



Expert Insights

# Data-powered automotive warranty re-invention

IBM Institute for  
Business Value



## Experts on this topic



### **Dr. Peter Korevaar**

[linkedin.com/in/peter-korevaar-224307139](https://www.linkedin.com/in/peter-korevaar-224307139)  
korevaar@de.ibm.com

Peter is an analytics and optimization thought leader at IBM Global Business Services with many years of experience in the automotive industry. He has developed analytics planning systems for distribution planning, inventory optimization and demand forecasting. In the last few years, Peter was part of the IBM Global Automotive Center of Competence and helped clients all over the world improve their supply chains



### **Verena Elisabeth Hafner**

[verena.hafner@de.ibm.com](mailto:verena.hafner@de.ibm.com)

Verena is an advanced analytics consultant and data scientist at IBM Global Business Services and part of the IBM Center of Competence Global Automotive, Aerospace & Defense Industry. She has worked with automotive clients all over the world to strengthen their AI capabilities and apply insights, especially in their supply chain data and processes, by developing analytics models.

Excessive warranty costs are only part of the picture—money earmarked for warranty reserves can be substantial and difficult to accurately predict.

## Key takeaways

**Warranty data can be a valuable resource** for automotive companies if they collect it, integrate it with other quality-related data, and analyze it with AI.

**Sharing data and data-derived insights broadly** across the auto ecosystem can bring significant improvements in process efficiency, cost reduction, and, ultimately, customer satisfaction.

**Using warranty insights to create new products,** services, and customer interactions can reveal new sources of revenue.

—

## A largely untapped resource

At first glance, it appears to be a bad way to woo customers—a warranty process that's used when things go wrong. Instead, it turns out to be an excellent opportunity for a company, not just to please its customers, but also to radically improve its business processes and find sources for future growth. For the automotive industry, as the traditional ownership model declines, companies are hungry for new revenue streams.

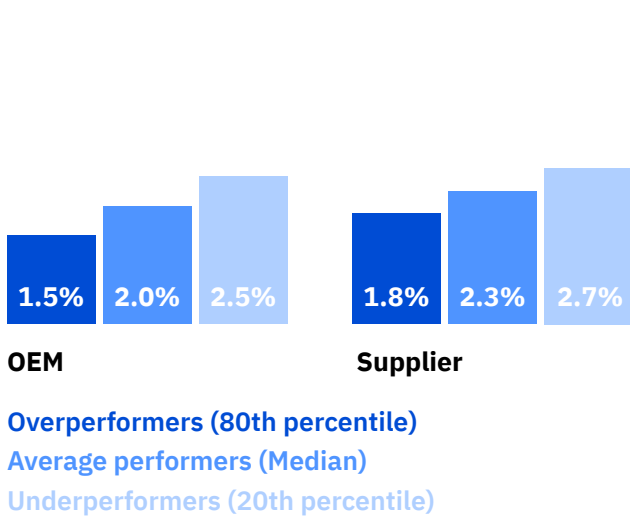
Recent IBM Institute for Business Value research found that on average, automotive original equipment manufacturers (OEMs) spend 2 percent of their annual revenue on paying warranty claims (claims rate). Their total warranty costs, including operations, are closer to 3 percent. For suppliers, these costs are 2.3 percent and 4.5 percent, respectively (see Figure 1). The opportunity for improvement is significant.

But excessive warranty costs are only part of the picture. Money earmarked for warranty reserves to cover those costs can be substantial and difficult to accurately predict. To get a better sense of the issue, consider that, in 2018, total claims for global auto manufacturers were USD 56 billion, while they had USD 115 billion in reserves.<sup>1</sup>

