

Lean Enterprise Academy



John Shook e-letter – 17 February 2011

NASA: "Toyota Problem Not Rocket Science"

Dear Lean Community member

NASA just released its highly anticipated report about the Sudden Unintended Acceleration (SUA) charge in Toyota vehicles. (www.nasa.gov/topics/nasalife/features/nesc-toyota-study.html) The verdict is in. And Toyota's electronic throttle control system is fully exonerated. The ten-month study by 30 NASA engineers found "no evidence that a malfunction in electronics caused large unintended accelerations," according to Michael Kirsch, principal engineer and team leader of the study. This means that that the reports of SUA were caused by "pedal misapplication," otherwise known as driver error.

So the events that led Toyota to recall 10 million vehicles may go down in industrial history as the biggest mountain of a crisis ever made out of the smallest molehill of a technical glitch. We now have verifiable facts, rather than conclusions drawn by politicians, media pundits, and lawyers based on assumptions, innuendo and fear.

Adding to the clarity provided by the NASA (commissioned by the U.S. NHSTA) report is a forthcoming book titled *Toyota Under Fire* by Jeff Liker and Tim Ogden (you can [pre-order it from publisher McGraw Hill here](#) which sheds even more light on the gulf between facts, and the way in which opportunists jumped to conclusions, throughout the entire crisis. I followed the story as it unfolded about as closely as anyone could ("[Toyota the Bad Guy](#)," "[Toyota Trouble: Fighting the Demons of Complexity](#)," "[Robert Cole's Observations](#)," "[Dialogue with Jeff Liker](#)," "[It's Not the Crisis, It's How You Respond](#)," "[Detroit Auto Show Overshadowed](#)") but still found reams of insightful new information in *Toyota Under Fire*.

These new resources clearly show how events spiraled out of control. The pivotal event that sparked the recall crisis was the tragic death of the Saylor family in a loaner Lexus in San Diego in 2009. The story of that accident quickly spread through the media, and was interpreted as SUA due to electronics. What actually happened is that a dealer placed a too-large all weather floor mat, one intended for an SUV, in the loaned passenger car without attaching it down. This entrapped the accelerator pedal, causing the accident. This event, and subsequent public attention, then snowballed into a global crisis for Toyota, with congressional hearings, public apologies in countries around the world, and 10 million (give or take a few million) recalls.

The technical charges leveled at Toyota took on a life of their own, quickly becoming "truth" in the public eye. Again, these reports show that there has never been a single confirmed case of electronically caused SUA, in any vehicle of any make - ever. More to the point of Toyota's specific issues: 1. there have been two documented cases of a serious accident due to "floor mat entrapment" (the one that resulted in the accident referenced above and a Camry accident in 2007 that killed one person) and 2. the "sticky pedal" problem in the U.S. is based on a handful of technical field reports from

Toyota which include only twelve vehicles (others are surely out there but no more have been confirmed, and others are surely out there on vehicles of all makes and models). Sticky pedals do not cause SUA, they are simply slow to return to idle position (and tests showed the stopping distance with the sticky pedal was the same as with a normal pedal). For that, 10 million recalls.

So . . . case closed? Not so fast. On the technical side, NASA's findings may have exonerated Toyota of the most serious problems that the company has been accused of in recent years. And yet we cannot let the company off so easily. There is still plenty of evidence that the company has not been operating at the same levels of wall-to-wall excellence for which it became famous. And, I think it is okay for us to maintain high expectations of Toyota.

Toyota is a company with a special relationship with problems. The essence of the Toyota Way is commitment with respect: commitment to excellence and continuous improvement with respect for people and truth. Toyota's profound contribution to the pursuit of excellence is a wholesale commitment to exposing and dealing with problems. So, for many, Toyota's ongoing crisis has been a bit of a conundrum. If there was no technical problem, what has Toyota apologized for? Toyota's response has befuddled many from beginning.

This crisis has also called into question other aspects of the company's recent performance and decisions, including its rapid expansion over the past decade. The speed of the company's growth outpaced its ability to develop its organization and the people in it. That much is obvious, and many observers have named that fact as the "root cause" of the troubles and the company has admitted as much. But, why did the company DECIDE to grow so fast? And, having so decided, what was so hard about developing its people and organization to keep up? Hmm, now exploring those questions might lead to some interesting insights.

