Value Analysis Purchasing Principles—
Learning To Buy Functions

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FORWARD

All wants and need are for functions—either use or aesthetic. All building blocks either of products or services, are functions. All costs are to provide functions the purchaser wants. All decisions are based upon functions-use & aesthetic-and costs. All comparisons are based upon functions-use & aesthetic-and costs. Still, all catalogues, all material lists, most requisitions, most sales promotions efforts, are in the language of described materials.

The more nearly the buyer knows function, understands function, solicits and buys function, the more effective he becomes.

Some specific approaches are set forth.

FIRST STEP

Five decisions must be made by the buyer.

1. That he is the “goalie”. No money is to go out unless value comes in, no matter what. He does not fault his teammates, or compete with them, but he has a job to do. When the puck slips through, he stops it. No money gets out, without wanted functions coming in.

2. That he will not just “catch the ball and pass it on”. Direction and force will be added by his function study and action. He will not receive requisitions and handle them clerically, he will contribute.

3. That as in any game, he will have blockers and stoppers, which he must overcome. He must expect this, be prepared for it, and do it.

4. That he must teach his teammates that he is competent to run the ball.

5. That he will teach his vendors to help him.

SECOND STEP—BUYER LEARNS SPECIFIC FUNCTION BUYING APPROACHES

1. Purchased part function analysis
2. Purchasing particle function analysis
3. Purchasing specification function analysis
4. Purchasing aesthetic function analysis
5. Additional cost function analysis
6. Supplier manufacturing cost function analysis
7. Functioning product function analysis
8. Supplier manufacturing process function analysis
9. Non-working cost function analysis
10. Combinations for example:

   Purchasing particle function analysis, & Purchasing specification function analysis

THIRD STEP—BUYER DEVELOPS SKILL IN THE FUNCTION BUYING TECHNIQUES.

Examples of each of the above 10 will follow. The reader who wishes more depth of information about any example will find it by referring to the page listed ie (57) in the Miles Book 2nd edition McGraw-Hill. All examples were the result of the buyers initiative, using the above approaches.

Examples of buyers use of each of the 10 function buying techniques.

1. PURCHASED PART FUNCTION ANALYSIS. The buyer assumes nothing, he learns the function of the parts which he buys. He asks questions until he understands. When a part seems to contribute little or nothing, he advises the requisitioner, asks if he wishes to reconsider, to cancel or change the requisition.

Example (100) “dust cover”. Cost $5.1,000/yr used. It was used inside of another gasket sealed container of electronic equipment and was about the size of a gallon pail. Since the equipment operated with the
outer cover closed, it seemed that there would be no “dust” inside. The buyer saw no function. Questioned it. The engineer said “it has no function but marketing requires it.” Next to marketing, who said “you say it costs $5. It has no function. One big customer wants it. Take it off, and we’ll charge him for ‘extra equipment’ on his orders”. $5,000 added to earnings.

2. PURCHASING PARTICLE FUNCTION ANALYSIS. The buyer imaginatively and creatively examines each particle of the item he buys. Is that particle working? Are all particles working approximately to their capacity of are there some doing little but adding weight, volume and cost? When he finds non-working particles which he knows he must pay for, he questions, “can some of this nonworking material be eliminated, or put to work?”

Example (57) for an appliance shift lever bracket, the steel buyer bought 11e of steel 3” wide X 1/8” thick. He observed that the bracket was a flat stamping only 2½” wide and that scrap was made, not only between the brackets, but along the sides as well. Millions of nonfunctioning particles of steel being bought. He questioned it. Why not buy the width needed, then just cut it off with no steel waste? The designer was motivated. He said that the shape at the back end didnt matter, it could as well be a “cut-off”. But he did even better, as seen in the illustration he designed it so that with each stroke of the machine, not one, but two parts were made. One was cut off and one was punched out. All quality was kept and $37,000/yr were added to earnings.

Appliance Shift Lever Bracket

BEFORE

Normal stamping operation with one piece formed at each stroke of machine and waste around edges.

AFTER

Improved stamping operation with two pieces formed at each stroke of machine and no waste material.

3. PURCHASING SPECIFICATION FUNCTION ANALYSIS. Each item of specification which adds cost is for the purpose of bringing some function. Surfaces smoother than normal, clearances tighter than normal, perpendicularness more exact than normal, each are for some functioning purpose. The buyer checks each other-then-normal specification, to learn which are adding cost, how much, and what function they provide. He often finds some that appear not to be adding function. He then determines the amount of cost benefits which would result if those specifications were not included. He provides this knowledge to his proper teammates so that actions may result.

