III. LITERATURE REVIEW

A. COST

1. Definition of Cost

Information about the systematic and comparative costs required to manage the company well. This information helps management to establish corporate earnings goals, evaluate the effectiveness of the plan, and reveal success or failure of the entire organization. In order to achieve this goal, systems must be designed to provide information on time. Furthermore, this information must be communicated effectively. For that, the needs for cost control become dominant.

Without cost information, management does not have information whether its business making a profit or not. This is very important because the profits necessary to develop or maintain the sustainability of the company. Without cost information, management also has no basis to allocate economic resources.

Based on this view Sunarto (2004: 2) reveal generally that: "Cost is the cost of goods or parts used or consumed to earn income". This definition has characteristics such as usage items, linkage with an output destination and assessment. The use of the more refined characteristics is needed to generate a more detailed terms of the cost.

According to Mulyadi (1993: 8), the cost is a sacrifice of economic resources measured in units of money that has occurred or may have occurred for a particular purpose. There are four main elements in the definition of costs, namely:

1. The cost is a sacrifice of economic resources.
2. Measured in units of money
3. Which has occurred or potentially will occur.
4. Sacrifice is for a particular purpose.

Witjaksono (2006: 6) states that: "Cost is a sacrifice of resources to achieve a particular goal."

Mursyidi (2008: 14) states that: "The cost is defined as a sacrifice to reduce the cash or other assets to accomplish goals, which can be charged at this time and in the future."

Based on the definitions above, used the accumulated data about cost for inventory valuation and for the preparation of financial reports. However, for planning purposes of analysis and decision-making, it often have to deal with the future and try to calculate the hidden costs, the deferential cost, the opportunity cost should be based on the cost in the past. Therefore it is a basic requirement that the costs should be interpreted in conjunction with the goals and purposes of use.
2. Classification of Costs

According to Mulyadi (1993: 14) costs can be classified according to:

a. Object of expenditure

In this classification, the name of expenditure object is the basis of cost classification, such as the object name is the fuel expenses, all expenses that associated with fuel called "fuel costs".

b. Principal functions of the company

In the manufacturing, costs can be categorized into three groups:

1. Cost of production

Production costs are costs incurred to process raw materials into finished products that ready for sale. According to the object of expenditure, cost of production is divided into the cost of raw materials, direct labor costs and factory overhead costs. Cost of raw materials and direct labor costs is called the main cost (primary cost). While the factory overhead costs called conversion cost, which is the cost to convert raw materials into finished products.

2. Marketing costs

Marketing costs are costs incurred in carrying out marketing activities for the product. An example is the cost of the promotion, the cost of transportation from corporate warehouse to customer warehouse, salaries of employees who carry out marketing activities, and the cost of sample.

3. General and administrative costs

General and administrative costs are costs to coordinate the activities of production and marketing of production. An example is the cost of employee salaries of finance, accounting, personnel and public relations (Mulyadi, 1993: 14).

c. Relationship of costs with something that be financed

In relationship with something that is financed, the cost can be grouped into two categories:

1. Direct costs (direct cost)

Direct costs are costs that occur, which cause the only thing is because of something that is financed. Direct production costs consist of costs of raw materials and direct labor cost. An example is the cost of labor work in the Maintenance Department and depreciation costs used in the engine department (Mulyadi, 1993: 15).

2. Indirect costs (indirect costs)

Indirect costs are costs incurred that not only is caused by something that is financed. Indirect costs in relation to the products referred to as indirect costs or factory overhead costs (Mulyadi, 1993: 15). Indirect cost is related to the particular cost object but cannot be trace to it in economically feasible (cost-effective) way. For example, the salaries of supervisors who oversee production of the many different soft drink products (Horngren 2005: 27)

d. Cost behavior in relation to changes in volume activity.

