Walking the automotive industry tightrope: Keeping customers—and your brand—safe

Much like a tightrope walker climbing the ladder to the platform, companies have taken generations to build brand names, only to have them decimated in a few weeks due to bad publicity. Quality issues affecting customer well-being bring reputation-breaking animosity.

Walking a tightrope of safety, reliability and profitability is a greater challenge during a soft economy. In the automotive industry today, staying balanced is difficult. It requires a change in how post-sale quality is monitored—less reliance on warranty-claim data and greater emphasis on building a comprehensive picture of product quality and customer experience. By acting on insights rather than reacting to issues, early detection and timely response can become part of the corporate culture.

Moving into a proactive stance allows company leaders to respond more quickly to safety concerns, product quality issues and general opportunities to improve customer relationships. Plus, an early response is almost always less expensive than a delayed reaction. To compete effectively in a demanding marketplace, automotive companies must trade in the old paradigm of damage-control responses for a new operating model—one based on routine, systematic analysis of a broad set of product and customer information, and an organization designed to act on the insights discovered.
A view from up top
Under constant economic pressure, automotive companies today are increasingly motivated to find ways to cut operating costs. Warranty claims are a natural target. The North American auto industry pays out almost US$8.5 billion per year in warranty claims and spends US$400 million per year on claims administration. Although everyone recognizes that it is far less expensive to correct a manufacturing process than to repair or recall hundreds, thousands or even millions of defective products already in the hands of the consumer, uncovering potential liability issues early can be a real challenge. Globally, the auto industry produces over 50 million vehicles per year, each comprised of around 10,000 parts. Identifying a specific problem in a particular component, based on intermittent, difficult-to-interpret clues, is a daunting task.

However, it is a crucial one to the industry. Revenue growth is scarce. Incentives are pervasive and significant. Spending is constrained. To survive in today’s competitive market, automotive manufacturers and suppliers must find cost-effective ways to differentiate themselves and gain market share. A strong brand image is difficult to trump. Establishing an enterprise-wide early warning system that detects product safety and quality issues — and simultaneously monitors customer experiences and preferences — can provide a two-pronged benefit: cultivating and protecting a valuable brand image and helping convert one-time buyers into lifelong customers.

A fall to earth
Strong brands are highly prized … and extremely fragile. After a recall of 6.5 million tires and reports of hundreds of deaths and injuries, consumer confidence in Firestone — and to some extent Ford — evaporated. According to a poll conducted by USA Today/CNN/Gallup, 77 percent of those surveyed would be less likely to buy Firestone tires, and 44 percent of those who were considering a Ford Explorer indicated that they were now less likely to buy one.

Although the Firestone tire incident was a high-profile case, it is not an isolated one. Month after month, respected automotive brands are tarnished by continued reports of product safety issues. For example, in the news reports for just one day, April 3, 2002: GM announced a recall of 1.9 million cars after reports that a faulty ignition switch could result in fire or smoke; Toyota expanded coverage from 1 to 8 years for an engine sludge problem affecting approximately 3.3 million vehicles; and Chrysler recalled 545,000 minivans because of potential problems with rear seat belts.
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With consumer safety—and a company’s brand image—at risk, navigating the automotive marketplace is a high-wire performance, where a fall can be devastating. Safety-related defects, visible to the public or targeted by government action, have an unfathomable cost. The potential damage to brands caused by out-of-control product issues is one of the largest risks that manufacturing companies face. When personal safety is involved, both governments and consumers expect companies to know and correct product issues.

TREAD: The law of gravity

The public has always expected automakers to identify and address product concerns quickly. But now, in the United States, it’s the law. On November 1, 2000, in response to the Firestone tire incident, the U.S. Congress passed the Transportation Recall Enhancement, Accountability and Documentation (TREAD) Act, which places new responsibilities and requirements on American automakers and suppliers.

The act mandates that manufacturers report information on deaths, injuries, property damage, consumer complaints, warranty claims and field-reported incidents that involve their products. TREAD also requires that manufacturers report foreign safety campaigns and recalls to the U.S. government. Finally, TREAD makes certain that falsifying or withholding information will result in criminal liability. The U.S. National Highway Traffic Safety Administration (NHTSA) is increasingly focused on protecting consumers, but where they fail to move far or fast enough, consumers will not hesitate to turn to the courts.

