



**The Quarterly Quality Report**  
**An ASQ Analysis of Quality & Customer Satisfaction With**  
**Manufacturing Durable Goods and E-Business**

*Commentary by Jack West, American Society for Quality*  
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**Introduction**

*This report on quality is based on data from the American Customer Satisfaction Index (ACSI), a key economic indicator and the nation's leading measure of customer satisfaction. It offers further analysis and commentary by ASQ experts on the perceived quality component of ACSI.*

**QUALITY IN THE MANUFACTURING DURABLES AND E-BUSINESS SECTORS:  
HIGHLIGHTS FROM THE SECOND QUARTER 2006 ACSI**

Perceived quality scores for both manufacturing durable goods and e-business were up this quarter over the same period last year. There was across-the-board quality improvement in autos, personal computers, and e-business.

Within the manufacturing durables sector, personal computers registered a significant increase in perceived quality. And the automobiles and light vehicles segment also showed continued improvement this quarter.

The quality gains in these two segments (personal computers and autos) pushed the overall ACSI customer satisfaction scores for both autos and manufacturing durables to their highest level ever. This occurred despite weakness in major appliances and electronics, both of which have yet to re-attain the quality levels recorded when they were first measured in 1994.

These quality gains were posted as the economy slowed in the second quarter and both prices and wages rose. Costs, driven by energy and raw materials prices, are increasing, and companies in many industries are raising prices after years of restraint.

The average vehicle selling price in the United States in the first quarter of 2006 was \$28,600, which is down slightly after rising for three straight quarters. The general trend lately has been rising average sales prices, driven by consumers' choice of more expensive vehicles with more expensive options and large, lavishly equipped SUVs and pickups, which have a higher profit margin for manufacturers. The price dip noticed in

the first quarter could be repeated in succeeding quarters as more buyers switch to smaller and more economical sedans in order to cope with rising gasoline prices.

In personal computers, the price of computing power continues to plunge. Today's personal computer is faster, has more capabilities, and costs less than last year's model; but buyers still load up on the latest gaming and multimedia options and accessories that push up the selling prices of the total package that consumers purchase.

Prices for appliances are rising, but at a decelerating rate. In the first six months of this year, prices rose at an annualized rate of less than 1%, compared with almost 3% last year.

If prices of goods rise and nothing else changes, consumer satisfaction should drop, since consumers are paying more but getting nothing extra in return. So this rise in consumer evaluations of manufacturing durables quality during a time of rising prices signals that the quality effect is real and is stronger than any damping effect on satisfaction caused by price increases.

Table 1  
ACSI Perceived Overall Quality

	Q2 '06	Q2 '05	% Change from last year	Q2 Yr 1	% Change from 1st year
<b>NATIONAL INDEX</b> (all industries measured this quarter)	<b>79.6</b>	<b>78.5</b>	<b>1.4</b>	<b>80.0**</b>	<b>(0.5)</b>
<b>MANUFACTURING/DURABLE GOODS</b>	<b>86.1</b>	<b>85.0</b>	<b>1.3</b>	<b>85.0</b>	<b>1.3</b>
<b>Automobiles &amp; Light Vehicles</b>	87	86	1.2	87	0.0
<b>Electronics (TV/VCR/DVD)</b>	86	87	(1.1)	87	(1.1)
<b>Major Appliances</b>	88	88	0.0	90	(2.2)
<b>Personal Computers</b>	82	79	3.8	80	2.5
<b>E-BUSINESS</b> (first measured 2000)	<b>79.7</b>	<b>78.8</b>	<b>1.1</b>	<b>80.7</b>	<b>(1.2)</b>
<b>Portals</b>	78	78	0.0	67	16.4
<b>E-BUSINESS</b> (first measured 2002)	<b>79.7</b>	<b>78.8</b>	<b>1.1</b>	<b>70.2</b>	<b>13.5</b>
<b>Search Engines</b>	83	84	(1.2)	73	13.7
<b>News &amp; Information</b>	77	76	1.3	77	0.0

\*\* Year 1 national quality index excludes e-business

## **Automobiles and Light Vehicles: U.S. Brands Make Some Progress Closing Quality Gap, but Only Domestic Luxury Brands Rank with Quality Leaders**

Perceived overall quality in autos historically has been high and fairly stable for the industry overall, mirroring the industry's stability in the broader ACSI score. This quarter, the industry's perceived quality score stands at 87, bringing it back up to the highest level previously recorded, which occurred in the second quarter of 1995.

