

VE PERFORMANCE IN A MANUFACTURER



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ABSTRACT

Manufacturing is getting hard, especially when you need to supply a large quantity of products to a world market. If you lose a business you will face the situation that your employees have not enough work. However, if you get a business, you might lose even more money because of poor quality or high cost. By hiring a VE consultant, involving supportive high level managers, and using a special follow-up system, we adopted the VE project in our company and earned money and more businesses as a result.

INTRODUCTION

Value Engineering (VE) is a proven method of cost reduction while maintaining good quality. VE can be used in almost every field -- manufacturer, construction, service, etc. A manufacturer deals a lot with materials, machines & equipment, employees, and suppliers. We have many different promoting activities that will enable them to be controlled smoothly. To start a VE project we can follow the procedure step by step, then we can get very good results.

During the study, the follow-up system is very important. We need people to do things for a team project. Through various methods to negotiate, we can let the team generate useful suggestions for improvement.

The results are the motivation of next project. Therefore we should carefully handle them, since that can be the model for future improvement. The difficulties we encountered during the study should be recorded for future reference.

CHARACTERISTICS OF A MANUFACTURER

A manufacturer produces products in plants. Some major characteristics of a manufacturer are as following:

Materials:

Usually the cost for material is almost 60% - 80% of the cost for the product. How to take care of material for a manufacturer is very important. Some materials need longer lead time so we must plan ahead to keep enough stock. Some materials are expensive that we need to carefully handle

them. Just In Time(JIT) is an improvement activity to let all the materials supplied in time started by Toyota. Many manufacturers perform JIT to reduce material cost. Finding the right material is also important for the manufacturers, such as energy saving, small sizing, cost saving, etc.

Machines & Equipment:

Almost all the manufacturers have machines & equipment as tools for manufacturing. To choose what kind of machine or equipment can affect the product a lot. Total Productive Maintenance (TPM), an activity to maintain all the machines and equipment in a plant, is promoted in many manufacturers to stay in the most effective situation.

Employees:

Manufacturers need employees to handle many things. Even the most automated plant still needs employees. The cost of human labor is also a factor to a product's cost. We should make people do their best. A systematic education will help people learn new skills that will meet manufacturer's needs. Suitable motivation in time can streamline the performance.

Suppliers:

Suppliers supply materials and assembly parts. If the manufacturers can receive good quality parts in time from suppliers, they will have a more efficient system. Therefore, choosing a suitable supplier is very important. A manufacturer usually sends a group of people including QC, IE, and so on to audit the supplier. Sometimes

helping suppliers produce quality parts will save a lot of time on defect corrections. An educational class for suppliers once in a while is worth investing.

Management:

A manufacturer should make continuous improvement. Various activities are usually promoted in a manufacturer, such as Total Quality Control (TQC), Quality Control Thinking Circle (QCTC), Industrial Engineering (IE), Suggestion System, and so on.

Reengineering:

Manufacturer should evaluate their organization structure and things they are doing, so that they are able to rearrange things to fit their customers' needs.

Environmental Protection:

Environmental problems have become a big issue for us. Manufacturers need to consider the law of environment protection when they invest in equipment. International Standard Organization (ISO) issued ISO - 14000 to protect our environment. We should not overlook our environment while searching for economic progress.

THE PROCESSES OF VE IN A
MANUFACTURER

To begin a Value Engineering study in a manufacturer that seldom does VE or never did before, we can do the following processes:

1. The Workshop:

Invite a VE consultant or an experienced VE expert to make a speech about VE for managers in a manufacturer. The more the managers know the better. The contents of the workshop include the definition of VE, how important to perform it?, the successful examples of VE, etc.. Before the workshop, the speaker must collect information of the manufacturer and set up his or her speech in order to meet the requirements of the manufacturer in a more practical way.

2. The Team:

Because Value Engineering studies need a lot of information and ideas, we can form a team to accomplish the study. That kind of person should join a team depends on what kind of subject. Usually the subject in a manufacturer is the product. So we need designers, industrial engineers, quality controllers, material handlers, production managers, purchasers, financial managers, etc. ,to be on the team.

