THE TOYOTA RECALLS

LAST UPDATE: 3/12/2010

On Feb 24, 2010, I have circulated the following e-mail among a few dozen Operations faculty:

“I have been reading everything I can about the Toyota problem, and cannot make up my mind whether there is any real problem there, as opposed to a PR problem coupled with a mob reaction.

Do you know of any FACTUAL information concerning this problem? (Number of accidents, number of complaints, number of defectives actually identified. etc.)”

Included is a brief summary of reactions so far.

Customer Complaints:

Gad Allon sent this information, complied from NHTSA data:

Similar data is contained in following WSJ article, 2/25/2010, By KATE LINEBAUGH and DIONNE SEARCEY. The article also contains Ford’s response to the high number of complaints in 2008: http://online.wsj.com/article/SB10001424052748703510204575085531383717288.html?mod=todays-us-page-one
The data clearly shows an increase in complaints in 2003 (after the introduction of the electronic Throttle systems, and again in 2009.

Gad Allon also sent the following link to comparative data from Edmunds.com
http://www.edmunds.com/help/about/press/161506/article.html

<table>
<thead>
<tr>
<th>AUTOMAKER</th>
<th>RANK (IN ORDER OF MOST COMPLAINTS PER MARKET SHARE)</th>
<th>PERCENT OF COMPLAINTS IN NHTSA DATABASE</th>
<th>PERCENT OF SALES IN US MARKET</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAND ROVER</td>
<td>1</td>
<td>0.6%</td>
<td>0.1%</td>
</tr>
<tr>
<td>AMERICAN SUZUKI MOTOR CORP.</td>
<td>2</td>
<td>0.9%</td>
<td>0.4%</td>
</tr>
<tr>
<td>ISUZU MANUFACTURING SERVICES OF AMERICA</td>
<td>3</td>
<td>0.3%</td>
<td>0.2%</td>
</tr>
<tr>
<td>VOLKSWAGEN OF AMERICA, INC</td>
<td>4</td>
<td>4.1%</td>
<td>2.4%</td>
</tr>
<tr>
<td>JAGUAR CARS LTD</td>
<td>5</td>
<td>0.4%</td>
<td>0.2%</td>
</tr>
<tr>
<td>VOLVO CARS OF N.A. LLC.</td>
<td>6</td>
<td>1.1%</td>
<td>0.7%</td>
</tr>
<tr>
<td>CHRYSLER LLC</td>
<td>7</td>
<td>16.3%</td>
<td>13.0%</td>
</tr>
<tr>
<td>MAZDA NORTH AMERICAN OPERATIONS</td>
<td>8</td>
<td>1.7%</td>
<td>1.5%</td>
</tr>
<tr>
<td>MITSUBISHI MOTORS NORTH AMERICA, INC.</td>
<td>9</td>
<td>1.3%</td>
<td>1.2%</td>
</tr>
<tr>
<td>FORD MOTOR COMPANY</td>
<td>10</td>
<td>18.3%</td>
<td>17.6%</td>
</tr>
</tbody>
</table>
EDMUNDS.COM ANALYSTS ALSO ATTEMPTED TO EVALUATE THE DEATHS AND INJURIES REPORTED IN THE NHTSA DATABASE, BUT IT QUICKLY BECAME CLEAR THAT THE DATA IS UNRELIABLE. FOR EXAMPLE, ONE COMPLAINT INDICATED THAT 99 PEOPLE HAD DIED IN ONE VEHICLE AS A RESULT OF AN ACCIDENT. IT SHOULD ALSO BE NOTED ROUGHLY 10 PERCENT OF TOTAL COMPLAINTS APPEAR TO BE DUPLICATES. FINALLY, THIS ANALYSIS DID NOT RATE THE REPORTED INCIDENTS FOR SEVERITY.