A disappointing performance

An OEM launches the model year with major design overhauls in four different models. Carefully, the company watches the market and all internal measurements for any sign of problems. Everything looks great; all four lines are experiencing record sales. Operations return to routine. As year-end approaches, a few warranty claims related to faulty windshield wipers are processed. The volume of claims remains well within “the normal range,” and although all four new designs use the same wipers, warranty claims appear for only one model. At the end of the quarter, customer service passes the claim information—along with all of their other suggestions for improvement—to engineering for consideration in upcoming designs.

By year three, the four models have morphed completely—from body shape to wiper blades. But, unfortunately, their three-year-old predecessors are now in the news. Wiper blades are locking while in operation; multiple traffic accidents have been attributed to obstructed views and driver distraction. The initial warranty claim trickle has suddenly become a torrent. Failures only appear in one model, despite widespread inclusion in other designs. Sales begin to decline. OEM and supplier engineers—concerned and puzzled by the sudden spike in claims—are researching frantically to uncover the cause, while the company’s public relations team struggles to quiet the media uproar. Although the OEM insists that current models are unaffected, sales begin to decline. Recalls and litigation—with their associated costs and notoriety—soon follow.

Automotive businesses now operate under a consumer and legislative microscope.
The warranty system: The old “safety net”

Historically, warranty-claim information has been used as the chief source of data for identifying recurring product problems. The analysis of claims has centered around three primary objectives:

- Cost containment
- Fulfillment of mandatory reporting requirements
- Identification of needed quality improvements.

In its traditional form, the warranty process is designed to serve as the manufacturer’s quality-assurance safety net. Warranties exist to correct defects that slip out of manufacturing plants or are introduced during distribution and delivery. Their objective is to raise product performance to the minimum level that meets customer and legal expectations. The focus is on repairing or replacing the product, not on improving customer relationships. Because warranty administration is typically managed by customer service, product design or manufacturing deficiencies—even when found—are not always communicated consistently, adequately and expeditiously to other organizations like engineering and manufacturing.

Based on a historical view, warranty analysis is reactive by design. Although warranty data can serve as a reliable source for projecting future claim costs, it has limited value from a proactive stance. Relying on indicators that occurred months ago prevents manufacturers from operating as responsively as they could. It’s like driving the business using the rearview mirror: there’s no visibility to immediate concerns occurring right now.

Although today, most automakers can forecast warranty costs with outstanding accuracy, far fewer have been successful at controlling them. Claims costs are often monitored in aggregate, not by individual component, or even by product line. How can manufacturers hope to contain costs when the source of the problem is unclear?

When manufacturers face quality problems with a particular product line, they frequently fortify their existing warranty-analysis process with temporary activities and resources to gain a more complete view of the situation. In some cases, dealers are “paid” to participate, driving costs up even further. But when the problem is rectified, either through design evolution or quality adjustments, so do these “add-on” analysis processes; only to be reinvented during the next crisis. Automotive OEMs and suppliers need a better method for systematically reducing claim volume, capping warranty costs and improving customer relationships.

Increased warranty periods have created an illusion of increased product quality.
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French tightrope walker Philippe Petit said, "When I put my first foot on the wire, I need to be sure there will be a last step." And so it is in the automotive industry. Automotive executives must find ways to reduce risk and improve the odds of safe passage—figuratively and literally.

**Listen to the “coach”**

Just as a coach shouts tips for helping their subject make it across the tightrope, customers are providing vital clues. Dealers and service centers are capturing and creating volumes of data. Telematics in vehicles and remote diagnostic capabilities in manufacturing equipment can provide signals about performance and safety. "Listening" to all of this data can help prevent damage to brand image, thwart the loss of future sales and preclude civil and criminal liability.

