Enrichment Of Quality And Productivity Through Simple Measurement Techniques

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Abstract -- **Globalization has thrown lot of challenges to the industries in the field of quality and productivity, quality and productivity are synonymous. Improvements in quality can lead directly to increased productivity, capability and profit. Quality management is not as fashionable as re-engineering, but it contains all the elements for the productive company of the future. Companies without quality management have to pray that their competitors remain incompetent. Through some simple measurement techniques is possible to add certainty to the path of productivity. Therefore it is important to take measurements to enrich quality and productivity of the organisation. If the initial performance is not measured the company will face difficulties in setting targets. Without targets, company has no way of judging productivity.**

Keywords: Management, Measurement techniques, Productivity, Quality.

1. Introduction:

Companies' record measure shows what is actually happening in the business. These measures help companies to predict changes in sales or turnover. The most important measurements are shown in Fig.1.and each of them is explained below.

1.1 Productivity:

It is an easy measure, because all companies know how much they produce. The task is then to set goals for improvement. Accountancy practices measure turnover per member of staff. Some manufacturers have weekly marks for various production issues.

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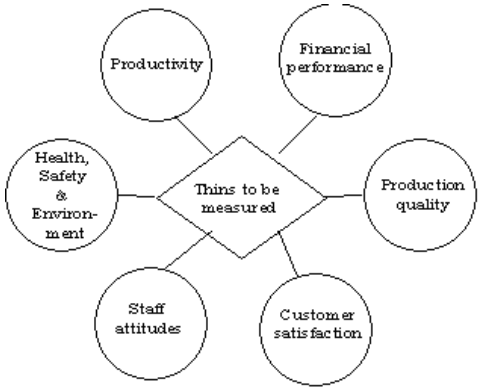

Fig.1 Measurements

1.2 Financial performance:

Companies keep detailed financial records, but the figures are not always informative. This is why ratios are useful, because they track corporate progress.

Financial information should be made more widely available: below director level, managers are often unaware of the company's month-to-month financial state. It is also worth noting that while financial data indicate success or failure, they do not explain why sales have risen or why customers have stopped buying.

1.3 Production quality:

Much of the measurement technique is spent looking at ways of measuring production quality. These measurements apply to service companies, as well, though customer service measures may be even more relevant.

1.4 Customer satisfaction:

The organization should check how responsive it is to customers. This can mean speed of answering the telephone, speed of settling customer complaints, or delivery reliability. It may also mean measuring customer loyalty and the number of complaints.

1.5 Staff attitudes:

If employees are de motivated, product quality will decline, as will productivity.

1.6 Health, safety and the environment:

A power station will measure the number of accidents in a year, while a food processor measures the chemicals in its local river. Some water companies even measure convictions for pollution. Companies in traditionally polluting industries are showing a downward trend.

Taking measurements allows the company to evaluate improvements overtime and asses cash savings. It is important to start recording before an improvement starts. Otherwise the true effect of the quality management program cannot be seen.[1]

2. Methodology:

There are simple measurement techniques for measuring the processes and solving problems. Companies can use these simple measurements for enhancing the productivity and reducing complexity in statistics.

Measuring the company's processes is often called statistical process control (SPC). Though it sounds technical, it is really very simple to adopt SPC,

- Collect data for main processes
- Analyze the numbers
- Make decisions based on what is found.

This can simply mean checking how many items are outside the specification, seeing where the problems are, and fixing them. SPC is 90 per cent problem solving and 10 per cent statistics. At first, the workforce may complain about having to keep extra records. They may grumble that it slows them down. Only later will they see that keeping records and analyzing the data gives them valuable information and more control over their work. SPC is often used to predict problems. If the quantity of rejected items is growing, it reveals that a machine may need maintenance or re-setting.

There are many ways to measure a process and solve problems. Some of the popular methods are

- Control charts
- Bar chart or histogram
- Pareto analysis
- Cause and effect analysis

3. Case studies:

Here are some case studies which reveal the success measuring techniques

3.1 Control charts:

The control chart is the most commonly used tool in SPC. It is produced by taking measurements at random, from as little as 5 per cent of the total production. Fig.2. shows that the process is gradually going 'out of control'. That is, the products are going beyond the limits marked by the dashed lines. This kind of chart shows trends, and helps staff to take corrective action before the product goes outside the specification and has to be scrapped.[2]

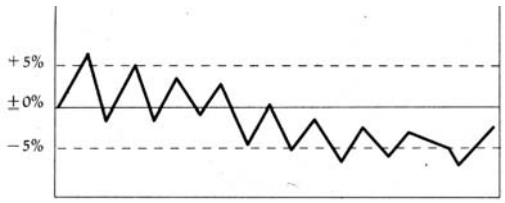

Fig. 2 Control Chart

Data are shown as a graph on a computer screen. When the graph exceeds pre-set tolerances, the screen' turns red and alerts the operator. At one steel plant, this has saved a million a year on one process alone. At other companies, the computer changes the machine to bring the process back inside the tolerances. [4]

3.2 Histogram:

Fig.3 shows that the greatest numbers of faults are in processes 2 and 4. Another chart might show that faults take place on certain shifts, at certain times of the day, or on certain processes. This helps the company to track down and prevent problems from recurring.