The only nameplate to experience a significant change in overall perceived quality this quarter compared to second quarter 2005 is the GMC division of General Motors, which was up 3.5%. Others showing smaller gains include Ford, Nissan, and Buick.

Looking out over a longer time frame—back to the second quarter in 1995—major gains in overall perceived quality have been realized by Hyundai (up 12.7%) and BMW (up 3.4%). Over this same eleven-year period, nameplates that slipped significantly in overall perceived quality include Mercedes and Saturn (both down 5.5%) and Nissan (down 3.4%).

Not only is auto industry quality very high overall, but from a statistical basis there is not much distance separating the top quality performers from the rest. Scores on perceived quality this quarter suggest a split into three groups within the industry:

<b><i>Top Quality</i></b>	<b><i>Middle of the Pack</i></b>	<b><i>Everyone Else</i></b>
Lexus	Lincoln-Mercury	Jeep
Toyota	GMC	Chevrolet
BMW	Pontiac	Mazda
Buick	Chrysler/Plymouth	Dodge
Cadillac	Mercedes-Benz	Ford
Honda	Saturn	Kia
Hyundai	Nissan	Volkswagen

The U.S. domestic carmakers Ford, General Motors and the Chrysler division of Daimler-Chrysler have made quality gains in the last 5-10 years by almost any standard, both in absolute terms and relative to the Japanese standard-setters. Still, only the luxury brands Cadillac and Buick rank up with the world's best. Ford's Lincoln-Mercury division had cracked the top quality echelon recently but has since slipped.

In spite of the recent gains, and as close as they might be, the rest of the American models have yet to move into the top quality ranks. Some may argue that this is largely a matter of perception on the part of car buyers, and perceptions can be very slow to change. What separates the very best from the rest, however, might be more a matter of quality focus, constancy, and doing many things consistently well.

The U.S. auto industry hasn't had the same sustained, clear quality focus as the Japanese. For years Toyota has exploited its particular brand of waste elimination and pursuit of perfection, to the point that these emphases have come to be seen as part of its corporate DNA. As for particular methodologies or approaches, Toyota does not talk about using techniques beyond relentlessly pursuing its Toyota Production System, which in the U.S.A we call Lean.

Honda is similar in the exploitation of its competitive distinction in engineering and innovation.

Hyundai, the latecomer to the dance, single-mindedly pursued quality by copying the Japanese quality model. Under the control of a micromanaging authoritarian chairman who was convinced that the way to emulate Japan's success, especially in markets outside of Korea, was by fanatical dedication to quality, Hyundai diligently studied the Japanese quality model, modified it, localized it, and applied it efficiently and effectively. In terms of general quality approach, Hyundai has steadfastly stuck to a simple, two-pronged strategy: 1.) systematically listening to customers to find out what kind of cars they want and 2.) optimizing processes. The company focused its improvement efforts on improving electrical systems (a major customer complaint), designing smoother and quieter automatic transmissions, and eliminating squeaks and rattles by investing heavily in body integrity. The company realized that the quality of its cars sold in the domestic Korean market would not cut it in overseas markets such as the U.S. Hyundai initially built disappointing cars in a factory in Canada that was later shut down and replaced with a state-of-the-art, flexible, highly efficient factory in Montgomery, Alabama.

The American automakers seem to lack the same constancy regarding preferred approaches to improvement, switching from one approach to the next, or a mixture of approaches, hoping to find one that works. In the meantime, any strategic miscue represents a tempting excuse to change direction in the quality programs.

The American makers have pockets of excellence and special competence, but they aren't as consistently successful in putting all the pieces together.