3. The Seminar:

A VE seminar is an effective way to train the team members who do not have much understanding about VE. We can arrange this seminar before team study. The contents of the seminar may include History, Definition, Job plan, Function, Function-cost, Function Analysis System Technique (FAST), Creativity, People Topics, Cost,

Evaluation & Implementation, Option Topics & Administration, and Workshop. We can also arrange to combine the seminars and studies together.

4. Proceedings:

To create a congenial atmosphere during the study is very important. Refreshments, coffee & tea, and a comfortable conference room for regular meetings will help. To involve all the members in the meeting is also important. Sometimes we can divide the team into subteams and give them subjects to discuss, then ask them to make reports once in a while. Don't forget to encourage members to do their best in the study.

5. Presentations:

Self introduction in the beginning of the team study will enable all the team members know each other better and thus smoothing the study process. During the introduction the presenters should also tell their views about VE and expectation.

Study reports are the way for members to gain information from professional members, such as market reports, design reports, production reports, cost reports, etc. Through these reports, members will gain more understanding about the project.

Mid-term reports are one of the ways to let high level managers know better about the status quo of the project. The contents of the reports are goals, plans, objectives, schedules, progresses, and difficulties. These reports will hopefully gain support

from high level managers and at the same time stimulate the members to work harder.

Suggestion reports present the changes to the team members for discussion. The team will make final group decision whether we should pass this suggestion or not.

Final report can be arranged at the end of the study. In the report the results of the study will be presented. High level manager or team leader should present awards for the most contributive members. Self evaluations of the study, future improvement, and plans are also important in the final report.

Design suggestions can be studied after the VE project is finished. Some suggestions can still be generated in future meetings.

6. Execution:

Before executing a new suggestion, we need experiments to ensure that the suggestion will not affect the interest of our clients. The stock is also a major issue for consideration. For example, how many parts are there which will be replaced by others left in our stock? Can we transfer those parts to be used in other products? Maybe we should use up all the stock before executing new suggestions. We should also set a plan to check the executing once in a while to ensure that the new method or new parts are running well without problems.

THE FOLLOW-UP SYSTEM

To smoothly proceed a VE study, follow-ups are very important. The methods of follow-up are the

following:

1. Communication:

The coordinator of a VE team should issue a roster for every team member. They can contact each other. Especially the consultant, the team leader, or the coordinator should supervise the members to follow the assignments. If a member doesn't know how to accomplish the assignment, he or she can ask for help to solve the problems. A consultant may use the Phone, Fax, or E-mail in order to correct, suggest, or explain, furthermore, to have deeper understanding of the members.

2. Interviews:

Sometimes face to face talking is better than other ways of communication. A consultant or team leader should arrange a period of time to have interviews with some members. Some problems will be found and solved directly during interviews. The coordinator should carefully arrange time and place and record the results if needed.

3. Presentations:

To arrange presentations in the VE team meetings is a very good way to follow up. The team leader can assign members to make a presentation to tell about their research, schedule, progress, and promises. When they can not keep their promises, they will have an opportunity to explain or present their problems. Then the team can discuss how to solve the problems or catch up the schedule.

4. Minutes:

Minutes are the important records of VE team. All the conclusions including assignments will be put in the minutes and sent to every member as well as high level managers. To review the minutes of the past meetings is very important to the progress of following studies. On a minutes we should record the meeting title, time, place, chairperson, recorder, participants, conclusions, assignments, and the future meeting time and location. The discussion can be overlooked in a minutes. The assignments have a deadline of the assignment and the name of the person who is in charge.

5. Reports:

A minutes can record down the important things during the VE meeting, but sometimes it isn't enough. The coordinator or team leader can issue a report with minutes to reinforce the meeting effectively. In the reports we can describe the progress of the study, the problems we have faced, the efforts made by some members, the skill of VE methods, and so on. The reports will enable high level managers to know better about the study and give their support in time.

THE RESULTS

Usually the results of VE can be divided into two categories - visible results and invisible results.

Visible Results:

The results whose changes can be seen have four types shown in Figure 1:

The first type:

In this type the results can be executed immediately without permission from the client. We can proceed with the suggestions right away and save money immediately.

