

# **In a Freer WTO Trade Regime, Food Industry Must Focus on Quality management**

IIM-A Working paper # 2001-04-06

**Satish Y. Deodhar\***  
IIM-A

satish@iimahd.ernet.in

## **Abstract**

In the new WTO led freer trade environment, Indian food industry can compete globally only if it is price and quality competitive. While many have addressed price competitiveness, sensitising food industry on the importance of quality competitiveness has become essential. Mainstream management research has studied quality management in manufacturing sector extensively. However, there is scant attention paid to quality management in food sector. I attempt to relate various dimensions of quality and quality management systems in the context of food industry. Although adopting strategic quality management practices needs a basic change in attitude which cannot happen overnight, a tangible beginning can be made in terms of adopting quality assurance system called HACCP.

\* Assistant Professor, Centre for Management in Agriculture, Indian Institute of Management, Ahmedabad, India

## **1. Introduction**

India began its economic liberalisation in 1991 and World Trade Organization (WTO) came into being in 1995. These two events were the harbingers of a freer trade regime food industry is experiencing today. With the eventual reduction in tariffs, subsidies and removal of quotas, India's performance in agricultural trade cannot sustain on the basis of various restrictive government interventions. In a liberalised world, it is the price and quality competitiveness that is going to generate more jobs and income domestically, earn or save precious foreign exchange and ensure food security to the nation. Price competitiveness of Indian food products has been measured using methods such as Nominal Protection Coefficient and Domestic Resource Cost (Datta, 2001; Naik, 2001; Sharma, 2001; Singh, 2001). However, these methods do not incorporate explicitly the quality dimensions of food products.

Many times, price competitiveness of Indian food products is a reflection of price discounting due to poor quality and/or poor quality reputation. In fact, Indian food industry is faced with asymmetric trade opportunities. When international prices are low there is deluge of imports into India, and, when international prices are high there is no symmetric spurt in exports due to quality problems. Therefore, quality competitiveness has never been so important as in the current liberalised trade environment. It is imperative that farmers and entrepreneurs engaged in post-harvest handling and food processing will have to commit themselves wholeheartedly to food quality management. Mainstream management research has paid sufficient attention to quality issues, but scant attention is paid to its application to food sector. In this paper I draw the attention of agribusiness professionals to the nuances of quality management as applicable to food

industry. A strategic attention paid to food quality management has a potential to reap rich dividends for the Indian food industry.

## **2. Definition and Dimensions of Food Quality**

There are various definitions of what is quality (Garvin, 1988). On the production side, the manufacturing-based definition gives emphasis on conformance to requirement, design, or specification. On the consumer side, user-based definition gives emphasis on capacity to satisfy wants and how well the product fits patterns of consumer preferences. The emphasis of each of the definitions depends on the importance given to various quality dimensions that go into the making of a food product. Understanding various dimensions of food quality and its strategic management is extremely important for enterprises in food sector to remain competitive in the current environment of freer global trade. The important dimensions of food quality are:

### Performance:

Performance refers to primary operating characteristics of a product. A real Basmati rice must give the aromatic smell when cooked compared to other rice varieties. Similarly, an ice-cream that melts faster than a competing brand would be ranked lower on performance dimension. Grapes exported to European Union have to have sweetness within a given range of brix. Else, their quality will be considered low based on performance dimension.

### Features:

Features are the secondary characteristics that supplement a product's basic functioning. Coffee powder sold in glass jars which can be used later for storing kitchen items, or selling orange juice in tetra-packs enhancing convenient use are examples of Features dimension of food products.

### Reliability:

Reliability reflects the probability of a product's malfunctioning or failing within a specified period of time. This dimension is applicable more to durable food items than items consumed instantly. Pickles, jams and namkins are eaten over a period of time. The brands which get spoiled more often than others will rank lower on this dimension.

### Safety:

Safety is one of the most important dimensions of food quality. If a food item is spoiled, its safety dimension is easily recognisable. However, food products can contain microbial, toxic and/or physical contaminants which are not recognisable before consumption. Consumer either falls sick after consumption of a food product or long-term effects of repeat consumption of a product could be hazardous to health. Diarrhea caused due to presence of salmonella bacteria in meat products, or long-term carcinogenic effects of presence of pesticide residues on fresh and processed vegetables are some of the examples.

### Conformance:

Conformance is the degree to which a product's design and operating characteristics meet pre-established standards. There are all kinds of specifications that need to be adhered to for food products. These specifications may involve a permissible

range of variation for a particular parameter or a inequality norm for it. For example, there always will be a permissible range of acidity level and salt concentration for pickles that maintains a standard taste and prevents spoilage as well. Control charts can be used to monitor conformance to the specifications. Similarly, Codex standard for maximum permissible level for aflatoxin in groundnut is 15 ppb, much less than the Indian standard of 30 ppb. In fact, European Union standard is too strict at 5 ppb, creating a non-tariff-barriers to Indian groundnut exports.