Within General Motors, for example, GMC is known for disciplined execution and attention to detail in the production process (as evidenced in the launch of the 2007 GMC Yukon), while Cadillac stands out in terms of developing exciting product and savvy marketing.

It takes a synergistic combination of innovation, style, quality, marketing and execution to produce cars that meet the very high expectations of U.S. consumers. While the case can be made that at any time one company or another may excel in one or more of these elements, the truly outstanding companies maintain world-class performance in all of these critical-to-quality characteristics over extended periods of time.

### **Personal Computers: Dell Bounces Back But Still Trails Apple**

All companies in the personal computers segment experienced gains in overall perceived quality this quarter. However, the 3.8% rise in the category overall was largely due to gains by Dell Inc. Dell has gained back all of the ground it lost since second quarter 2004 as a result of problems in its service and support activities. Dell's cost-cutting efforts in customer support areas alienated customers.

Hoping to reverse the damage, Dell has committed \$100 million this year to repair the damage by beefing up its U.S. service centers with the addition of 2,000 customer service associates. That change was announced in April. Dell's service quality score is now higher than Hewlett-Packard's and is approaching that of Apple.

Dell's gain this quarter lifted it past rival Hewlett-Packard in terms of quality as perceived by customers. However, Dell still trails the quality leader in the personal computer industry—Apple—by a significant margin.

Apple's strong sales of Macintosh computers boosted profit 48% in the quarter ended July 1. This occurred while Apple completed the transition of its personal computers to microprocessors made by Intel—a major change made without any apparent quality glitches.

The personal computer industry is reaching a new level of maturity. That brings with it a need to change from meeting expectations of techie early adopters and business users to meeting expectations of a more general population that requires greater ease of use and more user-friendly operations. Growth is slowing for business computers. This situation poses a greater challenge but it is necessary for companies to succeed with a broader customer base.

### **E-Business: AOL and Yahoo Diverge**

The e-business category is reported out in two segments: one consisting of Portals and another consisting of Search Engines and News & Information.

Among portals, Yahoo was down significantly, giving up most of the gain it had registered since portals were first measured by the ACSI in the year 2000.

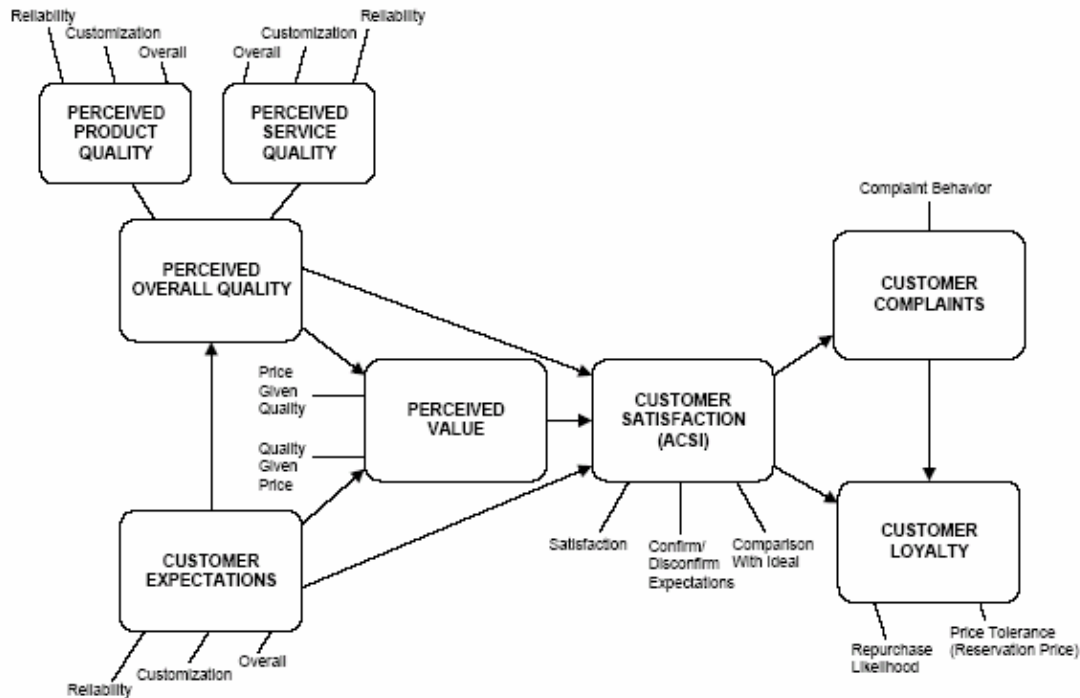
The clear quality winner in this category is America Online, Inc., which jumped up 4% this quarter and is up a robust 25.8% since 2000.