From the beginning of this crisis Toyota was seeking a technical answer to the problems and maelstrom that was emerging around it. As the NASA report shows, Toyota was essentially correct in its technical assessment of the problem. Toyota engineers were of course on the case from the beginning. Toyota engineers are trained to see problems EVERYWHERE. All the time, everywhere. So, to the engineers who were making the judgments, there seemed to be no need to rush. In fact, to rush would be precisely the wrong response. All evidence that they had in front of them pointed to the conclusion that there was no technical (the focus of their concern) problem. For further certainty or possibly a different conclusion, more facts were needed. Years of disciplined problem-solving and acculturation told them to never rush to a conclusion - examine the facts, determine causality and judge accordingly, then determine a course of action.

But the nature of the problem quickly shifted from a technical issue to one of a very different kind: Human (customer and employee) behavior, customer expectation and feelings, nuance of communication and trust. As Toyota continued to focus on the technical side of the issue, it seemed uncertain of what to think of the growing concerns of its customers.

That's why I believe that Toyota is indeed to be held totally accountable - no excuses - for the mess it found itself in. With problems large or small, it's not the problem that matters; it's how you respond to it. And Toyota didn't respond well in the early days of its crisis. The company will pay a huge price for that for years to come. Robert Cole, who has spent a career studying quality, in a pre-publication draft of an article states: "It doesn't matter how much the media hyped the problem or the politicians politicized it. Customer perception is the final arbiter. Therefore, those customer perceptions translate into a serious quality problem for Toyota." (Cited with permission from the author)

So, essentially, that is where Toyota stumbled, where it all begins and ends - with the customer. Toyota's engineers were "right" - there was nothing seriously unsafe in their vehicles (virtually nothing from an engineering or manufacturing standpoint), but events evolved so that the problem swiftly became one not of engineering but of listening to and respecting the customer. Customer first. Parts of Toyota were doing their best to listen to the customer. But, those parts of the company weren't being listened to by the people making the decisions.

Customers were concerned and fearful. Toyota's actions weren't sufficient to allay those fears. "Customer perception is the final arbiter" - end of story.

So, what does all this discussion mean to each of us on a day-to-day basis, in the most practical terms? Let's go back to the beginning, to the runaway Lexus in San Diego, for a remarkable sequence of events. The vehicle in question was a loaner, that is a vehicle loaned to drivers' whose vehicles were in for service. As it turns out, the exact vehicle in question had experienced the exact same problem with a different driver just days before the Saylor's accident. In that previous case, with much effort and alarm, the driver was able to stop the vehicle. He removed the floor mat and went about his business with no further problems with the car. But, then, as reported by Liker and Ogden, an amazing and ultimately tragic set of events occurred.

"When he returned the car to the dealer, Bernard warned the after-hours receptionist that there was a problem with the vehicle's floor mat and that it had caused the car to accelerate out of control. He recalls telling the receptionist: "I think the mat caused it, you need to tell someone." His warning went unheeded. Apparently the receptionist thought that Bernard would tell his story to a service technician; Bernard thought that the receptionist would pass the story along. Three days later, Mark Saylor climbed into the car, still with the wrong floor mats, unsecured, and drove off."

So, what didn't occur is as remarkable as what did occur. The service technician who could have corrected the problem after the first incident never got the news because two people made assumptions about who would tell him. (For a lean look at this common problem, see my column of "[A Technical Problem or a People Problem?](#)") There is much more to the story, but you should read the full account in Liker and Ogden's book.

So, the receptionist is the butterfly whose wings didn't flap, resulting in a massive crisis. But, make no mistake - the lesson here has NOTHING to do with placing blame on her. If the learner hasn't learned, the teacher hasn't taught. If Toyota has defined

itself by its special relationship with problems, that must extend to the relationship that each and every member of the organization has with problems.

Hence the deeper lessons to be drawn here about the Toyota Way and the Toyota Production System. Toyota's aspirational practices remain exemplary and serve brilliantly as a north star for any individual or organizations seeking similar levels of excellence. But, true excellence doesn't stop at the end of the assembly line or confine itself to the engineer's lab or the executive suite. Excellence extends everywhere. From engineers to receptionists. It is as strong as the weakest link the chain of providing customer satisfaction. Anything we can call the "Toyota Way" or "Your Way" is the actualization of how we do everything we do, everywhere we do it: designing, making, selling, servicing, HR policy-making, legal compliance-ensuring. Opening and closing our doors every day for our employees and customers. It all counts.

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P.S. Here's a list of relevant links:

[The Washington Post editorial - "NHTSA Report Clears up Mystery - and Hysteria - on Toyota Cars"](#)

[Harvard Business Review - "Toyota's Recall Crisis: What Have We Learned?"](#)

[Bloomberg BusinessWeek - "Toyota: The Media Owe You an Apology"](#)

[Automotive News - "One Year Later: Let's Get Beyond Toyota Speed Scare"](#)

[Fortune - "The Safety Police Go after Toyota Again"](#)