In relation to the change in volume of activity, the costs can be classified into:

1. Variable costs

Variable costs are costs that the total volume change is proportional to the change in activity. For example are cost of raw materials and direct labor.
2. Semi-variable costs
   Semi-variable costs are costs that change is not proportional to the change in volume of activity.
3. Semi-fixed costs
   Semi-fixed costs are fixed costs for certain activities and the level of volume change with a constant amount at a certain production volume.
4. Fixed costs
   Fixed costs are costs that the total volume remains in the range of specific activities. For example is salary for production director (Mulyadi, 1993: 16).

e. Benefit period
   On the basis of the benefit period, the cost can be divided into two general categories:
   1. Capital expenditure
      Capital expenditure is the cost of benefits that have more than one accounting period (usually the accounting period is one calendar year). These capital expenditures deducted as the cost of the asset and expensed in the years when enjoy the benefits by depreciation, amortized or depletion.
   2. Revenue expenditure
      Revenue expenditure is a cost that only has benefits in the accounting period of the expenditure. At the time of occurrence, revenue expenditure is charged as an expense and met with income earned from such expenditures (Mulyadi, 1993:17).

QUALITY

1. Definition of Quality

   In general, some experts define quality as follows:
   a. Philip B. Crosby
      Crosby argues that quality means conformance to requirements (Suardi, 2003: 2).
   b. W. Edwards Deming
      Deming believes that quality means problem solving to achieve continuous improvement (Suardi, 2003: 3).
   c. Joseph M. Juran
      Juran believes that quality means conformance to usage (Suardi, 2003: 3).
   d. K. Ishikawa
      Ishikawa believes that quality means customer satisfaction (Suardi, 2003: 3).
   e. Quality according to ISO 9000:2000
      According to ISO 9000:2000, quality is the degree from a series of characteristics of the product or services that meet the needs or expectations which can be expressed (Suardi, 2003: 3).
2. **Dimensions of Quality**

According to Hansen and Mowen (2005: 5-6), a quality product or service is meeting or exceeding customer expectations in the following eight dimensions:

a. **Performance**: A good level of consistency and product functions.

b. **Aesthetics**: Associated with the appearance of products and services.

c. **Serviceability**: Associated with the ease of caring for and improving the product.

d. **Features**: Characteristics of the product which is functionally different from similar products.

e. **Reliability**: The probability of the product or service to perform the intended function within a certain period

f. **Durability**: A useful life of the product function.

g. **Quality of conformance**: A measure of whether a product or service has met the specifications.

h. **Fitness for use**: Compatibility of a product to perform these functions as advertised.

3. **Basic factors affecting the quality**

According to Feigenbaum (1992: 54-55) basic factors affecting the quality consist of nine basic areas called 9M, as follows:

a. **Market**

In the present market have a wider scope and even more functionally specialized in the goods and services offered. With the growing number of companies, markets become international and even global. As a result, each company must compete with each other to improve the quality of products.

b. **Money**

To improve quality of the products, companies need a cost. Costs used to improve the quality of business referred to the cost of quality.

c. **Management**

Quality management is management that able to allocate the responsibility of every manager in their respective fields appropriately. It aims to correct deviations from specified quality standards.

d. **Men**

With the men who have expertise in their respective fields, the company will plan, create and operate the various systems that will ensure a desired result.

e. **Motivation**

Giving a good motivation for workers will make the workers work correctly in accordance with the desired company. It gives a good impact for the company to improve product quality.

f. **Material**

A quality product requires quality materials, therefore the supply of materials needed to be more stringent testing.

g. **Machines and mechanization**

A Company demand to achieve cost reductions and production volume to satisfy customer in a competitive market has prompted the use of plant equipments.
h. Modern information methods

Information at the present time is very important. For example, information about customer response for the products. That information must be obtained by the company for a consideration of decision making. This requires modern information methods to obtain information quickly and accurately.

i. Mounting product requirements

The rapid advances in the complexity of engineering design have made things that previously were overlooked become potentially important. The increasing complexity and requirements of a product make the product becomes more secure and more qualified.

QUALITY RELATED COSTS

1. Definition of quality related costs

According to Blocher et al. (2000: 220) quality related costs are costs associated with the prevention, identification, repair and rectification of poor quality products and the opportunity cost of lost production time and sales as a result of poor quality.

