

The House of Quality

By Praveen Gupta

Quality function deployment – QFD – changes the focus to value from price by pairing your capabilities with customer requirements.

Many businesses fail when competing based solely on providing the lowest price. As more manufacturing is outsourced, the focus is on total cost of the product or service (i.e., lowest price), rather than the best value of quality and features. This must change.

I have personally experienced situations in which a company's top executives did not care about quality, going so far as to ask what "quality" had to do with business. Each time, the company failed. It's amazing, but quality is still overlooked. Fortunately, many companies are trying to change, to provide the best value to their customers. One of the tools I believe could be useful in becoming a customer-driven best-in-class organization is quality function deployment.

QFD is a tool for translating customer requirements into company requirements and identifying features or capabilities required to become a best-in-class provider. Today, customers are demanding ever-more-challenging levels of quality. A customer lost due to poor quality may never return, and, even worse, may take several potential customers with it. For electronics manufacturing, in which M&As are routine and capital investment is increasing, a reasonable return on investment can be achieved only by being a superior supplier. One must understand the difference between value and price. With competition growing, it is easier to become profitable through better value than by having the lowest price.

PCB manufacturing is constrained by previous capital investments. We need to determine which manufacturing operations are most critical to producing the customer-specified critical characteristics. These manufacturing operations are implemented through operating procedures. The procedures include SPC plans, operator instructions, training, and prevention of inadvertent errors. The challenge is how to maximize the use of resources to meet customer requirements in the best possible way. QFD is a detailed approach. Initially, it may appear tedious and difficult, but companies that have used the approach have been very successful. The most crucial part of the QFD approach is the initial stage, when a company's capabilities and features must be thoroughly understood in relation to the best of the competition. Then, identifying what actions should occur in order to compete with the best competition becomes a major change in management thinking, not merely an action for survival.

QFD enables the preservation and use of knowledge through detailed thinking and graphical representation. This representation is known as the "House of Quality," and contributes to improved customer satisfaction, methodical decision-making, and prioritization of customer requirements. The bottom line: improved quality, reduced cost, increased responsiveness. It's a house of many rooms (Figure 1). The first major room is comprised of a relationship matrix between a customer's requirements and the supplier's ability (via product features) to meet those requirements. The requirements have been prioritized according to the customer's perspective. The

relationship can be graded as strong, moderate, or weak, represented by three symbols (points), a double circle (9), a single circle (3), or a triangle (1), respectively. The intent here is to ensure that all critical customer requirements have a strong connection to a feature or ability provided by the manufacturer. It is also intended to find out if a company is providing unnecessary features or services.

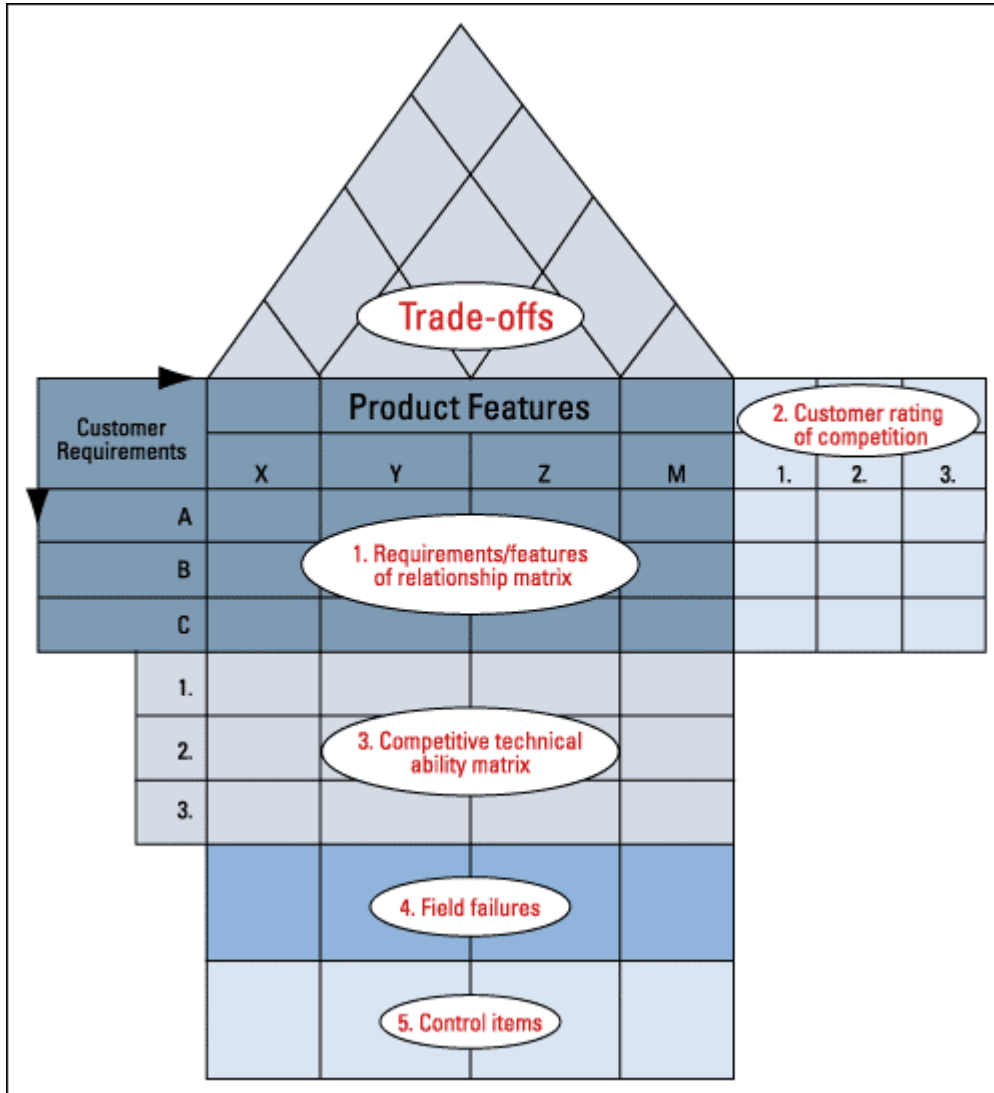


Figure 1. The house of quality prioritizes action based on what's important to the customer. Relationships are represented by symbols; a double circle is "strong," a single circle "moderate," a triangle "weak."

The next room is the customer rating of suppliers' products or services. Here management must decide whether to compare the company's products or services with a typical competitor or the best two competitors, using the perspective of the customer. One should not be intimidated by the sheer size of the competition. The purpose here is merely to select the top two competitors, then rank their performance against your's based on the customers' requirements. This helps to identify which requirements need more attention or resources to gain a competitive edge. This customer rating information can be collected from customers. Just ask them.

The third room in our house is the competitive technical ability matrix, which rates your company's technical ability in meeting customer requirements against the leading competitor's. This information can typically be gathered from vendors, as they work with many companies in the same industry. The technical ability matrix helps identify what additional resources are needed to ensure high customer satisfaction in meeting customers' critical requirements, and it helps to prioritize your company's resources effectively to optimize ROI.

The next room is for measuring the field performance of your product or service. Based on field performance, some adjustments must be made to make the product or service best-in-class.

The final room identifies necessary internal controls required to ensure consistent delivery of best-in-class products and features to delight the customers.

All this analysis is then summarized to prioritize opportunities for improvement based on the customers' perspective and to allocate your resources to achieve the best results. There are several other steps to implementing the QFD methodology; however, this first step will certainly get you on your way.