Example (126). A small steel part about the size of the top half of a shingle nail had precision surfaces and tolerances all over it. $700,000 per year cost $6e each, $42,000. The buyer questioned their function. They were check valves in the gas system of a refrigerator. They were always mounted upright with the head at the top, in a vertical tube, so that any gas flow from below had only to lift their weight and pass on through, and any return flow from above was stopped by the fit of the under side of the head on the tube. Precise tolerances under the head added function. No other precision tolerance added function. Others were changed to standard. Suprisingly the cost dropped it from 6e to 1/10 of one cent. A years supply cost $700. $41,000 were added to earnings.

4. PURCHASING AESTHETIC FUNCTION ANALYSIS. Aesthetic function is important. No need to make it if it doesn’t please the customer so that he will buy it. “Aesthetic” function is bought, the same as “use” function, excepting, the buyer often cannot use as much of his own general judgements. He must leave the selection of what is “artful” entirely to his talented teammate. He does, however develop cost for alternatives which might provide the same or better aesthetic functions at lower costs. This knowledge greatly aids the artful decision makers in selecting the best “aesthetics” at the lowest costs.

Example (2) A small pointed triangular shaped piece of very thin aluminum was used on the knob of an appliance. It cost $20,000 for one year’s supply of 1,000,000. On it was a red dart. emphasizing the direction it pointed. It served two functions. It covered the screw which mounted the knob to the shaft, and it served as a pointer, indicating adjustment. The buyer reasoned that the shape was a pointer, without the addition of the red color, and perhaps achieved the function. He evaluated it by securing a quotation on the part made from highly polished stainless steel. It
would cost $5,000 for a years supply. The style designer said “buy it, I like it better.” $15,000 was added to earnings.

5. ADDITIONAL COST FUNCTION ANALYSIS. Is the part or material ready to use as received, if not, what is immediately done to it? What is that costing now? Could we buy it ready-to-use? How much more would that cost.

I pause a moment here to point out that none of the decisions makers in the system have that knowledge, unless and until the buyer gets it. Much of the buyer added contribution is from the fact that he does, in fact have sources of information, which is really needed, but which is never developed excepting by his initiative and action.

Example (232). The buyer bought thin steel strip 2" wide to make 1,000,000 parts/yr, 8" long, for 2½¢ each. It became “back plates” in electronic equipment. A small pulley ran along the top, aiding adjustment.

Checking into “additional cost function analysis” he found that the back plates went into the product at 10½¢. Some of the addition was for making mounting holes, but much was for grinding, rounding and smoothing the top edge, so that the pulley would roll smoothly. He knew that by paying a small “extra”, he could buy steel strip with one “mill edge”. A smooth rounded edge is produced naturally by the rolling process, on each side of the sheet. A strip can be cut from each side, which will then have 1 rounded edge. Buying this strip ended much “additional cost”, reducing the “ready-to-use” part from 10½¢ to 4½¢. $60,000 was added to earnings.

The skilled buyer, in the proper framework of buyer-supplier confidence, can relate approximate costs to functions in the supplier’s operations. He often finds opportunity to end costs which do not bring wanted function. He ends them and brings benefits to both the supplier and the buyer.

Example (63). Enormous quantities, 50,000,000/yr of tiny stainless steel pins, 1/16" in dia. X ¼" long were purchased for electric clocks at a cost of $3.65 per thousand. The buyer examined the form of incoming raw material to the supplier, and each operation which added cost, together with the function provided by that cost. He found many nonfunctioning costs. Two will be described. The incoming stainless wire required three centerless grinder passes to get it to right size and finish. The buyer found that with the large quantities, the steel mill would provide the exact size needed at no extra cost. Identical material was then made with one pass, and buying smaller wire, steel weighed less and cost less. Secondly, the supplier’s factory had set its own tolerances at ½ of the buyers requirement, which meant that all production between allowable tolerance and ½ allowable tolerance was scrapped. Of course it went into costs, and would have been usable, but was thrown away. Other changes were made in inspection and handling. Cost was changed from $3.62/M to $1.90/M for the identical product. Both buyer and supplier benefitted. The same changes on a similar part brought total added earnings to $100,000.

7. FUNCTIONING PRODUCT FUNCTION ANALYSIS. Often, requisitions call for products. Learning the function needed, then securing proposals from suppliers who might provide that function by a different approach, is extremely profitable. The buyer then submits the proposal together with its costs, to the requisitioner for his study, and often, his approval.

Example (334-19, 339-19). 3,000 arching horns/yr were roughly 15" long, 2" wide and varied in thickness. Each was made of flat bronze cut, shaped, bent and brazed. Each cost $6.50. The buyer studied the function. It was to absorb the heat of the arc, when contacts were opened near it. So that the arc would extinguish.
Since the function was accomplished by having a mass of bronze near the arc, the buyer reasoned that the properties of ductile bronze added no function, and that cast bronze would absorb heat as well, perhaps parts could be made thicker and would do better, and perhaps at lower cost. His supplier of shell molded castings quoted $2.25 each with a 65¢ mold cost on each for the first year. $11,000 was added to earnings.