#### Durability:

In manufacturing sector, durability means amount of use one gets from a product before it physically deteriorates. However, in food industry, a product cannot be used repeatedly. It has to be used either at once or in parts. Thus, durability in the context of food products reflects its shelf life. For example, the newly developed Ultra Heat Treated (UHT) milk has a shelf life of more than 3 months as compared to regular milk. In vegetables, different varieties have different shelf lives. For example, Namdhari variety of tomatoes has larger shelf life than Urvashi variety.

#### Aesthetics:

This dimension of quality is closely related to the user-based definition of quality. How a product looks, feels, tastes and/or smells is clearly a matter of personal judgement and a reflection of personal preferences. Nevertheless, there appears to be some uniformity in consumers' ranking of products on the basis of aesthetics. Study by Bonner and Nelson (1985) shows that high quality of food was most often associated with attributes such as 'rich/full flavour', 'tastes natural', 'tastes fresh', 'good aroma' and 'looks appetizing.' Brands that were clearly differentiated on the basis of these

characteristics were the ones which were most successful in establishing strong market positions.

#### Perceived Quality:

Consumers do not always possess all information about the product attributes. Hence, perceptions of quality in terms of images, advertising and brand names become critical. Dabur, which has a strong brand name as an Indian company manufacturing wholesome Indian foods. It will be cautious about publicising their “Made in Nepal” connection for the tetra-packed fruit drinks which would undermine their “made in India” image.

With so many dimensions to food quality, it will be a Herculean task to excel in all dimensions of food quality. Many of the dimensions mentioned above represent either the manufacturing-based or the user-based definition of food quality. How does one manage quality with multiplicity of dimensions? I now turn to management of food quality next.

### **3. Food Quality Management**

Quality management has gone through various phases, namely Inspection, Statistical Quality Control, Quality Assurance, and Strategic Quality Management. Each successive phase has build upon the previous methods and made significant improvements. With a wide range of food business units ranging from small vendors in informal sector the multinational companies, some elements of all the stages could be observed in India. These stages are:

### Inspection:

In the informal food sector, what is practised can at best be described as after-the-fact inspection conducted informally where production volumes are very small. Enterprises where volume of production is large, do carry-out formal inspection, however, still, the concept of quality control is limited to counting, sorting and grading. Troubleshooting is still beyond the reach of inspection department. Small operators making Indian sweets, namkins, or selling fresh produce would fall in this category to name a few.

### Statistical Quality Control:

Many of the present quality control techniques can be attributed to Shewhart (1931). He developed simple statistical techniques and graphic methods for plotting production values to assess whether important production parameters fall within acceptable range. These production process control techniques are being used in some of the large food processing firms in India. For example, many export oriented pickle manufacturing companies use control chart on daily basis to ascertain whether the production process is in control. The process control is achieved by maintaining important parameters such as acidity level and salt concentration within the desired range. The desired range for these parameters has to be based on three considerations, namely – consumer taste, safety and spoilage prevention, and standardisation of the branded pickle attributes. Important advantage of this method is its emphasis on preventing failure than relying on end-product testing.

### Quality Assurance:

The developments in statistical quality control, although pathbreaking, evolved from a narrow, manufacturing-based definition of quality. From 1950s onwards, concepts such as Cost of Quality, Total Quality Control, and Zero Defects emerged which are grouped into a common terminology called Quality Assurance. Juran (1951) observed that cost of quality can be divided into avoidable and unavoidable costs. The normal costs of inspection and process control are unavoidable as one needs to monitor production performance. However, costs of defect and product failure are avoidable costs. These would include scrapped material and disposal, labour hours for rework, complaint processing, and financial losses resulting from unhappy customers. Such costs can be drastically reduced by investing in quality improvement. A striking example of this is the rejection of Indian marine exports by European Union a few years ago. The failure was attributed to poor hygiene in production process and presence of harmful bacteria in the marine products. Rejection of 40 percent of the consignments during 1998 implies that additional investments in quality improvement would have been justified as long as failure costs were high.

Feigenbaum (1956) proposed Total Quality Control. He maintained that manufacturing department working in isolation of other departments couldn't produce high quality. To him, quality was everybody's job, and co-operation among various departments was essential to build quality. Finally, the last major development in Quality Assurance was the concept of Zero Defect. It had its origin in Martin Company, and, soon it was used in the food processing industry by Pillsbury Corporation. During



sixties, NASA had given a task to Pillsbury Corporation to prepare food items for astronauts. To be used in space, the food for the astronauts was expected to have a property of Zero Defect. Pillsbury Corporation took that challenge and developed a food safety management technique to produce Zero Defect food items for astronauts. Later, it used the system for the production of its commercial food products. The system now is popularly known as Hazard Analysis and Critical Control Points (HACCP). HACCP is a dedicated system application for food industry. A description of this system and its initial application in India is discussed in Deodhar *et al.* (2001).