ADDITIONAL DATA PROVIDED BY NHTSA TO THE SENATE: (ETC = ELECTRONIC THROTTLE CONTROL, AIA = UNINTENDED ACCELERATION)

<table>
<thead>
<tr>
<th>Company</th>
<th>Complaints</th>
<th>25.3%</th>
<th>24.5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENERAL MOTORS CORP.</td>
<td>11</td>
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</tr>
<tr>
<td>NISSAN NORTH AMERICA, INC.</td>
<td>12</td>
<td>5.8%</td>
<td>5.9%</td>
</tr>
<tr>
<td>HYUNDAI MOTOR COMPANY</td>
<td>13</td>
<td>4.2%</td>
<td>4.4%</td>
</tr>
<tr>
<td>BMW OF NORTH AMERICA, LLC</td>
<td>14</td>
<td>1.7%</td>
<td>1.9%</td>
</tr>
<tr>
<td>SUBARU OF AMERICA, INC.</td>
<td>15</td>
<td>1.1%</td>
<td>1.3%</td>
</tr>
<tr>
<td>AMERICAN HONDA MOTOR CO.</td>
<td>16</td>
<td>6.8%</td>
<td>9.4%</td>
</tr>
<tr>
<td>TOYOTA MOTOR CORPORATION</td>
<td>17</td>
<td>9.1%</td>
<td>13.5%</td>
</tr>
<tr>
<td>MERCEDES-BENZ USA, LLC.</td>
<td>18</td>
<td>1.0%</td>
<td>1.5%</td>
</tr>
<tr>
<td>PORSCHE CARS NORTH AMERICA, INC.</td>
<td>19</td>
<td>0.1%</td>
<td>0.2%</td>
</tr>
<tr>
<td>SMART USA DISTRIBUTOR LLC</td>
<td>20</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>
The Number of Accidents/ Fatalities Alleged to be Caused by the Problem:

As of Tuesday, March 3, the Department of Transportation reported receiving complaints linking 52 deaths and 38 injuries to 43 accidents involving sudden acceleration of Toyota cars since 2000. Of these, 32 accidents were reported after September 2009 (the first recall). 41 of the 52 reported deaths involve electronic throttle controls: JOSH MITCHELL AND KATE LINEBAUGH, http://online.wsj.com/article/SB200014240527487038079045750973909996752212.html

For the purpose of calibration: The number of fatalities from car accidents in the US (all cars and makes) is over 40,000 per year; expressed differently, there are more than 0.15 fatalities per billion miles driven. Source: http://www-fars.nhtsa.dot.gov/Main/index.aspx

NHSTA Handling of customer complaints:

There have been six probes of the issue by NHSTA since 2003, but in all cases, Toyota was able to avoid a recall. A time line of events is included in the following Time article, By Katy Steinmetz Tuesday, Feb. 09, 2010

http://www.time.com/time/business/article/0,8599,1962218,00.html?xid=feed-yahoo-full-world-related

The Recalls:

November 2009: 4.2M cars: The Floor Mat Entrapment Recall
January 21, 2010: 2.3M cars: The Sticky Pedal Recall (voluntary)
January 26, 2010: 1.1M cars: Floor Mat; Toyota stops selling 8 models
January 29, 2010: 1.8M cars: Sticky Pedal, Europe)
February 9, 2012: 437K cars: The AntiLock Break system Recall, hybrid cars)
Feb 17, 2010: Toyota investigate problems in Power steering system

As of March 10, 2010:

- A few owners of cars that have been “fixed” by various recalls complained that their cars are still acting up;
- The question of a “software defective” is still floating around, but Toyota discounts this possibility.
- The cost of recalls estimated to exceed $4B
- ABC aired an investigative report claiming that electronic problems are the center of the problem. Toyota had disputed the report stating that ABC had staged some of its demonstrations. ABC withdrew some of the report, but stand by its conclusions.
Toyota

Professor Zemel

http://online.wsj.com/article/SB10001424052748704869304575109831857008698.html?KEYWORDS=toyota+slams+ABC+report&mg=com-wsj

- Toyota dealers were accusing GM of using government bailout monies to offer incentives and undermine Toyota’s sales
- A widely publicized incident involved a 2008 Toyota Prius accelerating to over 90 miles per hour on a California Highway. The driver called 911, and was helped by a State Patrolman

http://online.wsj.com/article/SB20001424052748704784904575111503873150166.html

The Reliability of Customer Complaints and the 1980 Audi 5000 Recall:


An analysis of the exponential increase in complaints after the recall was announced is reported in “Spike in Prius Complaints May Not Be All It Seems” NYT, March 10, 2010, http://www.nytimes.com/aponline/2010/03/10/business/AP-US-Prius-Panic.html?_r=2&scp=4&sq=toyota%20psychology&st=cse

by AP Auto Writer Tom Krisher reported from Detroit. AP Auto Writer Dan Strumpf in New York and Associated Press writers Jim Fitzgerald in Harrison, N.Y., Emily Fredrix in New York and Elliot Spagat in San Diego contributed to this report

The culture of quality at Toyota:

People who know Toyota indicate that there has been some deterioration in Toyota’s approach to quality over the last five years.