8. Supplier Manufacturing Process Function Analysis. The buyer first learns what functions are being performed by the materials he buys. He then uses this knowledge and skill to match up the function needs with the functions produced by his suppliers manufacturing processes. His batting average becomes pretty good.

Example (147,218). 800,000 8″ long J-bolts, made of 3/16 steel rod were purchased for 11½¢ each, $92,000/year. Used in groups of three, their function was to support the heavy weight of the TV tube and surrounding coils and apparatus in the chassis. The buyer located a supplier whose equipment functioned to produce good threaded items, in large quantities much more efficiently than the usual thread “cutting” equipment. Slightly smaller rod—the root diameter of the thread—was used. The thread was then rolled up, on it, a fast almost instantaneous process. Interchangeable J-bolts were produced. The cost became 11½¢ instead of 11½. $80,000 were added to earnings.

9. Non-Working Cost Function Analysis. Each purchase cost is to secure some wanted function. The buyer learns what that function is. Often he can identify in the product, that part or parts which perform that function. He will also find supporting items not performing the wanted function, which are adding much to cost. His suppliers may suggest less costly means to provide this support. VA techniques call these secondary functions. They may absorb lots of cost. Proper change in them does not effect the wanted function from the device. The buyer secures quotation on the different construction.

Example (108) Large quantities of a tiny radio frequency transformer about twice the size of a grain of rice cost 39¢ each. The buyer reasoned “where is the cost”? Only a small amount of two tiny wires held close together, performed the function. All of the rest of the cost is secondary. He found that a tiny spool was made. With microscope equipment 4 tiny holes were made in the spool ends, then a little wire was wound on the spool and the ends tediously threaded thru the holes. Slow and costly. The laboratory was asked for an adhesive which would not react with the insulation on the wires and which would have long life. They provided it. The functioning wires were wound on a support tab, then touched with a dab of adhesive. The product was 100%. It cost 19¢. 20¢ of non-functioning cost had been removed. Earnings were increased $40,000.

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10. Combination of Two or More Purchasing VA Techniques. Example of Purchasing Specification Function Analysis and Purchasing Particle Function Analysis. The buyer will often use two or more in combination.

Example (127). 2,000,000 iron screw machine parts, cylindrical. 1/2" long, 1/4" dia. with a slight flange at one end, were used per yr. Cost was 31⁄2¢ each, $70,000. Tolerances of dimension and finish were very exact overall. What was their function? They were pole pieces in loudspeakers. The flanged end mounted on an electromagnetic, the plain end was inside the floating coil which was mounted to the cone of the speaker. The function of the flange was to facilitate fastening and the function of the part was the conduct magnetic flux up through the bottom and out through the cylindrical sides-through the voice coil-and back into the magnet.

Function analysis showed 3 tolerances which contributed function. 1. Surface of flanged end which mounted on the magnet. 2. Diameter of main body,
over which the coil floated, and its surface finish. 3. perpendicularrness of flange face to cylindrical sides. All dimensions of flange, for mounting, and of length (upper end was in air in center of cone) could be normal. Particle function analysis showed that all metal was working, excepting a conical shaped piece at the top. Flux came in the flanged bottom and went out the cylindrical sides. The buyer now suspected that a supplier of "coined" iron parts could make them by automatic "cut-off" machines followed by high speed "coining". There was plenty of tolerance and material allowance to take the variation in material at the cutoff operation.

He was right. The supplier could meet all of these functioning special specifications with the high speed equipment. Cost became $30,000/yr. $40,000 was added to earnings.

Do you believe any company can actually afford a buyer who is not trained and skilled in the value analysis purchasing principles?
VALUE ANALYSIS PURCHASING PRINCIPLES -
LEARNING TO BUY FUNCTIONS

FORWARD

ALL WANTS AND NEEDS ARE FOR FUNCTIONS - EITHER "USE" OR "AESTHETIC".
ALL "BUILDING BLOCKS" EITHER OF PRODUCTS OR SERVICES, ARE FUNCTIONS.
ALL COSTS ARE TO PROVIDE FUNCTIONS THE PURCHASER WANTS.
ALL DECISIONS ARE BASED UPON FUNCTIONS - USE & AESTHETIC - AND COSTS.
ALL COMPARISONS ARE BASED UPON FUNCTIONS - USE & AESTHETIC - AND COSTS.
STILL, ALL CATALOGUES, ALL MATERIAL LISTS, MOST REQUISITIONS, MOST SALES
PROMOTION EFFORTS, ARE IN THE LANGUAGE OF DESCRIBED MATERIALS.
THE MORE NEARLY THE BUYER KNOWS FUNCTION, UNDERSTANDS FUNCTION,
SOLICITS AND BUYS FUNCTION, THE MORE EFFECTIVE HE BECOMES.
SOME SPECIFIC APPROACHES ARE SET FORTH.