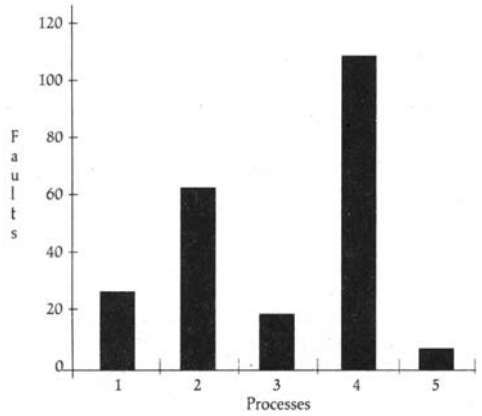

Fig. 3 Histogram

3.3 Pareto analysis

A Pareto analysis is often referred to as the 80/20 rule. 80 per cent of the problems are caused by 20 per cent of the activities. At a vinyl floor manufacturing unit, most of the problems occurred when the material was, put through a printing process. The other processes worked well. The next stage was to find out where in the printing process most of the faults took place. The company found that the scrap occurred when patterns were changed. Then management investigated how to get the printing registration accurate faster, and how to get the colour balance right faster. This led to big reductions in scrap.

3.4 Cause and effect analysis:

A cause and effect chart is also known as a fishbone chart, from its spiny appearance. It shows a problem and its possible causes. Fig.4 is an example of a retailer examining why sales have fallen Companies should only use simple measurements. If people can't understand them, they should not use them. There is no need for complex statistics. The graphs should be displayed prominently, so that all staff can see progress. Some companies use large electronic scoreboards. These can be quickly updated, and are highly visible. There are costs attached to poor quality, the company has to spend time and money fixing the error. A cost of quality audit will reveal how much money was wasted. Firms can do these before starting a Quality Management project. The cost of quality audit will reveal the scale of savings possible [2]

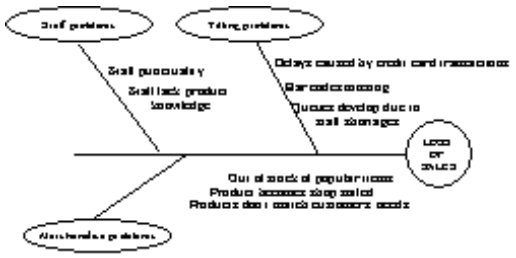

Fig. 4. Cause & Effect diagram

3.5 Benchmarking:

It is not easy to get the information about competitors. Measuring non-competitors performance may not very much. Some firms benchmark their performance against historical performance. It is best to compare the firm against the best firms. [3]

Benchmarking is sometimes used by companies' fear that they are falling behind. True market leaders tend not to look over their shoulder; they are too busy hurdling the next jump. So it would be unwise to treat it as main weapon. Comparisons of performance are not made it will be difficult to know how well the company is doing.

3.6 Brainstorming:

An organization also needs creative thought and new ideas for productive activities. One of the best techniques is brainstorming.

In brainstorming session, every one the group is encouraged to put forward ideas. The session should encourage lateral thinking. All the ideas are written on the papers which are stuck on the walls. Nobody is allowed to criticise any idea that would reduce people's willingness to put forward suggestions.

A target of 100 -150 ideas are to be set. After reaching the target the ideas are reviewed and the best ones used. [2]

This questionnaire may help to assess the range and effectiveness of the measurements taken at the place of work.

- Do you regularly measure the quality of products and services?
- Do production staffs use SPC techniques?
- Quality of products and services are benchmarked against others oftenly?
- Is company measuring the cost of quality regularly?
- Score one point for every 'Yes' answer
- And state whether the company is in control of its quality or not.

4. Conclusion:

Recent evidence shows that more and more companies are recognising the importance of measurements techniques if they have to survive domestic and world wide competition. Quality management is not limited only to the conformance of the product or service to specification; it also involves the inherent quality in the design of the system. The prevention of product, service, and process problems is a more desirable objective than taking corrective action after the product is manufactured or a service is rendered. In this context simple measurement technique is the perfect tool for enriching the quality and productivity.

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