Safety is a critical concern—but it’s not the only one. Customers prefer products that are more reliable and companies that give better service: Even low-level product defects and minor service glitches pose a threat to the customer relationship. Today, more than ever, customers expect continuous product and process improvements that address their needs—both stated and implied. And, thanks to the Internet, companies have a variety of avenues to learn about those customer desires: click stream data, frequently asked questions, Web site searches, e-mail and even online chats. Besides highlighting potential dissatisfaction or customer loyalty issues, direct input from the customer can help automakers:

- Identify and act on cross- and up-sell opportunities
- Improve effectiveness of promotions
- Discover emerging consumer trends.

To engineer products and deliver services that satisfy rising customer expectations, automotive companies must have continuous streams of useable feedback and know how to leverage it. Achieving a more competitive position depends on how well an automaker can shift from a product-centric quality process to one that revolves around its customers.
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An impressive act

An OEM launches the model year with major design overhauls in four different models. Carefully, the company watches the market and all internal measurements for any sign of problems. Everything looks great; all four lines are experiencing record sales. The early warning system kicks into routine operation.

Just three months after introduction, a few customers report problems with their windshield wipers "getting stuck." Alerted to a potential product issue, the early warning system analyzes these isolated cases and discovers that all of the reports were related to one particular model and most of the affected customers are located in rainy Seattle, Washington. When usage readings reported by in-vehicle telematics are compared, it becomes clear that the failing wipers have been used ten times the standard amount. Believing failures are more likely when a specific usage threshold is reached and knowing the volume of vehicles already on the road, engineers realize that they must act quickly to protect consumer safety. Still puzzled by the fact that failures only occur in one of the four models using the blades, the OEM receives the much-needed answer from their supplier.

Using information supplied by various OEMs, the supplier detects a flaw that only occurs with certain windshield slopes. An enhanced design is already in testing. With help from customer service, the OEM identifies all potentially affected customers. Fortunately, the defect is found within six months of product introduction, keeping the car volume involved relatively small. And, thanks to the early warning from Seattle, most vehicles are far from the usage threshold where the problem typically occurs. Although the media does publicize the recall, they praise both manufacturer and supplier for a prompt and proactive response. Recall costs are contained, and no litigation arises.

Designing your balancing pole: An early warning system

An enterprise-wide early warning system is essential for proactive identification of safety issues, but it can also improve a customer’s experience with the company and its products. To be effective, an early warning system should:

• Work from a broader perspective—Growing product complexity makes root-cause analysis, based on currently captured data, difficult. To establish a more forward-looking perspective, businesses must look beyond warranty claims to more timely sources of information. There is no shortage of information; automotive companies can tap a variety of potential sources—each with its own advantages and challenges (see Figure 1). Although data volumes can be challenging, automotive businesses need long-term perspectives and analysis horizons that encompass the product’s lifespan and the full customer relationship life cycle.

• Capitalize on integration—Not only should businesses look at a variety of sources, they should take advantage of the unique insights that come from integrating disparate data. By analyzing call center transcripts in concert with customer service records for example, an OEM may be able to uncover and substantiate a problem that might remain hidden if each source was filtered independently.
## Potential sources