Search engines, including Ask.com and Google, all experienced small declines in overall perceived quality this quarter, but the segment as a whole was pulled up by a strong 4% gain by USAToday.com in the News & Information segment. Other sites in the News & Information segment include CNN.com, MSNBC.com, NYTimes.com, and ABCNews.com.

## WHAT MAKES UP “PERCEIVED OVERALL QUALITY?”

The general ACSI model displayed in Figure 1 shows that perceived overall quality is derived from two elements: perceived product quality and perceived service quality, and is further influenced by customer expectations.

**Figure 1: The ACSI Model -- Manufacturing/Durables Sector**



There are two primary components to the customer’s service quality and product quality experience: 1.) the degree to which a product or service provides key customer requirements—labeled as “customization” in Figure 1, and 2.) how reliably these requirements are delivered—labeled “reliability.”

Likewise, the customer’s expectations can also be defined by these same customization and reliability components.

Expectations capture all of the customer’s prior knowledge about and consumption experience with a company’s products or services. Customer expectations provide the anchor that is adjusted or updated in light of a customer’s more recent purchase and consumption experience or what he or she has heard about the product or service.

For the manufacturing/durable goods measured this quarter, perceived overall quality is measured as a composite index made up of perceived product quality and perceived service quality. This is because a customer’s overall evaluation of quality is based on a balance between the quality of the durable product itself and the quality of the service that it often requires on a long-term basis. Automobiles and computers offer readily understandable examples of the need to consider both service and product quality.

Every auto manufacturer has a service quality score that is lower than its product quality score. For the industry overall, the gap currently is 2 points, which is narrower than the gap of 5 points when this statistic was first measured in 1996. Models with a significantly higher gap than the 2-point industry average are Mazda, Volkswagen, Dodge, Honda, and Hyundai. These brands therefore have an opportunity to increase their overall perceived quality scores simply by raising their service quality, without any change in product quality, since both product quality and service quality are components of perceived overall quality.

Now consider the effect of perceived overall quality and customer expectations on overall customer satisfaction.

Table 2 shows the difference between perceived overall quality scores and customer expectation scores for the measured automobile makers. The numbers are derived by subtracting the customer expectations score from the perceived overall quality score for each maker of autos and light vehicles.

Ideally, a company would want high ratings in both perceived quality and customer expectations. A large negative gap (Mercedes-Benz, Volkswagen) indicates the maker is coasting on its reputation—a situation that cannot last and will eventually cause harm to the company. A large positive gap (Hyundai, Saturn) indicates that the company may be building residual good will that it can capitalize on to build market share provided it better markets its strengths to its potential customers.

Table 2: **Differential Between Perceived Overall Quality and Customer Expectations**

<b><i>Nameplate</i></b>	
Mercedes-Benz	-6
Volkswagen	-6
BMW	-2
Cadillac	-2
Lexus	-2
Chrysler/Plymouth	-1
Lincoln/Mercury	-1
Ford	-1
Nissan	0
Jeep	0
Mazda	+1
Toyota	+1
Chevrolet	+1
Buick	+1
GMC	+1
Honda	+2
Dodge	+2
Pontiac	+2
Kia	+2
Saturn	+3
Hyundai	+5

## WHAT DO QUALITY SCORES MEAN?

Even though determination of quality is a complex and highly subjective calculus involving the simultaneous processing of many factors inside the mind of the consumer, that does not mean it can't be quantified.