FIRST STEP

FIVE DECISIONS MUST BE MADE BY THE BUYER

1. THAT HE IS THE "GOALIE". NO MONEY IS TO GO OUT UNLESS VALUE COMES
   IN, NO MATTER WHAT. HE DOES NOT FAULT HIS TEAMMATES, OR COMPETE WITH
   THEM, BUT HE HAS A JOB TO DO. WHEN THE PUCK SLIPS THROUGH, HE STOPS
   IT. NO MONEY GETS OUT, WITHOUT WANTED FUNCTIONS COMING IN.
2. THAT HE WILL NOT JUST "CATCH THE BALL AND PASS IT ON". DIRECTION
   AND FORCE WILL BE ADDED BY HIS FUNCTION STUDY AND ACTION. HE WILL
   NOT RECEIVE REQUISITIONS AND HANDLE THEM CLERICALLY, HE WILL CONTRIBU
3. THAT AS IN ANY GAME, HE WILL HAVE BLOCKERS AND STOPPERS, WHICH
   HE MUST OVERCOME. HE MUST EXPECT THIS, BE PREPARED FOR IT, AND DO IT.
4. THAT HE MUST TEACH HIS TEAMMATES THAT HE IS COMPETENT TO RUN THE F
5. THAT HE WILL TEACH HIS VENDORS TO HELP HIM.
SECOND STEP - BUYER LEARNS SPECIFIC FUNCTION BUYING APPROACHES

1. PURCHASED PART FUNCTION ANALYSIS
2. PURCHASING PARTICLE FUNCTION ANALYSIS
3. PURCHASING SPECIFICATION FUNCTION ANALYSIS
4. PURCHASING AESTHETIC FUNCTION ANALYSIS
5. ADDITIONAL COST FUNCTION ANALYSIS
6. SUPPLIER MANUFACTURING COST FUNCTION ANALYSIS
7. FUNCTIONING PRODUCT FUNCTION ANALYSIS
8. SUPPLIER MANUFACTURING PROCESS FUNCTION ANALYSIS
9. NON-WORKING COST FUNCTION ANALYSIS
10. COMBINATIONS FOR EXAMPLE

3. PURCHASING SPECIFICATION FUNCTION ANALYSIS

THIRD STEP - BUYER DEVELOPS SKILL IN THE FUNCTION BUYING TECHNIQUES.
EXAMPLES OF EACH OF THE ABOVE 10 WILL FOLLOW. THE READER WHO WISHES MORE DEPTH OF INFORMATION ABOUT ANY EXAMPLE WILL FIND IT BY REFERRING TO THE PAGE LISTED i.e. (57) IN THE MILES BOOK 2ND EDITION MCGRAW-HILL.
ALL EXAMPLES WERE THE RESULT OF THE BUYER'S INITIATIVE, USING THE ABOVE APPROACHES.
EXAMPLES OF BUYER'S USE OF EACH OF THE 10 FUNCTION BUYING TECHNIQUES

1. PURCHASED PART FUNCTION ANALYSIS. THE BUYER ASSUMES NOTHING, HE LEARNS THE FUNCTION OF THE PARTS WHICH HE BUYS. HE ASKS QUESTIONS UNTIL HE UNDERSTANDS. WHEN A PART SEEMS TO CONTRIBUTE LITTLE OR NOTHING HE ADVISES THE REQUISITIONER, ASKS IF HE WISHES TO RECONSIDER, TO CANCEL OR CHANGE THE REQUISITION.

EXAMPLE (100) "DUST COVER". COST $5. 1000/yr USED. WAS USED INSIDE OF ANOTHER GASKET SEALED CONTAINER OF ELECTRONIC EQUIPMENT. WAS ABOUT
THE SIZE OF A GALLON PAIL. SINCE THE EQUIPMENT OPERATED WITH THE OUTER COVER CLOSED, IT SEEMED THAT THERE WOULD BE NO "DUST" INSIDE. THE BUYER SAW NO FUNCTION. QUESTIONED IT. THE ENGINEER SAID "IT HAS NO FUNCTION BUT MARKETING REQUIRES IT." NEXT TO MARKETING, WHO SAID "YOU SAY IT COSTS $5. IT HAS NO FUNCTION. ONE BIG CUSTOMER WANTS IT. TAKE IT OFF, AND WE'LL CHARGE HIM FOR 'EXTRA EQUIPMENT' ON HIS ORDERS". $5,000 ADDED TO EARNINGS.