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<tr>
<th>Potential sources</th>
<th>Advantages</th>
<th>Challenges</th>
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<tbody>
<tr>
<td>Consumer call center data and transcripts</td>
<td>• High-value insights&lt;br&gt;• Based on actual dialog between customer and customer service representative</td>
<td>• Difficult to analyze&lt;br&gt;• Terse summaries with spelling errors and shorthand abbreviations</td>
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<td>Technical “hotline” data and transcripts</td>
<td>• Rich technical information&lt;br&gt;• Often contains the discussions that lead to eventual repair of unknown or complex problem</td>
<td>• Difficult to analyze&lt;br&gt;• Terse summaries with spelling errors, shorthand abbreviations and technical jargon</td>
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<td>Field engineering reports</td>
<td>• Highly descriptive&lt;br&gt;• Well organized</td>
<td>• Filled with engineering and technical terminology</td>
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<td>E-commerce interactions</td>
<td>• Direct feedback from diverse set of consumers&lt;br&gt;• Provides input on quality&lt;br&gt;• Offers suggestions or clues that can lead to future product or service improvements</td>
<td>• Varied level of value&lt;br&gt;• Consumer comments can sometimes be offensive or inappropriate</td>
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<td>Oversight agency records</td>
<td>• Particularly useful because consumers often choose to contact agencies rather than the manufacturer about safety or quality concerns</td>
<td>• Though descriptive, the agency’s terminology may differ from the company’s normal nomenclature</td>
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<td>Insurance claims information</td>
<td>• Early, reliable indicator of safety-related incidents</td>
<td>• Perceived liability risk of accepting such data</td>
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<tr>
<td>News and public information available from the Web</td>
<td>• Can provide early indication of safety issues as well as general customer satisfaction and preference</td>
<td>• Extremely difficult to categorize&lt;br&gt;• Vast number of sources: where to look?</td>
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<td>Data exchanges with partners —both up- and down-stream</td>
<td>• Supplier often provides same component to several manufacturers and can observe potential problems in a variety of settings and products&lt;br&gt;• Dealers have valuable data too; they often notice problems first, based on service requests</td>
<td>• Building open, collaborative business relationships where exchanging data about potential design flaws is perceived as an advantage not a risk&lt;br&gt;• Debate over ownership of transactional data in dealer systems</td>
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<tr>
<td>Data from in-vehicle devices</td>
<td>• Provides alert at the first instance of failure or fault indication; the quality trend can start immediately</td>
<td>• Requires vehicle platform to include this capability&lt;br&gt;• Scaling solution to handle data volume&lt;br&gt;• Must include dealer in this process</td>
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*Figure 1. Automotive companies can include a variety of data sources in their analysis.*
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- **Make analysis more affordable**—At many automotive companies, data collection and manipulation demands so much time and effort that analysis gets squeezed, follow-through is limited and needed changes fail to be implemented. With more information available, the problem only gets worse. Manual data manipulation and analysis simply can’t scale affordably to the level required for a comprehensive early warning system. Fortunately, technology can help. By automating data collection, manipulation and basic analysis, analysts are free to investigate verifiable problems and help implement solutions.

- **Look beyond the surface**—Advanced analysis techniques can unlock potential insights that have been hiding in unstructured, free-form text. With the help of data-mining solutions, businesses can accomplish deeper, more sophisticated analysis. For instance, an early warning system could use corresponding geographic information system data to plot the intensity of a particular problem across a map (much like a storm-tracking map), prompting investigators to look more closely at potential, geographically related causes such as local gasoline quality or improper care at a particular service center.

- **Help maintain focus**—With ever-increasing amounts of data, automation only addresses part of the problem; analysis must pinpoint the highest priority items to focus follow-on investigation efforts. Noting one hundred reports of a potential problem only tells part of the story. One hundred incidents that occurred as part of a slowly increasing trend over the past year is significantly different than the same number of incidents occurring in a two-month window.

- **Encourage responsibility**—Taking action must be defined as someone’s responsibility. In automotive companies today, responsibilities for data compilation and problem analysis are usually clear; but the role of “change agent” is often ambiguous or ill-defined. To respond rapidly and effectively to new issues and opportunities, someone must be accountable for managing changes that touch many parts of the organization.

- **Become “business as usual”**—To effect an enterprise-wide early warning system, many business units must be involved— not just customer service. An organization’s incentives and corporate culture must encourage information sharing and collaboration. Paying attention and acting quickly on new insights must become a routine part of business operations. Ignoring signs of a problem will not make it go away. Leaders must insist that their businesses expose and solve problems—not bury them. When companies “hide” defect indicators, they mistakenly believe that they are protecting the brand. But, in reality, they are putting their brand at greater risk because when these problems emerge—and they almost always do—the brand damage can be exponential.
**Greater together — A case study**

Although always interested in improving product quality, one major automotive manufacturer has decided to take specific steps toward a more proactive brand image by building a company-wide platform for rapid problem identification and resolution.

