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RETURN TO SENDER: RESOLVING THE AUTOMOTIVE-RECALL RESURGENCE

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Recalls have become big news again, and the industry requires better ways to anticipate and mitigate them rapidly and surely.

After decades focused on vehicle quality, the auto industry faces a new challenge—vehicle quality. While automakers and suppliers have made giant strides in reducing product and process variability, vehicles' digital features and functional complexity have exploded, forcing the industry to play catch-up with proliferating software and electronics problems.

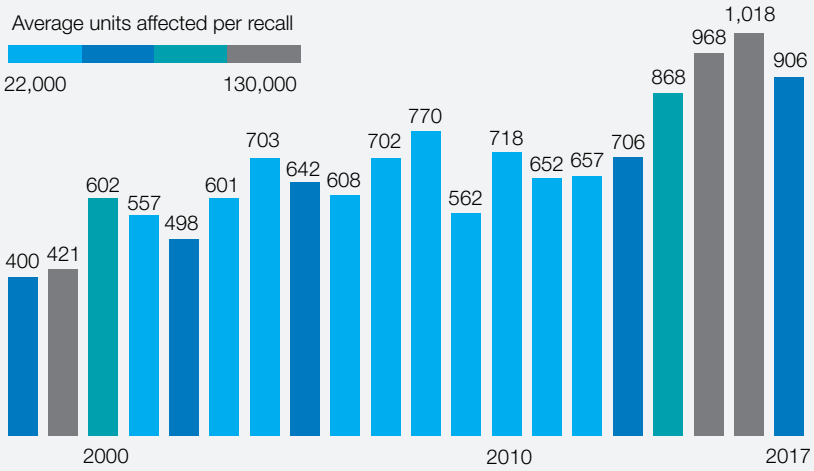
More and bigger recalls

In the United States, for example, the number of vehicle recalls has grown over the past 20 years to the point where in 2016, the market experienced more than 1,000 vehicle recalls for the first time (Exhibit 1). In 2017, on average, 3.1 vehicles were recalled for each vehicle sold.

Exhibit 1

Automotive recalls have been increasing in frequency and intensity.

NHTSA[1] recalls in United States, number



[1]National Highway Traffic Safety Administration.

McKinsey&Company | **Source:** National Highway Traffic Safety Administration

The scale of each recall has grown as well. Prior to the major airbag recall in 2015, the average number of vehicles involved per recall rarely surpassed 30,000 units. Since then, volumes peaked in 2016 at 90,000 vehicles per incident and remained high in 2017 at 46,000 units.

Issues concerning airbags—critical safety-related components—have driven most automotive recalls since 2015, when they comprised 71 percent of the total units recalled. Electrical and electronic (E&E) systems made up about 6 percent of the units recalled that year. Recently, airbag issues have declined, as measured by recalls, but E&E defects have increased, resulting in almost three million vehicles recalled in 2017, doubling the 2016 count.

As more companies move to modular designs and common product platforms and supply-chain partners, it becomes more likely that a defect on a single module or component can affect multiple vehicle platforms. The overall effect is that the complexity and reach of quality issues have increased. For instance, half of all recalls today affect more than one model, and 14 percent more than one brand. This may explain why automotive OEMs have not achieved any significant economies of scale on the number of recalls per model. Even large OEMs with more models tend to have the same number of recalls on a per-model basis.

Volume OEMs seem to struggle more with limiting the magnitude of recalls. In comparison with premium OEMs, they have recalled twice as many vehicles per vehicle sold between 2015 and 2017. This may indicate that their recalls are less confined to specific model years, variants, or extras.

These more complex quality issues are not going away anytime soon. They result from the increasing complexity of vehicles, driven by growing numbers of new features and electronic or software components needed for autonomous-driving assistance, geolocation services, and other smart functionalities. Quality and safety requirements for autonomous vehicles will be even higher and require a zero-defect mind-set and, consequently, a step change toward a no-recalls mind-set.

Understanding a recall's impact

The negative impact of a recall on the finances and reputation of an automaker or supplier will vary depending on the causes and circumstances surrounding it. Several factors play important roles in recalls. These can include the possible effect on the safety and the health of the driver or passengers, the financial impact in terms of repair costs and fines, and the impact on an OEM's brand. Likewise, the nature of a recall can range from voluntary actions initiated by automakers to those mandated by the US National Highway Traffic Safety Administration (NHTSA) or the respective authorities in other markets.