2. PURCHASING PARTICLE FUNCTION ANALYSIS. THE BUYER IMAGINATIVELY AND CREATIVELY EXAMINES EACH PARTICLE OF THE ITEM HE BUYS. IS THAT PARTICLE WORKING? ARE ALL PARTICLES WORKING APPROXIMATELY TO THEIR CAPACITY OR ARE THERE SOME DOING LITTLE BUT ADDING WEIGHT VOLUME AND COST? WHEN HE FINDS NON-WORKING PARTICLES WHICH HE KNOWS HE MUST PAY FOR, HE QUESTIONS, "CAN SOME OF THIS NON-WORKING MATERIAL BE ELIMINATED, OR PUT TO WORK?"

EXAMPLE (57) FOR AN APPLIANCE SHIFT LEVER BRACKET, THE STEEL BUYER BOUGHT 11/2 OF STEEL 3" WIDE X 1/8" THICK. HE OBSERVED THAT THE BRACKET WAS A FLAT STAMPING ONLY 2 1/2" WIDE AND THAT SCRAP WAS MADE, NOT ONLY BETWEEN THE BRACKETS, BUT ALONG THE SIDES AS WELL. MILLIONS OF NON-FUNCTIONING PARTICLES OF STEEL BEING BOUGHT. HE QUESTIONED IT. WHY NOT BUY THE WIDTH NEEDED, THEN JUST CUT IT OFF WITH NO STEEL WASTE? THE DESIGNER WAS MOTIVATED. HE SAID THAT THE SHAPE AT THE BACK END DIDN'T MATTER, IT COULD AS WELL BE A "CUT-OFF". BUT HE DID EVEN BETTER. AS SEEN IN THE ILLUSTRATION HE DESIGNED IT SO THAT WITH EACH STROKE OF THE MACHINE, NOT ONE, BUT TWO PARTS WERE MADE. ONE WAS CUT OFF AND ONE WAS PUNCHED OUT. ALL QUALITY WAS KEPT AND $37,000/YR WERE ADDED TO EARNINGS.
3. PURCHASING SPECIFICATION FUNCTION ANALYSIS. EACH ITEM OF SPECIFICATION WHICH ADDS COST IS FOR THE PURPOSE OF BRINGING SOME FUNCTION. SURFACES SMOOTHER THAN NORMAL, CLEARANCES TIGHTER THAN NORMAL, PERPENDICULARNESS MORE EXACT THAN NORMAL, EACH ARE FOR SOME FUNCTIONING PURPOSE. THE BUYER CHECKS EACH OTHER-THAN-NORMAL SPECIFICATION, TO LEARN WHICH ARE ADDING COST, HOW MUCH, AND WHAT FUNCTION THEY PROVIDE. HE OFTEN FINDS SOME THAT APPEAR NOT TO BE ADDING FUNCTION. HE THEN DETERMINES THE AMOUNT OF COST BENEFIT WHICH WOULD RESULT IF THOSE SPECIFICATIONS WERE NOT INCLUDED. HE PROVIDES THIS KNOWLEDGE TO HIS PROPER TEAMMATES, SO THAT ACTIONS MAY RESULT.

EXAMPLE (126). A SMALL STEEL PART ABOUT THE SIZE OF THE TOP HALF OF A SHINGLE NAIL HAD PRECISION SURFACES AND TOLERANCES ALL OVER IT. 700,000 PER YEAR COST 6¢ EACH, $42,000. THE BUYER QUESTIONED THEIR FUNCTION. THEY WERE CHECK VALVES, IN THE GAS SYSTEM OF A REFRIGERATOR. THEY WERE ALWAYS MOUNTED UPRIGHT WITH THE HEAD AT THE TOP, IN A VERTICAL TUBE, SO THAT ANY GAS FLOW FROM BELOW HAD ONLY TO LIFT THEIR WEIGHT AND PASS ON THROUGH, AND ANY RETURN FLOW FROM ABOVE WAS STOPPED BY THE FIT OF THE UNDER SIDE OF THE HEAD ON THE TUBE. PRECISE TOLERANCES UNDER THE HEAD ADDED FUNCTION. NO OTHER PRECISION TOLERANCE ADDED FUNCTION. OTHERS WERE CHANGED TO STANDARD. SURPRISINGLY THE COST DROPPED FROM 6¢ TO 1/10 OF ONE CENT. A YEARS SUPPLY COST $700. $41,000 WERE ADDED TO EARNINGS.

4. PURCHASING AESTHETIC FUNCTION ANALYSIS. AESTHETIC FUNCTION IS IMPORTANT. NO NEED TO MAKE IT IF IT DOESN'T PLEASE THE CUSTOMER SO THAT HE WILL BUY IT."AESTHETIC" FUNCTION IS BOUGHT, THE SAME AS "USE" FUNCTION, EXCEPTING, THE BUYER OFTEN CANNOT USE AS MUCH OF HIS OWN GENERAL JUDGEMENT. HE MUST LEAVE THE SELECTION OF WHAT IS "ARTFUL" ENTIRELY
TO HIS TALENTED TEAMMATE. HE DOES, HOWEVER DEVELOP COSTS FOR ALTERNATIVES WHICH MIGHT PROVIDE THE SAME OR BETTER AESTHETIC FUNCTIONS AT LOWER COSTS. THIS KNOWLEDGE GREATLY AIDS THE ARTFUL DECISION MAKERS IN SELECTING THE BEST "AESTHETICS" AT THE LOWEST COSTS.