There are several definitions of quality costs were:

a. Quality costs are defined as costs that occur because of poor quality.
b. Quality costs are the costs incurred by the company because doing the work incorrectly.
c. Quality costs are the costs incurred because of the activities that are not directly required to support departmental objectives.
d. Quality costs are costs necessary to achieve a quality (Adnan, 2000: 119).

2. Classification of quality related costs

Basically the quality related costs can be categorized into four types, namely:

a. Prevention costs

Prevention costs are expenses incurred to prevent quality defects. The costs of prevention are comprised of:

1. Cost of quality training

Cost of quality training are the expenses for the internal and external training programs which include wages and salaries paid in the training, the cost of instruction, clerical staff costs and miscellaneous expenses.

2. Costs of quality planning

Costs of quality planning are wages and overhead for quality planning, quality circles, the design of new procedures, new equipment design to improve the quality, reliability, and supplier evaluation.

3. Costs of equipment maintenance

Costs of equipment maintenance are costs incurred to install, customize, maintain, repair, and inspection of production equipment, processes, and systems.
4. Costs of supplier warranty

Costs of supplier warranty are the cost incurred to develop requirements and measurement data, auditing, and reporting quality.

b. Costs assessment (Appraisal).

Costs assessment (detection) were spent in order to measure and analyze the data to determine whether the product or service accordance with specifications or not. These costs occur after production but before sale. The costs of this assessment consist of:

1. Costs of testing and inspection

Testing and inspection costs are costs incurred to test and inspect the material that comes, products in process and finished product or service.

2. Costs for testing equipment

Testing equipment is the expenditure incurred to acquire, operate or maintain the facilities, software, machinery, and testing equipment quality assessment of products, services or processes.

3. Costs for quality audit

Quality audit is the salaries and wages of all people involved in the assessment of the quality of products or services and other expenses incurred during quality assessment.

4. Costs for tests in laboratory

Tests in laboratory are the materials and equipment for testing, sample products tested, and salaries of employees involved in testing.

5. Costs of information

Cost of information is the cost to prepare and prove the report of quality. This cost is the cost for making a document of testing result and salary for workers who make the document.

c. Internal failure costs

Internal failure costs are costs incurred due to the low quality which discovered since preliminary assessment at the factory until delivery to the customer. Internal failure costs consist of:

1. Costs of corrective action

Costs of corrective action are the costs for the time that has been spent to find the cause of failure and to correct the problem.

2. Costs of rework

Costs of rework are materials, direct labor and overhead for the rest of the production, rework and re-inspection.

3. Costs of re-process

Costs of re-process are the costs to redesign product or process, unplanned machine stops, and the failure of any interruption of production due to process improvement and rework.

4. Costs of re-expedition

Costs of re-expedition are costs incurred to speed up the processing operation because of the time spent to repair or rework.

5. Costs of re-inspection and re-testing

Re-inspection and re-testing costs are salaries, wages and costs incurred for re-inspection or re-testing of products that have been repaired.
d. **External failure costs**

External failure costs are costs incurred in order to rectify the defective quality of the product after delivery to the customer. In addition, included in external failure cost is the profit that failed to obtain because the product or service cannot be accepted by customers. The following examples are included in the external failure costs:

1. **Costs for handling complaints and returns from customer**

   Costs for handling complaints and returns from customer are the salary and administrative overhead for the customer service department to improve the products which are returned, the reserves or deductions for low quality, and cost of transport.

2. **Costs of the recall and product liability**

   Costs of the recall and product liability are administrative costs to handle product returns.

3. **Lost sales because the product is unsatisfactory**

   Lost sales due to products that do not satisfy is the contribution margin that lost because of delayed orders, lost sales and declining market share (Blocher *et al* 2000: 220).

Quality related costs can also be classified as a cost that can be observed or hidden. The quality related cost can be observed (observable quality costs) are costs that are obtained from the company's accounting records, for example, the cost of quality planning, inspection costs of distribution and rework costs. Hidden costs are the opportunity cost that occurs due to poor product quality and usually opportunity cost are not presented in the accounting records, for example the cost of lost sales, customer dissatisfaction costs and the costs of losing market share (Hansen and Mowen, 2005: 9).