Four types of recalls predominate. The least severe when it comes to financial impact is a simple voluntary recall, where an automaker announces an optional recall of, say, 1,000 vehicles to replace a wheel cap painted the wrong color or correct a mistake in the manual in the glove box. The recall with the second-lowest financial impact is also voluntary and includes risks of minor injuries. One OEM has received several customer complaints and recalled 200,000 vehicles to replace sharp-edged window switches. Next is a recall as the result of an NHTSA investigation. In one case, the agency has filed a lawsuit to drive the recall of several million vehicles because of a design flaw that prevented passengers from releasing their seatbelts. In such cases, the global press will likely discuss the issue broadly, damaging the automaker's brand. Finally, the most severe recall from a financial perspective is one that results from an NHTSA investigation that involves severe injuries. In a possible scenario, NHTSA could compel an automaker to recall millions of vehicles and replace engines prone to catching fire. NHTSA might also fine the OEM severe penalties—for example, up to $1 billion—for concealing the defect and knowingly putting passengers at risk. Because of such a recall, the brand's sales numbers can easily drop significantly.

Interestingly, we did not find any major differences between recalls happening in different regions. Looking at major recent recalls in the United States, we found that they also happened in other major markets, such as China, Germany, Japan, and South Korea, under the condition that the affected models were also sold there and that the affected component had the same supplier. Transport authorities seem to be closely watching recalls in other countries and not distinguishing between brands.

Overall, recalls may result in a variety of internal and external costs regardless of their severity, which makes it necessary to understand the main root causes behind associated quality issues and their implications about the company's quality-management practices. For example, direct costs can include both repairs and legal costs. Major recalls that affect large numbers of vehicles can result in significant aggregated expenses. Legal costs can include liability lawsuits and class-action lawsuits. Indirect costs can include customer-relationship-management

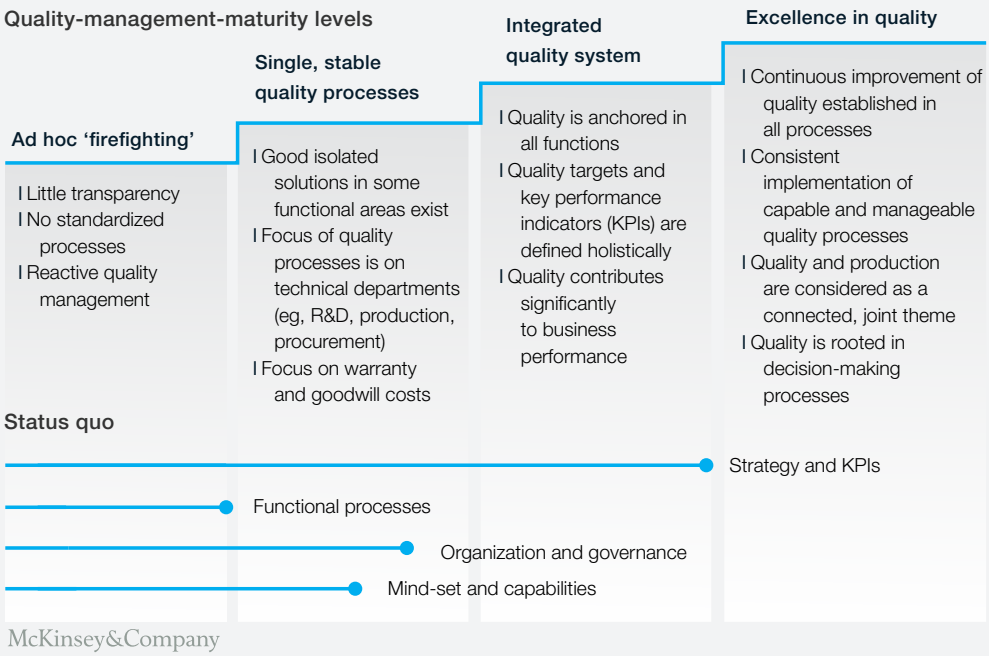
efforts to communicate recall information to improve the company's image and the possible need to add customer-service capacity. Indirect financial consequences can also include opportunity costs, such as lost sales because of a damaged brand image or a reduced stock price.

Move from 'firefighting' to prevention

When dealing with recall-triggering quality issues, the challenge is in moving from "firefighting" to prevention across all functional processes (Exhibit 2). Doing so requires companies to reach new quality-management-maturity levels.