EXAMPLE (2) A SMALL POINTED TRIANGULAR SHAPED PIECE OF VERY THIN ALUMINUM WAS USED ON THE KNOB OF AN APPLIANCE. IT COST $20,000 FOR ONE YEAR'S SUPPLY OF 1,000,000. ON IT WAS A RED DART, EMPHASIZING THE DIRECTION IT POINTED. IT SERVED TWO FUNCTIONS. IT COVERED THE SCREW WHICH MOUNTED THE KNOB TO THE SHAFT, AND IT SERVED AS A POINTER, INDICATING ADJUSTMENT. THE BUYER REASONED THAT THE SHAPE WAS A POINTER, WITHOUT THE ADDITION OF THE RED COLOR, AND PERHAPS ACHIEVED THE FUNCTION. HE EVALUATED IT BY SECURING A QUOTATION ON THE PART MADE FROM HIGHLY POLISHED STAINLESS STEEL. IT WOULD COST $5000 FOR A YEAR'S SUPPLY. THE STYLE DESIGNER SAID "BUY IT. I LIKE IT BETTER." $15,000 WAS ADDED TO EARNINGS.

5. ADDITIONAL COST FUNCTION ANALYSIS. IS THE PART OR MATERIAL READY TO USE AS RECEIVED? IF NOT, WHAT IS IMMEDIATELY DONE TO IT? WHAT IS THAT COSTING NOW? COULD WE BUY IT READY-TO-USE? HOW MUCH MORE WOULD THAT COST.

I PAUSE A MOMENT HERE TO POINT OUT THAT NONE OF THE DECISION MAKERS IN THE SYSTEM HAVE THAT KNOWLEDGE - UNLESS AND UNTIL THE BUYER GETS IT. MUCH OF THE BUYERS ADDED CONTRIBUTION IS FROM THE FACT THAT HE DOES, IN FACT HAVE SOURCES OF INFORMATION, WHICH IS REALLY NEEDED, BUT WHICH IS NEVER DEVELOPED EXCEPTING BY HIS INITIATIVE AND ACTION.

EXAMPLE (232). THE BUYER BOUGHT THIN STEEL STRIP 2" WIDE TO MAKE 1,000,000 PARTS/yr, 8" LONG, FOR 2¢ EACH. IT BECAME "BACK PLATES" IN ELECTRONIC EQUIPMENT. A SMALL PULLEY RAN ALONG THE TOP, AIDING ADJUSTMENT.
CHECKING INTO "ADDITIONAL COST FUNCTION ANALYSIS" HE FOUND THAT THE BACK PLATES WENT INTO THE PRODUCT AT 10½¢. SOME OF THE ADDITION WAS FOR MAKING MOUNTING HOLES, BUT MUCH WAS FOR GRINDING, ROUNDEOING AND SMOOTHING THE TOP EDGE, SO THAT THE PULLEY WOULD ROLL SMOOTHLY. HE KNEW THAT BY PAYING A SMALL "EXTRA", HE COULD BUY STEEL STRIP WITH ONE "MILL EDGE". A SMOOTH ROUNDED EDGE IS PRODUCED NATURALLY BY THE ROLLING PROCESS, ON EACH SIDE OF THE SHEET. A STRIP CAN BE CUT FROM EACH SIDE, WHICH WILL THEN HAVE 1 ROUNDED EDGE. BUYING THIS STRIP, ENDED MUCH "ADDITIONAL COST" REDUCING THE "READY-TO-USE" PART FROM 10½ TO 4½¢. $60,000 WAS ADDED TO EARNINGS.

6. SUPPLIER MANUFACTURING COST FUNCTION ANALYSIS. ON LARGE VOLUME COMPETITIVE ITEMS, IT IS OFTEN IMPORTANT FOR THE BUYER TO KNOW MUCH ABOUT THE MANUFACTURING PRACTICES AND PROCESSES OF HIS SUPPLIER. WHAT RAW MATERIAL STARTS THE PROCESS? WHAT WORK IS BEING DONE TO IT? WHAT COSTS ARE BEING INCURRED WHICH MAY NOT ADD TO THE FUNCTIONS WHICH THE BUYER WANTS? THE SKILLED BUYER, IN THE PROPER FRAMEWORK OF BUYER-SUPPLIER CONFIDENCE, CAN RELATE APPROXIMATE COSTS TO FUNCTIONS IN THE SUPPLIERS OPERATIONS. HE OFTEN FINDS OPPORTUNITY TO END COSTS WHICH DO NOT BRING WANTED FUNCTION. HE ENDS THEM AND BRINGS BENEFITS TO BOTH THE SUPPLIER AND THE BUYER.