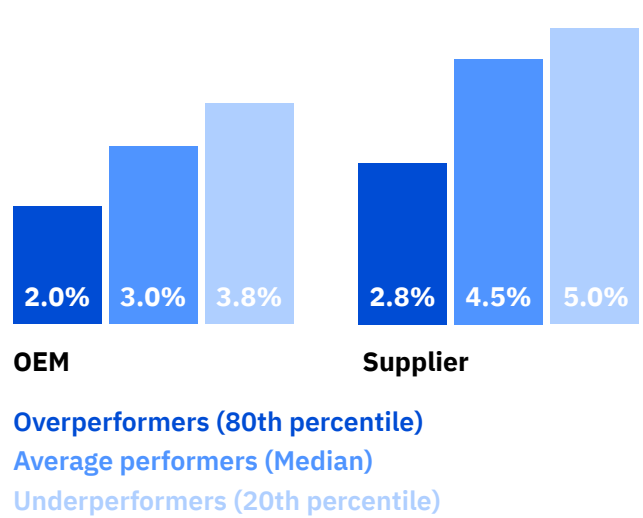
**Figure 1**

Automotive company performance ranges on warranty key performance indicators (KPIs)

**Claims as a percentage of revenue (claims rate)**



**Warranty cost as a percentage of revenue**



Source: IBM Institute for Business Value benchmark study. Q. What is the warranty claims rate for your organization?  
Q. What is your organization's warranty cost (repair and replacement) as a percentage of annual sales? n=300.

While cost reduction efforts can improve automotive company profitability, there is also value to be gained on the other side of the ledger. For example, one major auto OEM uses warranty data to improve its claims process and forecast parts usage. Time to identify non-compliant claims has decreased from three minutes to less than a minute, helping reduce labor costs by 52 percent.<sup>2</sup>

But perhaps more important, forecasting parts usage allows the manufacturer to make sure dealers have in-demand parts available for repairs, making it more likely customers have an excellent experience and don't experience frustrating delays. Insights from warranty data can thus increase customer satisfaction.

30 percent of OEMs and 23 percent of suppliers are analyzing social media data. With warranty claims data, this analysis can give companies ideas for new products and services.

## What is data-powered warranty reinvention?

Analysis of warranty data can deliver benefits that extend beyond the warranty function. By integrating Internet of Things (IoT) technologies into manufacturing processes, and applying artificial intelligence (AI) and advanced analytics to the data they generate, automotive companies can gain valuable insights into their operations, products, suppliers, and customers. This can lead to the redesign and improvement of existing warranty processes and operations, customer experiences, actual products, and the workforce methods that produce them.

For example, a major engine manufacturer faced a familiar challenge: in addition to being expensive and disruptive for individuals, engine breakdowns can be a drag on entire operations. To address this, the company instrumented and connected its products, allowing it to monitor performance in the field and identify factors that contribute to engine failure. Data mining helped establish relationships between engine performance parameters and target outcomes (that is, defined categories of engine faults). Then, based on the engine parameter readings, the company used predictive models to calculate the probability of engine fault within a defined period. This provided the manufacturer with a detailed and accurate understanding of engine performance under various conditions, allowing it to modify its warranty program in response to findings and to proactively initiate service based upon probability and type of failure.

Reinvention of warranty processes opens the door for new products and services. Our analysis found that 20 percent of OEMs and 14 percent of suppliers are integrating IoT technologies into warranty management processes to drive new sources of revenue. These include warranty extensions, tiered servicing approaches, or even innovative commerce, data sharing, and insight opportunities.

Additionally, when instrumented products are connected to the internet, the data they provide gives companies a better understanding of how customers use their products, allowing them to offer complementary products or services to improve the user experience.

