

First - A Small Detour

Two Popular Quality Methodologies

Nowadays:

Lean and Six Sigma

We all associate Lean's origins with Toyota.

What about Six Sigma?

General Electric



Motorola



TQC



Japanese Quality Leaders



Corporate Experimentation



Toyota

What Happened to Toyota?

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How Many Quality Problems Do They Have?

- Operationally: 3 problems (as of 2/08/10)
- From a “customer first” perspective, they had 7 million problems
- From a future customer perspective, the universe of potential car purchasers

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The Unfolding Big Picture

- Subsequent to the initial recalls associated with floor mats and sticky pedals causing unintended acceleration and braking problems on Prius and Lexus hybrids, Toyota had 13 safety related recalls through Sept. 2010.
- These highly publicized recalls may well have solidified in the U.S. public's mind that Toyota has serious quality problems.

Test Results from Consumer Reports(CR)

- If we examine the percentage of a brand's vehicles recommended by CR, the trajectory shows significant decline for Toyota models from 85% recommended in 2008, to 73% in 2009, to 47% in 2010--the sharp drop in 2010 primarily associated with the recent recalls. By comparison, CR recommended 70% of Nissans in 2008, 77% in 2009 and 95% in 2010.

Figure 1: How Toyota's Reliability Compares to Selected Competitors
(Toyota shown in blue dotted line; Competitors shown in red solid line)



Chevrolet



Ford

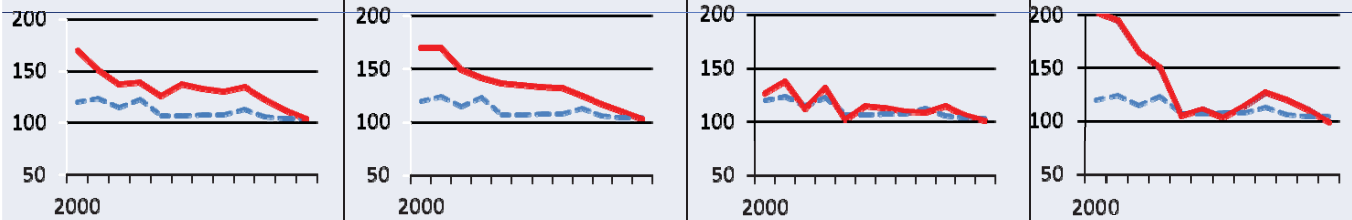


Honda

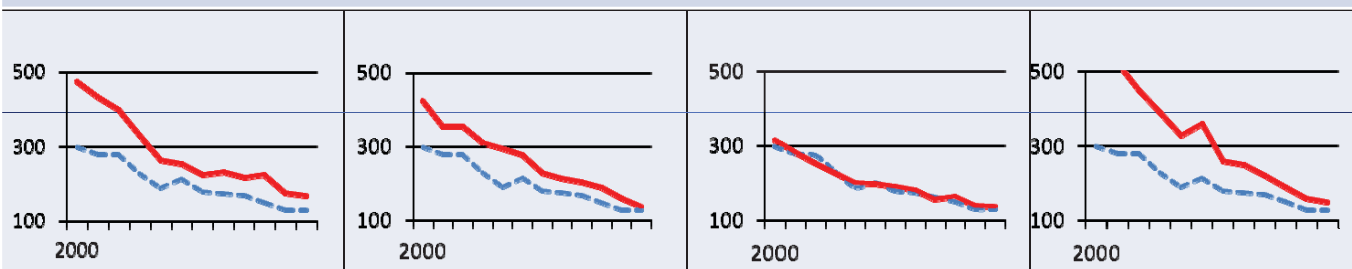


Hyundai

INITIAL QUALITY STUDY, problems per 100 cars measured at 90 days of ownership. J.D. Power & Associates



VEHICLE DEPENDABILITY STUDY, problems per 100 cars experienced by original owners of three-year-old vehicles.



