

QUALITY COST CONCEPTS¹

OBJECTIVE 3

Identify four types of quality costs and explain how managers use these costs to improve performance.

Quality costs are costs incurred because poor quality can or does exist in a particular product, function, or business.² Quality refers to conformance to design specifications. Thus, quality costs are costs incurred to ensure that quality standards are met or because quality standards are not met. These costs of conformance often are divided into three categories: prevention, appraisal, and failure.

Prevention costs are costs incurred to prevent the production of poor-quality units (in manufacturing organizations) or poor-quality services (in service organizations). MetalArt uses statistical process control to monitor production and to make necessary changes if a process slips out of control. Thus, the cost of implementing statistical process control techniques to prevent paint from being applied in the wrong place is an example of prevention costs.

Appraisal costs are costs incurred to identify poor-quality products (or services) before a customer receives the goods or services. The cost of inspections within the MetalArt plant is classified as an appraisal cost. A goal of world-class organizations is to design a production process that is in a state of control and exhibits little random variation. A good process that is in control produces high-quality products, making less inspection necessary. Therefore, a company usually benefits by investing in prevention, rather than appraisal, activities.

Failure costs are costs incurred because poor quality exists. Failure costs may be divided into two categories, internal failure costs and external failure costs. If a defective product or service is discovered before it is delivered to the customer, the cost is considered an internal failure cost. However, if a customer discovers a defective product or service, the cost is considered an external failure cost. For example, if paint is applied outside of the proper location during printing and subsequently damages welding equipment when a customer manufactures a can, MetalArt has incurred an external failure cost. Some failure costs are easy to quantify; however, customer ill will associated with discovering a defective product or service is difficult to measure. When W. Edwards Deming, a famous industrial statistician, said that the costs of poor quality are unknown and unknowable, he referred to the inability to determine the cost of unhappy customers.

Firms that measure quality costs wish to track the level of internal failure, external failure, appraisal, and prevention costs over time. Typically, a firm that embraces a quality program invests additional resources in prevention and appraisal activities to reduce failure costs. Over time, as processes become more reliable, failure costs decline. Of course, the objective is not merely to substitute one type of quality cost for another. Managers wish to see a decline in total quality costs as investments in improved processes produce results.

Exhibit 6, on page M266, illustrates MetalArt's experience in managing quality costs. At first, failure costs were high. Then management implemented appraisal and prevention measures. Over time, the quality of production at MetalArt improved, and total quality costs began to decline. Finally, total quality costs reached a level far below their initial amounts.

7-8 Refer to the process description in Exercise 7-7. The following information was pulled from the company's records.

Obj. 3

- A container of glass was broken as the result of a forklift accident at the end of the production line.
- Customers returned 25% of a shipment to the company because the glass contained impurities.
- The melting oven crew members attended a national glass manufacturers' conference to learn about new manufacturing technologies and methods.
- The company implemented a three-step raw materials inspection program to verify raw material quality and purity.
- Managers at all levels were trained in statistical process control methods.

Classify each event as internal failure, external failure, prevention, or appraisal. Support your answers.

7-9 Companies that implement quality cost systems typically use four cost categories. Classify the following costs as internal failure, external failure, prevention, or appraisal:

Obj. 3

- Scrap
- Warranty claims
- First-part inspection of a new production run
- Quality control education

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