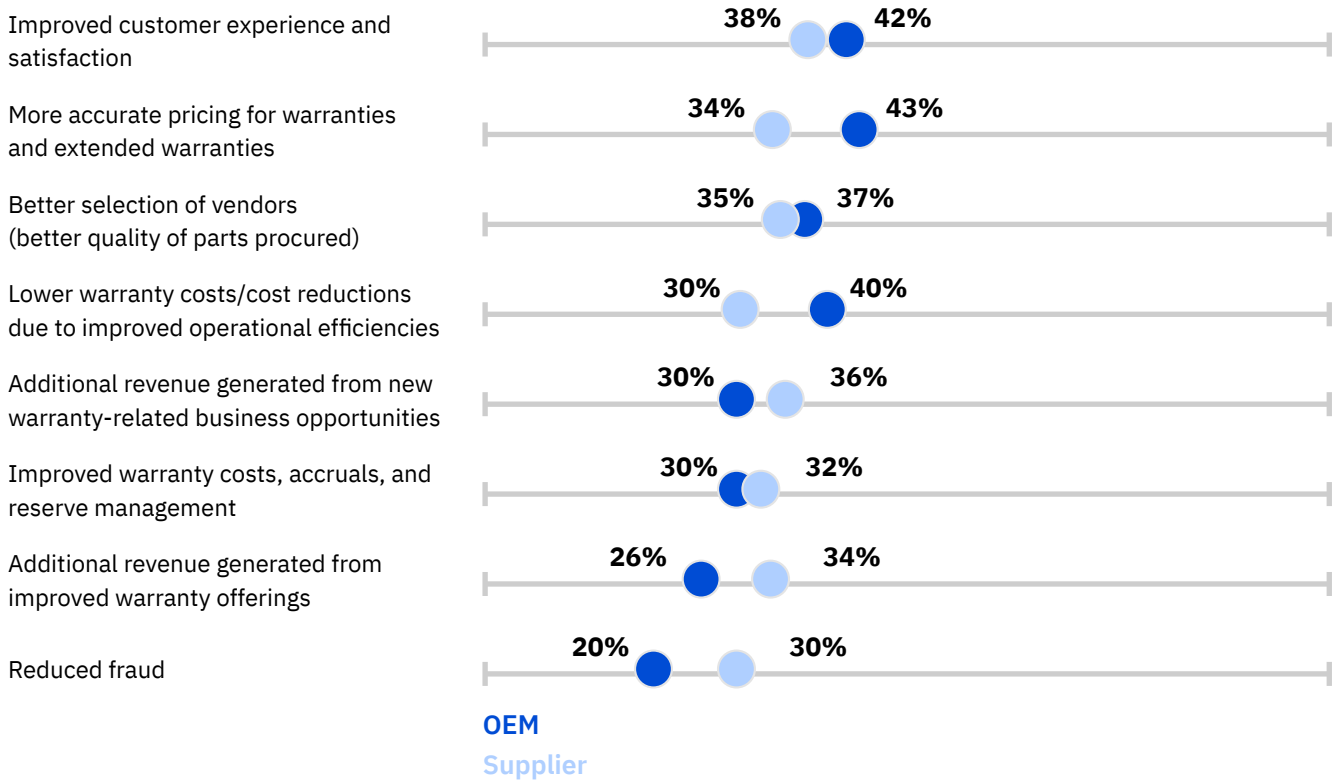
Social media offers another source of unique insight into customer sentiment about products and brands, how products are used—and how they fail. Our research indicates that 30 percent of OEMs and 23 percent of suppliers are analyzing this data. Together with warranty claims data, this analysis can also give companies ideas for new and improved products and services.

Our data shows that automotive companies have achieved significant benefits from data-enabled warranty improvement efforts (see Figure 2). Companies seeking to optimize these benefits will need new capabilities that support unprecedented collaboration and provide a shared view of deep insights among automotive OEMs, suppliers and dealers.

A predictive analytical application can use data from IoT devices to locate patterns missed by existing test parameters, allowing quality engineers to proactively intervene.

**Figure 2**

How warranty improvement initiatives have benefited auto companies



Source: IBM Institute for Business Value benchmark study. Q. What benefits has your organization achieved as a result of the warranty performance improvement initiatives you have implemented? Select the top three. n=300.

## How data makes a difference

### 1) Reduces cost through increased operational efficiency and quality

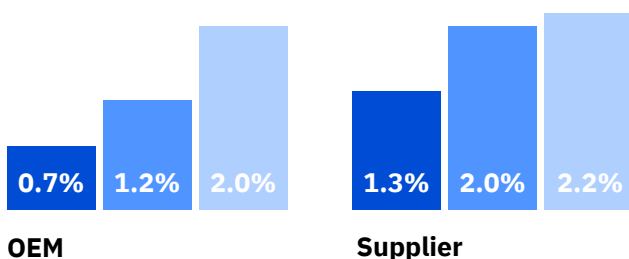
Candidates for warranty cost reduction across the automotive value chain seem obvious: For suppliers with USD 2 billion of revenue, potential savings from reducing their claims rates can be up to USD 18 million. Good use of warranty data can help them achieve this.