Source: Author's estimate on data shown in "Inside Toyota, Executive Took Blame Over Debacle", *Wall Street Journal*, (April 14, 2010): A18. Different scales for the two different figures reflect WSJ's mode of presentation.

U.S. Media Attention Regarding Toyota Recalls

- Extraordinary media attention
- A media plot to get Toyota?
- No, just the media doing what it does –with all its associated strengths and weaknesses
- Toyota recalls getting far more attention than those of other automakers

Our most important objective is to deliver superior products to satisfied customers whose trust we must win. If we deliver a product to the customer whose quality creates trouble for them, this will affect their trust in us. If we betray their trust, they will not buy our products for a long time!

* Source: Isao Nakatsuka, Director of the TQC Promotion Office at Toyota Industries Corp., 1990.

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Table 1: Light Truck Sales for Ford and General Motors: 1999-2005*

	1999	2000	2001	2002	2003	2004	2005
FORD	2,447,285	2,483,140	2,383,697	2,194,534	2,214,580	2,210,086	2,018,000
GM	2,395,480	2,390,785	2,561,258	2,729,831	2,673,038	2,713,114	2,610,000

- Federal regulations define a light-duty truck to be any motor vehicle having a gross vehicle weight rating (curb weight plus payload) of no more than 8,500 pounds (3,855.5 kg) which is "(1) Designed primarily for purposes of transportation of property or is a derivation of such a vehicle, or (2) Designed primarily for transportation of persons and has a capacity of more than 12 persons, or (3) Available with special features enabling off-street or off-highway operation and use." Practically speaking, light trucks include light duty vans, pickups and sport utility vehicles.
- I am indebted to Michael Flynn, former head of the Office for the Study of Automotive Transportation at the Univ. of Michigan, for suggesting this line of analysis. He provided me with a number of other useful suggestions for this presentation.

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Early Warnings

- Basic Principle of Risk Management: Identify risks early and eliminate them while they still are minor
- There were a number of early internal warnings
- But no large-scale counter measures.

Root Causes of Toyota's Quality Problems (1) Hyper Growth

- In 1995, Hiroshi Okuda, Toyota President, set in motion a new global growth strategy. It included a set of challenging interim goals to move Toyota's global market share to 10%. This goal morphed into a new target of 15% by 2010.
- They were moving toward that goal, reaching 13% in 2008, before the global financial meltdown and massive recalls derailed their efforts.

Root Causes of Toyota's Quality Problems (2) Growing Technical Complexity

Vehicles in developed countries becoming more complex

- Governments of developed countries imposing stricter regulations governing safety, emissions & fuel consumption
- Customer expectations rising as seen in demand for green cars, advanced features and performance in luxury cars
- High end features in luxury cars spreading faster into lower cost vehicles
- Automakers advancing technological capabilities.

Impact of Hyper Growth & Growing Technical Complexity on Supplier Management

- Toyota engineers increasingly stretched thin
- Toyota had to delegate more design work to outside contract engineers and new overseas suppliers
- Toyota found it increasingly difficult to find experienced in-house engineers to closely supervise and evaluate their new inexperienced suppliers' detailed component designs.

Lessons for Other Firms

- When adopting new strategic targets, firms must integrate them with existing commitments to quality
- Major quality failures lead consumers to reassess a firm's brand value, through examining its responses to the crisis
- Multinational executives in overseas markets need local and global information and a strong voice in recall decisions
- OEM's need to strongly monitor design and manufacturing processes of suppliers to insure quality
- User error can be decreased through improved design
- Continue to learn from the Toyota production system.

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Expanded Analysis

- Posted online in The Atlantic: Who is Really at Fault for the Toyota Recalls?
<http://www.theatlantic.com/business/archive/2011/05/who-was-really-at-fault-for-the-toyota-recalls/238076/>
- Article to appear summer issue of MIT journal, Sloan Management Review