

Viewpoint

Evolving the Strategy at Ford

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Of the more than 40 years I have spent with Ford Motor Company all over the world, the last 10 have been the most exciting. The decade of the 1980s brought a massive cultural change at Ford. Our quality strategy steadily evolved from an early emphasis on reducing „things gone wrong“ to the objective of achieving total customer satisfaction. At the same time, we moved from „finding and fixing“ problems to devising processes that prevent problems.

A Mandate for Change

For Ford, a new approach to quality has been essential. In 1980, Ford North American operations lost approximately \$2.5 billion. Our share of the U.S. car market had declined to 17 percent, while quality was significantly inferior to that of imported vehicles.

When I returned from Europe in 1982 (eventually to take the position of director of body and chassis engineering), I entered a changed world full of energy for new quality initiatives. I must admit that at first I felt a touch of cynicism about the new philosophy of „EI“ (employee involvement) and „participative management.“ Within a few months, however, I had become a convert to change.

And, at Ford, change has worked. By the end of the decade, quality – measured in terms of the number of things gone wrong (TGW) reported by our customers – had improved approximately 70 percent for cars and trucks. There was also a steady increase in measured customer satisfaction levels for both cars and trucks.

Our quality results for 1990 were even more encouraging. Vehicle performance (in terms of TGW) surged by approximately 15 percent over 1989 levels for both cars and trucks, while three new vehicles (Towncar, Explorer, and Escort) were launched with TGW levels significantly lower than the outgoing models. This latter achievement was particularly gratifying as the vehicles were launched on time.

During the same period, Ford achieved a continuous and steady improvement in customer satisfaction. Interestingly, this trend persisted even during a period in the mid-1980s in which the number of product problems was not showing improvement, demonstrating that there is a lot more to quality and customer satisfaction than reducing the numbers of things gone wrong. Between 1981 and 1985, 21 percent more Ford customers described themselves as completely or very satisfied. The improvement was even greater among truck owners, whose satisfaction increased an average 30 percent. By 1990, Ford truck owner satisfaction was at approximately the same level as for cars.

The Roots of Change

While it is difficult to pinpoint exactly when the current quality drive started at Ford, a major event in the drive for cultural change was the encounter in early 1981 between Ford management and the eminent management theorist, W. Edwards Deming. What Dr. Deming proposed to Ford was nothing short of a profound cultural transformation – a transformation in the way we thought, what we believed, and the ways we treated each other, our customers, our suppliers, and our dealers. He viewed this transformation as a matter of life and death – not just for Ford, but for all North American enterprises.

What was required was a common sense of purpose and direction. When Dr. Deming first asked the top management whether Ford had constancy of purpose, they were very surprised. After all, Ford had been in business for more than 75 years. Surely they had constancy of purpose. But they soon understood what he meant. They realized that Ford did not have a written statement of purpose. Furthermore, it had no clearly defined principles to guide every employee in the accomplishment of that purpose. People cannot share in the purpose and goals of the company if they do not know what these are. So a process was started that led to the company's statement of its mission, values, and guiding principles. Published in late 1984, the following guiding principles provide the foundation for Ford's whole product quality strategy for achieving total customer satisfaction.

- Quality comes first.
- Customers are the focus of everything we do.
- Continuous improvement is essential to our success.
- Employee involvement is our way of life.
- Dealers and suppliers are our partners.

- Integrity is never compromised.

What We Did

During the 1980s, Ford's quality program evolved through three phases. From 1980 to 1983, we emphasized improvements in manufacturing: compliance with existing standards, adherence to our quality standard system (Q101), and implementing teamwork and employee input in manufacturing. From 1984 to 1986, our focus shifted to designing new products with higher levels of „things gone right“ and tightening existing standards. Most recently, we have concentrated on improving processes, taking a disciplined approach to „fix and find,“ and substantially expanding our use of analytical tools to prevent problems. Significantly, during this period, our customers' definition of quality assumed a primary role in defining engineering standards.

Throughout all three phases, three major elements have driven product quality and customer satisfaction in the product development and manufacturing areas: process improvement, manufacturing quality guidelines, and major problem-prevention tools.

Process Improvement. There is a strong, broad-based approach to process improvement within Ford Motor Company, with an emphasis on formal training and the selection of a senior management member to champion a specific program.

Basically, a process is a set of interrelated work activities that transforms or blends input resources to produce a product or service for a customer. Large processes invariably cross organizational or functional lines, contain many sub-processes, and usually have more than one customer. Viewed in this way, any company is a network of processes.

Process improvement is a structured, systematic approach to ensuring that our processes yield products and services that meet or exceed customers' needs and wants over time, with increasing efficiency. It has both conceptual and operational attributes.

Manufacturing Quality Guidelines. The foundation of the manufacturing quality effort is Ford's manufacturing quality guidelines:

- Quality system standard Q101
- Q1 preferred quality awards
- Supplier quality-improvement guidelines for prototypes and production parts

These guidelines identify the key analytical tools required to ensure high-quality products.

Quality Standard Q101 is the „granddaddy“ of all Ford quality-control systems and the foundation from which all Ford manufacturing quality systems flow. It has been updated a number of times – in 1976, 1986, and most recently 1989. At each updating, new and important quality processes and analytical techniques are added. For example, the 1989 revision mandatory requirements such as „process capability“ and „continuous improvement.“

The Q101 standard has five sections that define the quality requirements for producers:

- Planning for quality
- Achieving process and product quality
- Documenting quality
- Special requirements for control item products
- System and initial sample approvals

The Q1 Preferred Quality Award was originally developed and implemented to recognize outstanding suppliers of production and service products to Ford Motor Company. The Q1 award process is common throughout Ford Motor Company worldwide and depends heavily upon Ford's quality system standard Q101; however, there are many other criteria that must be met before receiving a Q 1 award – including management quality awareness and commitment. Currently, approximately 75 percent of outside-supplied components to Ford's North American automotive operations are sourced to suppliers with a Q 1 rating. The objective is to reach 100 percent early in the 1990s.

