startled at the yield. Later using those items of yield one at a time secure more time and help.

What do I do then? We must compare. To evaluate is to compare. There is not necessarily any relation between the material, labor, profit and overhead on a part and its value. Value is determined by something else - outside - other ways to accomplish the same function.

Learn function. What does it really do? How else can the function be provided?

Enlist the aid of suppliers. Every good supplier has men who lead in their own field and are totally available to the purchasing agent. Give them a clean cut charter, let them study your problem, you will be surprised what they lay on the line.

Support suppliers who contribute. After receiving our specific problems, if they contribute they must get the order.

Secure understanding in the plant. First of management. You need not too much active support and not too little. Too much support by the big boss makes middle management feel that something is being thrust upon them. Some people who see it quickly - go on through them and with them and teach others. Bring in suppliers and specialists on specific projects. Make sure that the people in the plant understand that you are just getting more information, that you don't expect to make the design engineers' or the methods engineers' decisions.

Go out into the suppliers' plants. The new facts developed are surprising.

Find a way to give credit to others.

What trouble will I get into? I expect plenty! You will be doing something different.

"What's he doing?" What's that purchasing agent, buyer doing? Because you are doing something they are not accustomed to. "Specifications are my job..."three bids" are his" job.

Purchasing is a service. You fellows stick to your service job - ours is the creative job. (Incidentally, I had a most interesting experience here in Los Angeles about two years ago, at the National Meeting of the Association. Some of you will remember that the president of one of our large companies spoke. He said, "Purchasing is not a service, it's a profit-making organization." Afterward I went up and said, "Mr. Hill, I heard what you said about purchasing being a profit-making organization. Do you believe that?" He said, "Of course I do or I wouldn't have said it." I said, "Is your purchasing department organized that way?" He said, "No it isn't but it's going to be!" He said, "Until the Association assigned me the job of making this speech on purchasing, I didn't know enough about purchasing to know that it was a profit-making organization."

"I don't have time to talk to you about it." "You wouldn't understand it anyway. Incidentally, one of our vice presidents advised us there is no question which it isn't all right for purchasing people to ask. He stated that an understandable and sensible answer should always be forthcoming.

All of our work is secret. We can't let anybody know about it.

"We are already ahead of everyone else on this. How can anyone else help us?"

"We don't want to let out our know-how."

"We can t be making changes all the time." The work of these purchasing people in Value Analysis is so unsettling.

This is just normal human nature. Not the cause for an irritation. Never become irritated. This is just a part of your interesting job. One of our managers believes firmly that any argument is always time and opportunity lost. He gives an example. He said, "my wife went to the best store in town and got a fur piece for examination. The next day she decided she didn't want it. She had charged it so she took it back. They wouldn't take it. They gave her a bad time and vise versa - but she brought home the fur and had scarcely regained her composure by evening. "There's no problem here", her husband tried to console and teach her saying, "Just take the coat back, you have it on approval - but don't argue with them." So she tried it again with his encouragement but had just as miserable a time, and brought home the coat. "I told you there was no problem, the only thing is they get you to argue. If you will get a pencil and paper and write it down and memorize it, I will tell you what to say. You say this and nothing else and that's all there will be to it." She was desperate, so she agreed. He dictated these words. "Here is the coat. I don't want it. Cancel my charge account." He told her to go in, walk over to the counter, lay it over the counter by the cash register, say those words, turn on her heels and walk out, and not for any reason allow anyone to get her to say another word. So she did.

When he got home next evening she was elated. She said, you know, I did exactly as you said but couldn't get out of the door without a fellow saying, "You can leave the coat if you want to, but don't cancel your charge account."

WHAT GOOD WILL COME OF IT IF I DO IT

Some jobs will break amazingly. You will be startled at what they will do. For example, we had a casting -- a brush holder. It cost $28 as a sand casting after machining. That's the way we were doing it. Based upon the part of the facts which they had, the people in the area thought it was best. As a shell molded part it is ready to use for $2. For another example, here are some J-bolts that go on the television set. The one on the left has a cut thread--the one on the right a rolled thread. The cost is 11¢ for one and 1-1/2¢ for the other. It is startling--almost shocking. It looks simple but it isn't. The purchasing man accomplished this by having one of the best suppliers of roll thread type parts come in. He gave him the television chassis, told him to take it back and later tell us what we must do to make the part on his fastest equipment. So the purchase price dropped $80,000 a year as a result. For another example, one of the purchasing fellows saw his wife canning. And he noticed that on the underside of the lid - not a rubber gasket but a "compound was used." He got in touch with Dewey and Almy, the specialty vendors in Cambridge who make the plastic rubber compound and took them up into the television plant for their suggestions. We were using an 11¢ rubber gasket. Now we have a little "in-line" machine that squirts self-vulcanizing rubber on just like tooth paste. Its total cost is 2¢ saving $96,000 a year.

Gradually it will become understood that purchasing can do a broader job - can help substantially by bringing in more facts for design or manufacturing engineering or management decisions. Often engineering and management personnel who have been most cautious in accepting Value Analysis - completely reverse - becoming your strongest supporters - after they have experienced Value Analysis help on one of their own jobs.

You will be asked to go too far - to set in meetings where you don't belong - to actively participate in advance development work before ideas and function are clearly jelled out, etc.

Be the master of your own time. Participate where you can contribute proportionally.

In providing Value Analysis knowledge to your areas stick to simple stories. We only put one item on one page. Men then see it, read it, and get the impact of it. We have found that the Value Analysis concept grows rapidly in an area. For example, this statement, "Before I studied Value Analysis, I hoped that I might get some ideas on how to lower costs without reducing quality. Now I see just how unlimited the possibilities are."

VALUE ANALYSIS A MUST ON GOVERNMENT WORK

The U.S. has no money. It's our money. Don't allow any man to say, "It's a government job - cost doesn't matter on this item." We have given no man authority to waste our money with such carelessness. High costs of military equipment could destroy our "way of life" and end our high standard of living. After "performance engineering" accomplishes the essential objective - immediate intense effective Value Analysis work and value engineering can often secure the identical performance for 1/3 to 1/5 of the cost.

This is what we mean in our next example. This welded part accomplishes its function and is excellent engineering. But see how the functional part is made by a metal ribbon with 2 V bolts and it goes from $2.50 to .05...1/5 the cost and the same performance. Again, here is a part that goes on radar equipment - a very precise coil assembly. It costs $35. It's good. It did a difficult job. It was fine engineering, but now that we have it we're up a long step in the progress stairs. Let's immediately take another step--the first was "real performance" - now "real value . The part on the right which cannot be provided, costs $7. Again 1/5 of the cost and actually, it's lighter and for that reason better.

As guideposts, the "Ten Tests for Value" are extremely helpful in purchasing, engineering and manufacturing offices alike.

In conclusion...getting lower cost is a vital job. Any cost is definitely too high if it can be reduced. Let's now just go after five or ten percent. If we use the skills of Value Analysis, 25-35% or more can come out of cost with the identical performance. This is the dividend for clean thinking for using the best ideas, processes and materials correctly.

There is no question about more and more products available to our people but there is serious danger that excessive high costs will deny the use of these fine products. There is no need to make finer and finer products if we let the prices climb so high that folks cannot buy them. So let's staff our purchasing departments with people who can think!

So, let us in purchasing accept the charter that value is our responsibility.