



WORK METHODS DESIGN- DEVELOPING A BETTER METHOD

IENG 301

FUNDAMENTALS OF
WORK STUDY AND
ERGONOMICS

WORK METHODS DESIGN- DEVELOPING A BETTER METHOD

- Experience shows that there is no perfect method.
- There are always opportunities for improvement.

Search for Possible Solutions- Develop the Preferred Method

The following approaches should be considered in developing possible solutions from which the preferred work method will be selected:

- **Eliminate all unnecessary work.**
- **Combine operations or elements.**
- **Change the sequence of operations.**
- **Simplify the necessary operations.**

A. Eliminate all unnecessary work

- In many instances the job or the process should not be a subject for simplification or improvement, but rather it should be eliminated entirely.
- The Procter and Gamble Company, established a formal procedure for work elimination, it is called Cost Elimination. This approach goes as follows:

A. Eliminate all unnecessary work

1) Select the cost for questioning.

It is suggested that a major cost should be selected first in order to get the greatest money returns. If the major cost is eliminated, this will often lead to the elimination of many smaller operations as well. Labor costs, materials costs, clerical costs, and overhead costs of all kinds are possible subjects for elimination. Efficient operations can be eliminated just as easily as those not as well done.

A. Eliminate all unnecessary work

2) Identify the basic cause

- A search should be made to determine the basic cause, which makes the cost necessary. The basic cause is that factor which controls the elimination of the cost. The key question is, “this cost could be eliminated if it were not for what basic cause?”
- At this stage we do not ask such a question as “Why is this operation necessary?” or “How could this operation be done better?” These questions are avoided because they tend to justify and defend the job’s continued existence. Instead the objective is to find the basic cause.
- Operations for which there is no basic cause, or for which a basic cause no longer exists, can be eliminated at once.

A. Eliminate all unnecessary work

3) Question the basic cause for elimination

- If the basic cause has been identified, then it can be questioned in two ways.
- Disregard the basic cause and consider what would happen if the operation were not done. If the same results or better results can be obtained without the operation, then consideration should be given to eliminating it at once. However, disregarding the basic cause can be dangerous. In this connection it is necessary to consider two points:
 - (1) determine the area of influence of the basic cause and what else might happen if this basic cause were eliminated? and
 - (2) determine the associated “price tag” of the basic cause. Is there a proper return on the money spent to obtain the desired results? If the basic cause cannot be disregarded, the second opportunity for elimination is b.
- Apply “why?” questioning. If the job under consideration seems to be necessary, can the job immediately preceding it be eliminated, thus perhaps making all succeeding jobs unnecessary? If complete elimination is not possible, try for partial elimination.

A. Eliminate all unnecessary work

3) Question the basic cause for elimination

- It is often desirable to undertake cost elimination on a department-wide or plant-wide basis. Thus several qualified members of supervision working as a group can help identify basic causes of specific costs selected for study.
- **Benefits of Work Elimination:** If a job can be eliminated, there is no need to spend money on installing an improved method. No interruption or delay is caused while the improved method is being developed, tested, and installed. It is not necessary to train new operators on the new method. The problem of resistance to change is minimized when a job or activity that is found to be unnecessary is eliminated.

B. Combine Operations or Elements

It is sometimes possible to make the work easier by simply combining two or more operations, or by making some changes in method permitting operations to be combined.

C. Change the Sequence of Operations

When a new product goes into production it frequently is made in small quantities on an “experimental” basis. Production often increases gradually, and in time output becomes large, but the original sequence of operations may be kept the same as when production was small. For this and for other reasons it is desirable to question the order in which the various operations are performed.

D. Simplify the Necessary Operations

- One of the best ways to approach the problem of methods improvement is to question everything about the job- the way the job is being done, the materials that are being used, the tools and equipment, the working conditions, and the design of the product itself.
- Assume that nothing about the job is perfect. Begin by asking the questions: What? Who? Where? When? How? Why?
- Question each element or hand motion. Just as in an analysis of the process we tried to eliminate, combine, and rearrange the sequence of operations, so in the single operation we try to eliminate motions, combine them, or rearrange the sequence of necessary motions in order to make the job easier.

Tools for Methods Improvement

- Because several different methods of visualizing a process or an operation are widely used, each of them will be fully described later. Of course, not all of these different methods would be used on any one job. For example, it may be found that a process chart or flow diagram is all that is needed.
- If a single operation is the subject for study, then the operation chart may be used. The activity chart and the man and machine chart are also useful, and occasionally it may be worthwhile to make a micromotion analysis of the job, particularly if the cycle is short and a large number of people are employed on it.
- **Note:** It should be clearly understood, however, that the process chart, flow diagram, activity chart, man and machine chart, operation chart, and simo chart are merely tools to be used as needed.