Traditionally, engineering organizations that supported specific vehicle programs or component systems constructed their own ad-hoc analysis systems from warranty data and problem reports they managed to obtain. Although this approach allowed a reasonable amount of insight within finite areas, it offered poor visibility across vehicle programs and, in many cases, lacked sufficient granularity for speedy issue resolution.

Recognizing the importance of early, accurate identification of potential safety issues, the manufacturer decided to establish a corporate early warning system—with help from IBM. The company established an organization whose sole purpose was analyzing safety-related data— independent of any particular vehicle program or subsystem. Although this was a large investment, the company was serious about improving product safety, decreasing the time spent chasing unverified issues and reducing the overall costs associated with recalls.

The manufacturer used its existing piece-meal analysis initiatives as a base to develop common, enterprise-wide definitions for vehicle components, failure symptoms and customer effects. Using the common vernacular, the team then built “rules” for automating various analysis activities. Understandably, the rules had to be sophisticated and robust enough to handle wording nuances and implied relationships between symptoms and components. By establishing common definitions and rules employed by a centralized system, analysts could now take advantage of information from multiple sources. Once the system was operational, analysts were prepared to leverage it effectively because they had been involved intimately in designing its data structure and analysis rules.

In its initial incarnation, analysts use the firm’s early warning system to perform ad-hoc queries that help them confirm or reject “hunches” about potential vehicle problems in the field. In the next version, the system itself will generate these “hunches” using sophisticated data mining tools. With safety issue identification under control, the company can now branch out to identify customer satisfaction concerns as well.

Even though the functionality of the initial version is somewhat limited, the system has already begun to pay off. Analysts are able to find three percent more incidents related to a specific problem while manually inspecting 70 percent fewer records in the process. By adding new sources of information, tuning analysis rules and increasing the granularity of component definitions, the manufacturer plans to produce even greater returns on investment in the next iteration of its early warning system.
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How effective is your balancing pole?

Few industries have better quality processes than the automotive industry. For many companies, superior product quality has been a top goal for decades, with significant improvements implemented over the years. Yet, customer expectations are rising just as fast. And, public and governmental scrutiny is more intense than ever. How effectively is your organization meeting these challenges? Take a moment to ask yourself a few important questions:

- Have we reduced warranty claims significantly over the last year? Are we seeing a consistent year-over-year reduction?
- How does our product quality compare to the rest of the industry (in the J.D. Power and Associates Initial Quality study, for instance)?
- How often do direct customer interactions lead to specific product improvements? Can we trace a consistent flow of outside information to our design departments?
- Are suppliers consistently involved and held responsible? Do we share information bilaterally?
- Have we been caught off guard? Do we know what dealers and regulatory agencies know?
- How much are we investing in reporting to oversight agencies? Are we making the most of this mandatory investment by using the information to improve our brand?
- Are all of our shortcomings visible internally? Are they exposed sufficiently so that action is inevitable?

Architecting an effective early warning system can be an arduous task, but one that can provide highly desirable results: a reliable and responsible brand image, increased customer loyalty, reduced exposure to safety and environmental litigation, lower operational costs and more customer-led production innovation.

At IBM, our industry consultants understand the challenges that automotive companies face today and are prepared to help you design and implement a comprehensive early warning operation. For more information about early warning systems and the organizational changes that they entail, please contact us insights@us.ibm.com. To browse other resources for business executives, we invite you to visit our Web site at ibm.com/services/strategy.
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About the authors
Richard Fournier is a Business Development Executive within the IBM Global Services Automotive Industry Practice. He works with automotive businesses to help them improve brand loyalty while simultaneously lowering operational costs. Rick can be reached at rfournie@us.ibm.com.

Thomas Shovelton is a Principal within the IBM Business Intelligence Consulting and Services Practice. Tom helps automotive companies transform data into knowledge that inspires action. He can be contacted at tshovelt@us.ibm.com.

Larry Stolle is a Business Development Executive within the IBM Global Services Automotive Industry Practice. Larry consults with automotive executives as they design and execute strategies that protect and enhance their brand. You can contact Larry at lstolle@us.ibm.com.

Contributors
Joseph Pohlen, Executive Consultant, Automotive Industry Practice, IBM Global Services.

References