The Q1 award system (in a somewhat modified form) has now been expanded to include all „in-house“ manufacturing facilities.

Supplier Quality Improvement Guidelines are manuals that address requirements for prototypes and production parts, respectively. First issued in 1988, the manual for prototype quality was developed specifically to support a disciplined concept-to-customer (CTC) product development process. The entire prototype strategy is designed to prevent the occurrence of quality problems and to promote continuous quality improvement during the prototype process.

In the manual for production parts, first issued in 1989, the major emphasis is „quality is best improved by minimizing variation.“ Ford believes that a continuous reduction in variation will virtually eliminate defects. This manual contains the tools needed to meet current higher quality expectations, such as FMEA, process control plans, and team-oriented problem solving. Finally, there are many processes, cross-functional team approaches, and analytical tools available to help engineers prevent the occurrence of problems in new product areas (Exhibit 1). Each affected organization is now required to develop a „quality of events“ plan, using these major prevention tools in support of the milestones identified in the CTC process.

Exhibit 1

Major Problem-Prevention Tools Used at Ford Motor Company

<i>Recurring concerns</i>	<i>New concerns</i>
DFQ – design for quality	QFD – quality function deployment
Design check sheets	FMEA
MQT – management quality teams	DOE/Taguchi methods
Recall prevention	DVP&R/ES/GPAS
CFTs – cross-functional teams	Manufacturing/feasibility capability
QRTs – quality responsible teams	DFA – design for assembly teams
Quality cycle plans	FEA/stress analysis
8 discipline review-analysis	Pugh analysis
Design quality reviews	VSA – variation simulation analysis
CAD/graphics training	FTA – fault tree analysis
Define critical characteristics	PIST/PIPC-Cp/Cpk
Repairs/1,000, TGW/1,000	PDPC – process decision program chart

The tools listed in Exhibit 1 are not all-inclusive. Ford has encouraged the trial use of new analytical concepts. However, as the various organizations mature in their development of analytical quality plans, they increasingly use the quality deployment approach to avoid future problems. QFD (Quality Function Development) has become the umbrella for pulling together a total „problem prevention“ plan.

In addition to ensuring high customer satisfaction with a new product, QFD can be useful in meeting other objectives – such as achieving cost and weight targets or satisfying downstream customers – before the completed product is sold to its final customer.

Where We're Headed

At Ford, the early 1990s should see the completion of the transition already under way from a „find and fix“ approach to a prevention mode. The benefits of this transition were evident in the 1990 models. Quality data indicate that the same techniques have also yielded significant improvements in many of the „carryover“ 1990 cars and trucks. In its fourth phase, Ford's quality program is shifting from focusing primarily on product to examining the total customer experience.

We all know the domestic automotive industry is under attack, primarily by extremely competent Asian competitors. They have an arsenal of weapons for this attack, including a barrage of new products, new features, high-tech powertrains, price advantages, and perceived value for money. However, the single biggest challenge continues to be the competitors' quality – quality not only at delivery, but during the period of ownership by the customer.

It may be possible to win the battle of new products with attractive styling, high-tech powertrains, exciting features, functional excellence, and competitive pricing, but then lose the war because of noncompetitive levels of owner satisfaction. At Ford, there is a belief that new processes and analytical tools are available to achieve a major breakthrough in the quality of customer satisfaction. Ford has a strong commitment to have all its vehicles achieve customer satisfaction levels equal to their directly competing vehicles – domestic or foreign.

The „quality manufacturer“ will win for two simple reasons:

First, quality saves money and generates profit. The manufacturer who achieves total quality in both the production and the customer-use life cycle of a product will have significantly lower costs. Not only will the product cost less to produce, but the manufacturer will spend less on repairing the product and marketing new products.

Second, quality generates and supports high levels of customer satisfaction, without which customer loyalty will not flower.

In the past, there has been a tendency to focus primarily on customer satisfaction during the earlier period of ownership and to emphasize a reduction in things gone wrong as the prime requisite for customer satisfaction. This was not a bad starting strategy, as an improvement in the early life of a product often „flows on“ during the subsequent use of a vehicle.

However, we have always recognized that there is a lot more to customer satisfaction than reducing TGW. Today, there is a much greater awareness that the most important measure of customer satisfaction is the level at the time of trade-in, when a replacement vehicle is purchased. For the private, „nonfleet“ buyer, this occurs roughly every five and one-half years. Experience shows that customer satisfaction is highest during the early period of ownership; thereafter, it typically declines.

To be customer-driven requires redefining quality to mean quality-as-seen-by-the-customer. The product must first make the customer happy and meet all of his or her expectations for good value.

A total quality strategy that has the vision of optimizing customer satisfaction is obviously highly complex. To be complete, it must pay careful attention to all the following elements:

- Product content, durability, and reliability
- Value for money, over time
- Customer satisfaction indicators
- Competitive data and benchmarking
- Dealer experience – purchase, delivery, and service
- Repair quality
- Warranty coverage

There is no single magic formula or preeminent analytical tool that will result in „overnight“ leadership in customer satisfaction. What is needed is consistency and persistence. Even with this indication, it can take many years. For a company the size of Ford, achieving our quality goals could take 10 to 15 years. However, we are now well along the path.

Robert J. Marshall recently retired as executive director, corporate quality, for Ford Motor Company. This article is based on a presentation by Mr. Marshall at an on going series of executive seminars on „Beyond the Quality Revolution,“ sponsored by Arthur D. Little, ODI, and Opinion Research Corporation.