EXAMPLE (63). ENORMOUS QUANTITIES, 50,000,000/yr OF TINY STAINLESS STEEL PINS, 1/16" IN DIA. X 3/8" LONG WERE PURCHASED FOR ELECTRIC CLOCKS AT A COST OF $3.65 PER THOUSAND. THE BUYER EXAMINED THE FORM OF INCOMING RAW MATERIAL, TO THE SUPPLIER, AND EACH OPERATION, WHICH ADDED COST, TOGETHER WITH THE FUNCTION PROVIDED BY THAT COST. HE FOUND MANY NON-
FUNCTIONING COSTS. TWO WILL BE DESCRIBED. THE INCOMING STAINLESS WIRE REQUIRED THREE CENTERLESS GRINDER PASSES TO GET IT TO RIGHT SIZE AND FINISH. THE BUYER FOUND THAT WITH THE LARGE QUANTITIES, THE STEEL MILL WOULD PROVIDE THE EXACT SIZE NEEDED AT NO EXTRA COST. IDENTICAL MATERIAL WAS THEN MADE WITH ONE PASS, AND, BUYING SMALLER WIRE, STEEL WEIGHED LESS AND COST LESS. SECONDLY, THE SUPPLIERS FACTORY HAD SET ITS OWN TOLERANCES AT \( \frac{1}{2} \) OF THE BUYERS REQUIREMENT, WHICH MEANT THAT ALL PRODUCTION BETWEEN ALLOWABLE TOLERANCE AND \( \frac{1}{2} \) ALLOWABLE TOLERANCE WAS SCRAPPED. OF COURSE IT WENT INTO COSTS, AND WOULD HAVE BEEN USABLE, BUT WAS THROWN AWAY. OTHER CHANGES WERE MADE IN INSPECTION AND HANDLING. COST WAS CHANGED FROM $3.65/M TO $1.90/M FOR THE IDENTICAL PRODUCT. BOTH BUYER AND SUPPLIER BENEFITTED. THE SAME CHANGES ON A SIMILAR PART, BROUGHT TOTAL ADDED EARNINGS TO $100,000.

7. FUNCTIONING PRODUCT FUNCTION ANALYSIS. OFTEN, REQUISITIONS CALL FOR PRODUCTS. LEARNING THE FUNCTION NEEDED, THEN SECURING PROPOSALS FROM SUPPLIERS WHO MIGHT PROVIDE THAT FUNCTION BY A DIFFERENT APPROACH, IS EXTREMELY PROFITABLE. THE BUYER THEN SUBMITS THE PROPOSAL TOGETHER WITH ITS COSTS, TO THE REQUISITIONER, FOR HIS STUDY, AND OFTEN, HIS APPROVAL.

EXAMPLE (334-19, 339-19). 3000 ARCHING HORNS/YR WERE ROUGHLY 15" LONG, 2" WIDE AND VARIED IN THICKNESS. EACH WAS MADE OF FLAT BRONZE CUT, SHAPED, BENT AND BRAZED. EACH COST $6.50. THE BUYER STUDIED THE FUNCTION. IT WAS TO ABSORB THE HEAT OF THE ARC, WHEN CONTACTS WERE OPENED NEAR IT, SO THAT THE ARC WOULD EXTINGUISH.
SINCE THE FUNCTION WAS ACCOMPLISHED BY HAVING A MASS OF BRONZE NEAR THE ARC, THE BUYER REASONED THAT THE PROPERTIES OF DUCTILE BRONZE ADDED NO FUNCTION, AND THAT CAST BRONZE WOULD ABSORB HEAT AS WELL, PERHAPS PARTS COULD BE MADE Thicker AND WOULD DO BETTER, AND PERHAPS AT LOWER COST. HIS SUPPLIER OF SHELL MOLDED CASTINGS QUOTED $2.25 EACH WITH A 65¢ MOLD COST ON EACH FOR THE FIRST YEAR. $11,000 WAS ADDED TO EARNINGS.

8. SUPPLIER MANUFACTURING PROCESS FUNCTION ANALYSIS. THE BUYER FIRST LEARNS WHAT FUNCTIONS ARE BEING PERFORMED BY THE MATERIALS HE BUYS. HE THEN USES THIS KNOWLEDGE AND SKILL TO MATCH UP THE FUNCTION NEEDS WITH THE FUNCTIONS PRODUCED BY HIS SUPPLIERS MANUFACTURING PROCESSES. HIS BATTING AVERAGE BECOMES PRETTY GOOD.