#### Strategic Quality Management:

Many multinational companies were already practising quality assurance for the last couple of decades. However, with the changing times, they had to adopt what is now called, strategic quality management, that would be viewed as an aggressive competitive weapon. The important influences in United States that guided companies to adopt strategic quality management were - increased foreign competition, a sharp jump in product liability suits, and, especially, the dramatic inroads made by Japanese companies with their superior quality and reliability. With the opening up of the Indian markets, the Indian food industry is in a no different situation now.

Although Strategic Quality Management builds on the earlier concepts of inspection, quality control and quality assurance, it is much more comprehensive in its perspective. To begin with, it emphasises commitment to quality by top management whose interests are strategic and competitive. Among other things, it emphasizes on human resource development and retraining of workers through role modelling. I.e. the top management itself should set an example of undergoing periodic training. Moreover,

focus must be on defining quality dimensions from consumers' point of view and translating them into controllable manufacturing-based quality attributes. For this purpose, market research on quality becomes important. Further it must be followed by continuous improvement in quality, for competitors catch-up with your quality sooner or later. Lastly, it also understands the concept that one cannot excel in all dimensions of quality, and, hence, one could focus on a select set of dimensions that may cater to an identified niche market.

#### **4. Priorities for Indian Food Industry in Changing Times**

With the liberalisation of Indian economy and the onset of WTO regime, quality competitiveness will matter most in Indian food industry. Hence serious consideration must be given to quality issues. Quality management practices are common in established manufacturing industries and also in multinational companies that are in the food business. However, majority of the enterprises in food industry are oblivious of various quality management practices and the ways to apply them in food industry. Strategic food quality management cannot be practised overnight in the Indian food sector. Nevertheless, in the changing times one will have to move in that direction. Here an attempt is made to relate the quality management concepts to food industry. Entrepreneurs must learn to understand various dimensions of food quality and its management that will give them a competitive edge over others.

In this context, a tangible system an agribusiness could employ in a reasonably well-planned manner is the HACCP system. HACCP is a Quality Assurance system, and, although 'safety' of food products is the overriding quality dimension considered in

this system, it provides a systemic approach to address other dimensions of quality as well. Moreover, this system has also become a *de-facto* mandatory system for food companies in the new WTO regime. The reason is that HACCP is recommended by the Codex Alimentarius Commission (CAC), and, the CAC recommendation has been endorsed by the Agreement on Sanitary and Phytosanitary Measures (SPS) reached under the auspices of WTO..

At this time there are a number of foreign consultants and a few Indian consultants who specialise in development of HACCP system for individual firms. These consultants could be an expensive proposition for small entrepreneurs. However, some training programmes on HACCP may be initiated by central or state governments which impart HACCP training to employees and entrepreneurs of food companies. In fact, with the long-run perspective in mind, there is a need to conduct management development programmes on food quality issues. Such programmes will not only sensitise the entrepreneurs to quality as a competitive weapon, but prepare them to develop their own strategic quality management practices. In a freer WTO trade regime, food industry must focus on these issues in right earnest.

## References

- Bonner, P.G. and R. Nelson (1985). "Product Attributes and Perceived Quality: Foods," in J. Jacoby and J. Olson, eds., *Perceived Quality*, Lexington Books: Mass.
- Datta, S.K. (2001). "Problems and Prospects of India's Rice Trade in a WTO Regime," Ch. 20, in *Implications of WTO Agreements for Indian Agriculture*," Samar K. Datta and Satish Y. Deodhar, co-ordinators, Oxford IBH and Co: Delhi.
- Deodhar S.Y. and H. Dave (2001). "Managing Quality of Agri-commodities and Food Products under WTO Regime ," in Datta, S. and S. Deodhar, eds., *Implications of WTO Agreements for Indian Agriculture*, Oxford-IBH: Delhi.
- Feigenbaum, A.V. (1956). "Total Quality Control," *Harvard Business Review*, November-December, pp. 94-98.
- Garvin, D.A. (1988). *Managing Quality: The Strategic and Competitive Edge*, The Free Press: New York, pp. 40-41.
- Juran, J.M (1951). *Quality Control Handbook*, McGraw-Hill: New York.
- Naik, G. (2001). "Competitiveness of Indian Wheat," Ch. 25, *Op. Cit.*
- Sharma, V.P. and S.K. Datta (2001). "Economic Impact of WTO Agreements on the Dairy Sector," Ch. 22, *Op. Cit.*
- Shewhart, W.A. (1931). *Economic Control of Quality of Manufactured Product*, D. Van Nostrand Co.: New York.
- Singh, G. and S.R. Asokan (2001). "Impact of WTO on Indian (Edible) Oilseeds Sector," Ch. 23, *Op. Cit.*