### 3. Analysis of Quality Costs

After the quality related costs are identified and prepared in accordance with the classification categories, then the cost of quality can be analyzed to be used as the basis for determine priority actions. This analysis process consists of checking each elements and total cost. The process can also compare the operation of one period with the previous period. Benchmarking would be more meaningful if the cost of quality is compared with other activities within the company.

To determine precisely the areas that should receive the highest priority of quality effort is required a details about the overall of quality related cost (Feigenbaum, 1992: 112). Companies can also use the Pareto diagram to determine areas that should be priority concern to reduce quality related cost. Pareto diagram can help companies to determine the major problems with the least amount but has a big impact.

Meanwhile, according to Gaspersz (2005: 168) companies measure and analyze quality related costs as an indicator of the success of quality improvement program which can be related to other cost measures, namely:

a. Quality related cost compared to the value of sales. The lower of this value indicates the success of quality improvement programs.

b. Quality related cost compared with a profit. The lower of this value indicates the success of quality improvement programs.
c. Quality related cost compared to the cost of goods sold. This value measured by the percentage of the total quality costs to the value of sales, where the low value indicates the success of the quality improvement program.

4. **Optimal Distribution of Quality Costs**

a. **Traditional View**

The traditional view assumes that there is a trade off between prevention cost and failure product cost. When the cost of control increases, the cost of product failure must decrease. During the failed product cost reduction is greater than the increase in prevention costs, companies must continue their efforts to prevent or detect defective products. In the end, will be reached a point where the increase in prevention cost greater than the decrease in failure product cost. This point illustrates the minimum level of total quality related cost and an optimal balance between prevention cost and failure product cost. This point is also called the acceptable quality level (AQL) (Hansen and Mowen, 2005: 14).

f. **Contemporary views**

In contemporary view used zero defect models. This model states that by reducing defects to zero, company will get a cost advantage. Companies that produce fewer defective products will be more competitive than companies that use the model of AQL. This model then was revised again with robust quality model. According to this model, the loss occurs because it manufactures 28 products which deviate from the target value and the farther deviation the greater loss. Besides, the loss is still possible even though the deviation was within the specification tolerance. In other words, the variation of ideal specifications is prejudice and tolerances do not offer any benefit. Model of a zero defect can reduce quality related costs thereby offering saving in both cost and quality of work overload (Mowen and Hansen, 2005: 14).

D. **PARETO DIAGRAM**

Pareto diagram is a graphical tool to gain insight into the most important causes of a problem. It is a bar chart in which the data are arranged in descending order of their importance; the diagram displays the relative contribution of each item to the total effect in decreasing order (Hubert 2001). Based on this, the most important problems can be distinguished from the less important ones and the greatest improvement can be realized with the least effort.

The Pareto principle, applied to quality work, suggests that the majority of quality losses are maldistributed in such a way that a “vital few” quality defects or problems always constitute a high percentage of the total quality losses (Kolarik 1999). The most important causes of a problem and priorities can be identified. It aids the decision-making process because it puts the most critical issue into understood frame work (Hubert 2001).

In detail, the function of Pareto diagram is as follows:

1. Shows the major problem
2. Declare the comparison of each issue to the overall
3. Shows the level of improvement after the corrective action on selected issues
4. Shows the proportion of each issue before and after repair.
According to Muhandri 2005, the steps in making Pareto diagram are:

1. Stratification of the problem and state the number
2. Determine the period of data collection. To ease in comparison, make that same period between the collection of data before and after repair the problem.
3. Set each cause (from stratification) sequentially in accordance with the value and draw the graph columns. The biggest cause is on the far left. If there is a cause "others", it is placed on the far right.
4. Draw a line graph that shows the percentage in the top of the column chart, beginning with the largest. At the bottom of each column write the name or description of the column.
5. At the top or side of the diagram given the name and the amount of the total unit.