EXAMPLE (147,218). 800,000 8" LONG J-BOLTS, MADE OF 3/16 STEEL ROD WERE PURCHASED FOR 11½¢ EACH, $92,000/Year. USED IN GROUPS OF THREE, THEIR FUNCTION WAS TO SUPPORT THE HEAVY WEIGHT OF THE TV TUBE AND SURROUNDING COILS AND APPARATUS IN THE CHASSIS. THE BUYER LOCATED A SUPPLIER WHOSE EQUIPMENT FUNCTIONED TO PRODUCE GOOD THREADED ITEMS, IN LARGE QUANTITIES MUCH MORE EFFICIENTLY THAN THE USUAL THREAD "CUTTING" EQUIPMENT. SLIGHTLY SMALLER ROD - THE ROOT DIAMETER OF THE THREAD - WAS USED. THE THREAD WAS THEN ROLLED UP, ON IT, A FAST ALMOST INSTANTANEOUS PROCESS. INTERCHANGEABLE J-BOLTS WERE PRODUCED. THE COST BECAME 1½¢ INSTEAD OF 11½. $80,000 WERE ADDED TO EARNINGS.
9. NON-WORKING COST FUNCTION ANALYSIS. EACH PURCHASE COST IS TO SECURE SOME WANTED FUNCTION. THE BUYER LEARNS WHAT THAT FUNCTION IS. OFTEN HE CAN IDENTIFY, IN THE PRODUCT, THAT PART OR PARTS WHICH PERFORM THAT FUNCTION. HE WILL ALSO FIND SUPPORTING ITEMS, NOT PERFORMING THE WANTED FUNCTION, WHICH ARE ADDING MUCH TO COST. HIS SUPPLIERS MAY SUGGEST LESS COSTLY MEANS TO PROVIDE THIS SUPPORT. VA TECHNIQUES CALL THESE SECONDARY FUNCTIONS. THEY MAY ABSORB LOTS OF COST. PROPER CHANGE IN THEM DOES NOT EFFECT THE WANTED FUNCTION FROM THE DEVICE. THE BUYER SECURES QUOTATION ON THE DIFFERENT CONSTRUCTION.

10. COMBINATION OF TWO OR MORE PURCHASING VA TECHNIQUES. EXAMPLE OF PURCHASING SPECIFICATION FUNCTION ANALYSIS AND PURCHASING PARTICLE FUNCTION ANALYSIS. THE BUYER WILL OFTEN USE TWO OR MORE IN COMBINATION.

EXAMPLE (127). 2,000,000 IRON SCREW MACHINE PARTS, CYLINDRICAL, $1" LONG, $1" DIA., WITH A SLIGHT FLANGE AT ONE END, WERE USED PER YR. COST WAS 3½ EACH, $70,000. TOLERANCES OF DIMENSION AND FINISH WERE VERY EXACT OVERALL. WHAT WAS THEIR FUNCTION? THEY WERE POLE PIECES.


FUNCTION ANALYSIS SHOWED 3 TOLERANCES WHICH CONTRIBUTED FUNCTION.
1. SURFACE OF FLANGED END WHICH MOUNTED ON THE MAGNET. 2. DIAMETER OF MAIN BODY, OVER WHICH THE COIL FLOATED, AND ITS SURFACE FINISH. 3. PERPENDICULARNESS OF FLANGE FACE TO CYLINDRICAL SIDES. ALL DIMENSIONS OF FLANGE, FOR MOUNTING, AND OF LENGTH (UPPER END WAS IN AIR IN CENTER OF CONE) COULD BE NORMAL. PARTICLE FUNCTION ANALYSIS SHOWED THAT ALL METAL WAS WORKING, EXCEPTING A CONICAL SHAPED PIECE AT THE TOP. FLUX CAME IN THE FLANGED BOTTOM AND WENT OUT THE CYLINDRICAL SIDES. THE BUYER NOW SUSPECTED THAT A SUPPLIER OF "COINED" IRON PARTS COULD MAKE THEM BY AUTOMATIC "CUT-OFF" MACHINES FOLLOWED BY HIGH SPEED "COINING".

THERE WAS PLENTY OF TOLERANCE AND MATERIAL ALLOWANCE TO TAKE THE VARIATION IN MATERIAL AT THE CUT-OFF OPERATION.
HE WAS RIGHT. THE SUPPLIER COULD MEET ALL OF THESE FUNCTIONING SPECIAL SPECIFICATIONS WITH THE HIGH SPEED EQUIPMENT. COST BECAME $3,000/yr. $40,000 WAS ADDED TO EARNINGS.

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DO YOU BELIEVE ANY COMPANY CAN ACTUALLY AFFORD A BUYER WHO ISN'T TRAINED AND SKILLED IN THE VALUE ANALYSIS PURCHASING PRINCIPLES?

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