Exhibit 2

Players should move from 'firefighting' to prevention in quality management.



Taking a systems view is also critical since field defects frequently relate to design considerations and development interactions across multiple systems or components. Once organizations have identified and prioritized root causes, they can select a set of actions that define a holistic quality-improvement plan.

This approach is not new for the automotive industry, which has worked to implement quality excellence over the past several decades. The difference is that companies need to identify and focus on safety-related and other severe issues that could potentially trigger large recalls and take steps across the value chain to resolve them.

Beyond managing the number and severity of recalls, achieving better quality can reduce warranty costs in four specific ways. **Defect prevention** enables companies to anticipate

potential issues during product development and avoid them through the transfer of lessons learned, risk assessment, and testing and validation. For example, one manufacturer has strengthened quality gates in product development to surface risks better and prevent them from passing a gate. **Defect elimination** involves the fast detection, containment, and permanent correction of defects. For instance, one premium-car manufacturer uses advanced analytics on onboard car data, warranty repairs, and spare-parts consumption to identify new quality issues much more quickly. In addition, one electric-vehicle (EV) producer quickly resolves issues via over-the-air (OTA) updates to its fleets of EVs in the field. **Repair-cost reduction** eliminates unnecessary work and streamlines repair methods at affected dealerships to minimize the scope of fixes and the costs of repairing defects. Companies should also consider how to **share responsibility with suppliers** adequately through partnerships and warranty-sharing agreements.

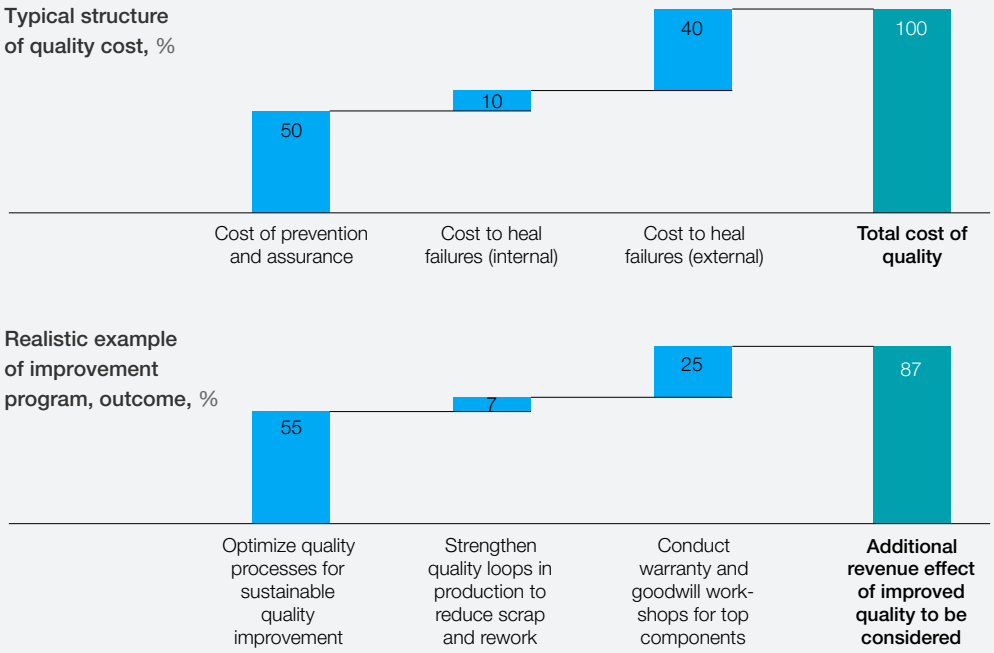
While companies could also potentially reduce goodwill payments to customers to reduce costs, doing so could have a severely negative impact on the customer experience.

Quality's recall payoff

Launching a quality-improvement program that targets recalls can lower an automaker's or supplier's associated risk at a time when the scale and scope of these challenges are growing dramatically. A well-orchestrated and holistic initiative will typically reduce quality costs by 10 to 15 percent and dramatically improve the organization's response time and customer satisfaction in the event of a recall (Exhibit 3).

Exhibit 3

Companies can reduce quality costs 10 to 15 percent via quality management.



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Automotive recalls have become larger and riskier as the industry continues to change. Understanding the potential threat and developing effective ways to prevent, resolve, and eliminate recalls are critical skills automakers and suppliers need if they want to succeed in today's auto industry.

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