The second type:

The result must be approved by the client. We should present our suggestions with experiments' data to our customer for approval. In this case we will need to put more efforts and time to process the suggestions.

The third type:

The result only can be used in other related models. This is an additional result from our study. Other models or products can also benefit a lot.

The fourth type:

Because of technical or customer's concerns, the results can not be performed so far. They can be executed in the future productions or models.

Type	Suggestion No.	Total
First	Q-02,E-01,E-04,M,02,M,04,M-05, M-06,M-07,M-10,M-12,M-14,M-16, M-19,M-20,O-01,O-02	16
Second	Q-01,E-02,E-05,M-08,M-15,M-17	6
Third	E-03,M-02,E-03,M-09,M-13	5
Fourth	Q-01,Q-03,M-11,M-18	4

Figure 1 Public Pay Phone VE Team Types of Results

Formally the results of a VE study are about 30 % cost reduction. Some changes by VE studies can reduce more than 70%. The examples are shown in Figure 2.

No.	Description	Cost Reduction %
M-01	Screw Improvement	46.24%
M-03	Mother Board	37.7%
M-04	Coin Slot Cover	77.47%
M-07	Coin Slot Guide	83.1%
M-17	Frame Mid-Plate	49.4%
M-19	Label Improvement	77.78%
M-22	L.C.D. Fixing change	100%
E-09	Memory Circuit	58.82%

Figure 2 Public Pay Phone VE Team Ratio of Results

Invisible Results:

Morale:

When a VE is performed in the manufacturer, many members from different departments will be involved in the project. They get together regularly and put their efforts on the project. Finally they gain a considerable amount of money saving for their organization. That will upgrade the morale in the manufacturer.

Experiences:

During the VE performing the consultant, the team leader, the coordinator, and team members did their best to work for the project. The experiences can be a great fruit for everyone and the manufacturer. The minutes and reports are very good records for their future reference.

Confidence:

VE is a systematic method. Everyone just needs to follow the procedure accordingly, then results will be generated. Successful studies will build the members' confidence for future studies. One or two members might not be able to accomplish a task, but a team can conquer many problems, if not all.

Communication:

Communication is very important in an organization, for most of the time a problem occurred is because of lack of communication. Through VE studies different departments will need to communicate constantly and thus understand each other better. That is a very good result for the manufacturer.

THE DIFFICULTIES

When we perform VE in a manufacturer, we gain a lot from the results. However, there were still some difficulties sometimes, such as the members of VE teams, departments, suppliers, and knowledge.

Members:

Most of the time members of a VE team came from different departments. They have their own responsibilities in their departments. They are assigned by the superior of the manufacturer for the need of a VE team. They can not just do the assignments of VE studies. They will face the dilemma of deciding which side is more

important. For this problem the follow-up system can solve it. Finding the support of high level managers is very important in VE studies.

Departments:

During the studies in some cases the discussions will come into conflict among the departments. Different departments have different functions and interests. Negotiations to solve the problems are essential. Setting clear goals and objectives and letting other departments know they can gather helps from other departments are important. The overall interest of the organization is more important than every individual department.

Suppliers:

Sometimes we might face the problems from our suppliers when they don't think they should change to fit our suggestions. However, if we can guide our suppliers to perform VE studies in their companies, we can also benefit from that. Most of the companies will encourage their suppliers by giving special offers to buy their parts. When we face the situation that our suppliers do not accept our suggestions, we should try to persuade them. If they still don't want to accept the suggestion, we can find some other suppliers instead.

Knowledge:

New precision techniques we do not know may be a barrier for our study. We should

not just quit. We can ask help from universities or research institutes. There are a lot of information that can be obtained in a library or internet data base.

CONCLUSION

No matter how difficult the situations are, if we can persist on our methods, we can get very good results. Because of the improvement of modern communication technology, distance is not a problem for doing business any more. To stay in keen competition, manufacturers should adopt as many improvement activities to adjust their steps as possible. Value Engineering will help manufacturers reduce their costs, upgrade their productivity. The follow-up system can be a very effective way to ensure VE's good results.

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