



### Quality Function Deployment

QFD is a technique that translates customer requirements, expressed in the customers' language, into an action plan. While listening to customers has always been a good business practice, QFD formalizes the somewhat arbitrary practice of just listening to and then trying to meet some of the customers' needs by creating a ranking of the most important customer requirements. It also ensures these get heard by all the functions within the firm who need to know.

#### How Does It Work?

QFD is a series of interconnecting matrices – often called the House of Quality because the completed matrices resemble a house. An excellent description of how to build such a house is given in Hauser and Clausing (1988). Each segment of the matrix is important in assessing:

- customer requirements;
- the actions over which a business has control; and
- the relationship between these two

A small team is formed to work on a new product opportunity or enhancement. A typical team can consist of members from the marketing, engineering and production departments. In addition, customers are represented on the team. The team will hold a series of discussions with customers to explore needs and priorities. From this information, solutions will be identified to meet these needs.

Matrices convey information about the following issues:

- **Customer requirements** – identified and documented in the customer's own language.
- **Relative importance of each customer requirement** – not all customer requirements are of equal importance to the customer. Assigning a relative weight to each of them reflects the relative importance of the requirements.
- **Business parameters** – the business parameters that might be used to satisfy the customer requirements are listed across the ceiling of the house of quality. The parameters are written in the language of the business.
- **Relationship matrix** – relationships between the customer requirements and the business parameters are developed in the body of the matrix. The relationships are usually specified as 'strongly related', 'moderately related', 'weakly related' or 'not related', and the matrix is developed using a symbol for each.
- **Computed ranking of business parameters** – the results of fundamental computations integrating the information previously identified are presented in this area of the house of quality. The business parameters are ranked such that those with the highest score will have the greatest impact on the most important customer requirements and will address the greatest number of customer requirements.
- **Competitors' positions** – in a competitive market, realistic assessment of both the competition and your own capability is important.



- **Correlation between business parameters** – the purpose of this step is to define relationships between the technical requirements, especially those that may require a trade-off in the final analysis.

### Hints For Using This Tool

Firms attempting QFD should probably start with a pilot exercise.

Other implementation issues to consider include:

#### **Project size**

QFD at its best uses and develops a great deal of information. Choosing a project that is too broad in scope should be avoided. At the same time, the project should be meaningful to the project team. Somewhere between too trivial and too broad is the ideal project.

#### **Confidence building**

The initial project should build confidence. This can be aided in project selection. A project that is known to be very difficult, or open-ended, should be avoided. Try to identify a project that will be successful in terms of a meaningful completion of the study. Further, this project should be of a size to allow results to be seen quickly.

#### **Project definition**

It is important that the project be well-defined and bounded. The project team should know and understand how far they should go in considering data or implementing solutions. Avoid artificially imposed constraints, such as finishing within a fixed number of days.

#### **Cross-functional teams**

The composition of the project team can be critical to success. It should be representative of all areas that may have a bearing on the problem. Include marketing, purchasing and finance in the team. Consider suppliers and customers being represented.

#### **QFD should not be mandated**

It is a useful tool, but not a universal tool. Its use should be to fill a need, not simply to use a tool. Remember, too, that QFD is information-intensive. The study team will deal with a great quantity of data, and there may be a temptation to require a high degree of accuracy and precision.

#### **Outside data should be sought and used**

Market research and other supporting studies should be carefully planned, to elicit the kind and quality of response that will be most meaningful.

#### **Do not stop too soon**

QFD is a long process, with most of it analytical. It is true that a great deal can be learned from the house of quality. This is information, however, not a prescription for action.

### Further Information

J. Hauser and D. Clausing, 'The house of quality', *Harvard Business Review* (May-June 1988), 63-73.