The ASQ Quality Report relies on the tested methodology of the ACSI to help quantify the subjective evaluations of the goods and services acquired and consumed in the United States. Interviews with many customers probe multiple facets of quality such as product or service attributes, price, and market fit to measure the subjective evaluations of the goods and services acquired and consumed in the United States. Data derived from these interviews are used as inputs to the ACSI's econometric model, which combines numerous proxy measures (reflecting the consumer's overall consumption experience) to arrive at an index number on a 0 to 100 scale. This is not a percentage. Unlike the output of many familiar consumer surveys, an ASQ Quality Report score of 80, for example, does not mean that 80% of consumers who were interviewed have high regard for the quality of the particular product or service in question.

The unique methodology used to calculate the ASQ Quality Report's quality scores has the advantage of allowing for cross-industry and cross-company comparison. For example, it allows us to say with assurance that consumers have higher regard for the quality of beer than they have for the quality of banking services, or that consumers think Heinz products have better quality than Dole products.

## METHODOLOGY

This report on quality offers further analysis by ASQ experts and is based on a key economic indicator and the nation's leading measure of customer satisfaction, the American Customer Satisfaction Index. Produced by the University of Michigan in partnership with the American Society for Quality and CFI Group, the ACSI is produced quarterly, measuring more than 200 companies in 41 industries. The index has been issued and supported by the partnership for more than 10 years.

The ACSI uses two primary criteria to define the consumer's quality experience:

- 1.) customization, or the degree to which a product or service fulfills the customer's key requirements
- 2.) reliability, or how reliably these requirements are delivered.

ACSI data collection occurs through thousands of quarterly interviews with customers who have purchased and used specific products or services within defined time periods. It treats satisfaction with quality as a cumulative experience rather than a most-recent-transaction experience.

Customer interviews that formed the basis of the overall ACSI and its quality component occurred during the period of April through June of this year. Customers of companies in the automotive, electronics (TV/VCR/DVD), major appliance, and personal computer manufacturing industries and e-business portals and search engines services were interviewed.

Each quarter a different sector is measured, with the fresh data being used to update the national ACSI score quarterly on a rolling basis. ASQ plans to issue Quarterly Quality Reports, with analyses on these sectors, based on the latest ACSI scores.

**Table 3**  
**Data Collection and Sector Update Schedule**

Sector	Consumer Interviews	Results Released
Utilities, Transportation, Information, Healthcare & Social Assistance, Accommodation & Food Services	January - March	May
Manufacturing/Durable Goods, E-Business	April - June	August
Manufacturing/Non-durable Goods	July - September	November
Retail Trade, Finance & Insurance, E-Commerce	October - December	February
Public Administration	Throughout the year	December

***About the Author***

Jack West is a past president of the American Society for Quality and a quality expert. A Six Sigma Master Black Belt instructor and consultant, West has held various engineering and management positions at Westinghouse Electric Corporation and Northrop Grumman. He holds a doctorate in business administration and a master’s degree in management, both from The George Washington University. John Ryan, ASQ public policy analyst, also contributed to this report.

***About the American Society for Quality (ASQ)***

The American Society for Quality is the world’s leading authority on quality. With more than 93,000 individual and organizational members, the professional association advances learning, quality improvement, and knowledge exchange to improve business results and to create better workplaces and communities worldwide. As champion of the quality movement, ASQ offers technologies, concepts, tools, and training to quality professionals, quality practitioners, and everyday consumers, encouraging all to Make Good Great™. ASQ has been the sole administrator of the prestigious Malcolm Baldrige National Quality Award since 1991. Headquartered in Milwaukee, WI, the 60-year-old organization is a founding partner of the American Customer Satisfaction Index (ACSI), a prominent quarterly economic indicator.

Other information about ASQ and the ACSI can be found on the following Web sites:

- <http://www.asq.org/quality-report/index.html>
- <http://www.theacsi.org/>