Tom Foster wrote:

“I think there are real problems. The two that appear most apparent are not following the TPS and squeezing their suppliers with the 10% annualized cost reductions. This could also be one of the
outgrowths of rapid design change approaches. Tangentially, it appears that Toyota's handling of the PR is very poor.

Paul Ingrassia, the former Detroit bureau chief of the Wall Street Journal and prolific commentator on all things automotive, wrote:

“Toyota would not have proposed its gas-pedal fix if it was not convinced of a fundamental -- if rare -- issue. That said, the company flubbed its communications, and there has been a mob-rule reaction, partly as a result. Toyota's quality began to deteriorate five years ago. The company reacted by denying and accusing the press of over-reacting.”

The weakened emphasis on quality was acknowledged by Mr. Toyoda, in his Senate testimony. Mr. Toyoda attributed this to the company’s rapid growth: The capacity has grown from 5.2 million cars a year in 2000, to about 10 million in 2010:

http://www.youtube.com/watch?v=OIHgB6GHTwQ&feature=youtube_gdata

The lower quality is also referred to in Toyota internal documents:

"Although we rigorously defend our products through good negotiation and analysis, **we have a less defensible product.**" (emphasis added), Toyota internal memorandum, prepared by Vice President Chris Tinto. (Toyota claims the memo was written by an employee attempting to impress his boss, and is not indicative of company policies.)

**Defectives on the line:**

I could not find any data about frequency and type of manufacturing defects; Victor Araman raised the distinction between design flaws and production defectives, arguing that it is probably the former that are relevant here, and that those are rarely measured.
The Hearing:

This is the link to the Senate hearing, March 2, 2010:

http://commerce.senate.gov/public/index.cfm?p=Hearings&ContentRecord_id=5a15bd95-d0c7-4171-9aee-cc8420e9265f&ContentType_id=14f995b9-dfa5-407a-9d35-56cc7152a7ed&Group_id=b06c39af-e033-4cba-9221-de668ca1978a&MonthDisplay=3&YearDisplay=2010

The lawyers are circling:

http://online.wsj.com/article/SB10001424052748703804575083744021651422.html?mod=loomia&loomia_si=t0:a16:g2:r5:e0.0217123:b31072032


Using Google to search: “Toyota Recall, Lawyers”, yields an impressive number of ads and solicitations by a variety of Law firms.

Toyotas stock price:

http://www.google.com/finance?chdnp=1&chdd=1&chds=1&chdv=1&chvs=maximized&chdeh=0&chdet=1267131600000&chddm=23460&chls=IntervalBasedLine&q=NYSE:TM&ntsp=0

Summary:

Victor Araman had sent the following very good overall summary article by BILL SAPORITO WITH MICHAEL SCHUMAN AND JOSEPH R. SZCZESNY, Time, Thu Feb 11:

http://news.yahoo.com/s/time/20100211/wl_time/08599196359500;_ylt=Aia72AD.OePDUaTeDzJq.5bO_aF4;_ylu=X3oDMTM1ajB1NDc4BGFzc2V0A3RpbWUvMjAxMDAyMTQyMTY1MDAxMDAyMDg1OTkxOTYzNTk1MDA5Y2NvZGUdW9dHBvHVvYXlEY3BvcwM3BHBvcwM3BHNIYwN5bi90b3Bfc3RvcmlcwRzbGsDYW5hbHlzaXN3aGF0

All in all, there seems to be a consensus that:

• There was a significant increase in the number of customer complaints in 2003 (after the electronic throttle control systems were introduced; those were investigated by NHSTA and disputed by Toyota. There was an additional peak in 2009, (although some of the 2009 peak could have been triggered by the recall)
• Starting in 2000, Toyota had placed a major emphasis on growth, perhaps at the expense of quality. (However, the impact of this on the safety of Toyota vehicles is not clear)
• As of March 3, 2010, we do not know what is causing the problem(s), or even if there is anything “wrong” with the cars
• Toyota failed miserably in the PR-Crisis Management domain (although it is not so clear how things would have developed under a different approach).
• The Impact of the crisis on Toyota finance and its reputation will be severe. More bad news are, no doubt, yet to come

Thanks to all the contributors