For example, in the manufacturing process, test protocols may miss an issue that later manifests itself. But when claims start pouring in, a predictive analytical application can use data from IoT devices in machinery to locate patterns missed by existing test parameters. This lets quality engineers proactively intervene. They can detect new fail modes, link them to a root cause and rectify the issue. This reduces the number of potential faulty products in the market, eliminates claims for these issues and ultimately reduces warranty costs.

Another candidate for warranty cost reduction is the warranty claims process itself, which accounts for up to 2 percent of revenue for some OEMs and 2.2 percent of some suppliers (see Figure 3).

**Figure 3**

Cost to process warranty claims as a percentage of revenue



**Overperformers (80th percentile)**

**Average performers (Median)**

**Underperformers (20th percentile)**

Source: IBM Institute for Business Value benchmark study.

Q. What is the total annual cost (in USD) of the process "process warranty claims" for your organization?

Q. What is the total annual revenue for your organization in US dollars? n=300.

## Insight: Operationalizing analytics

As part of its IT transformation, a major automotive OEM operationalized analytics across the enterprise. It applied predictive analytics to critical production processes to identify causal factors of poor quality, discover top predictors for equipment failure, and improve production line availability and reliability. Through process and product quality improvements, this OEM reduced warranty repeat repairs by 50 percent and achieved a 5 percent reduction in overall warranty costs amounting to savings of USD 50 million a year.

By broadening information-sharing across the automotive ecosystem, the value from higher quality products can extend much further.

## Insight: Extending benefits through data sharing and analytics

A global automotive OEM uses a single data platform and tool across its warranty process. The platform provides access to and the ability to analyze over 10 terabytes of integrated warranty claim data from around the world. Engineers, warranty, and financial analysts, and suppliers around the world use the warranty analytics, reporting and sophisticated predictive modeling. Additionally, they have access to data for commonly asked queries, problems and resolutions. This integrated approach and consistent view speeds up claims processing, facilitates supplier recovery and accelerates the “detection to correction” cycle.

Lack of clearly defined, repeatable global processes is one of the greatest warranty-related challenges for 38 percent of automotive OEMs and 31 percent of their suppliers. In the case of warranty claims, automating the process at an enterprise level standardizes the process and applies consistent tools throughout. This facilitates integration of organizational functions and data, and the communication of warranty and service information among them, speeding up the process and reducing related costs. Twenty-six percent of OEMs and twenty-one percent of suppliers have fully automated their entire claim-processing lifecycles.

### **2) Improves quality across the automotive ecosystem**

Improving quality throughout the organization—from product development, manufacturing and assembly to after-sales support—can help companies take out cost and improve brand integrity, both critical advantages in today’s highly competitive automotive market.

But by broadening interactions and information-sharing across the automotive ecosystem, including support for customers, dealers, service centers, and OEMs, the value from higher quality products can extend much further.

Here’s why: IoT technology, coupled with advanced predictive quality algorithms, can allow earlier detection of problems. Standardized early warning systems can advise OEMs, suppliers, and dealers of these potential warranty issues. By increasing collaboration through data sharing and analytics, manufacturing plants and supply chain partners can be notified to prevent faulty or weak parts from being used in future manufacturing.



### **3) Improves customer experience, opening the door for new services and revenue streams**

Arguably, the most significant value from reinventing warranty processes using insights from data analysis may be in discovering ways to keep customers happier while providing them new, differentiated products and services they value. This requires reinvention that places the end user at the center of the redesigned warranty process. It also requires looking outside the automotive industry for both inspiration and to understand fully customer expectations.

In an era of customer experience and individualization, a customer's last "best experience" anywhere becomes their future minimum expectation everywhere. To meet this expectation, automotive companies need to reimagine their customer interactions. Here too, warranty data integration, using enabling technologies such as IoT, can play a role.

Thirty percent of OEMs and twenty-one percent of suppliers from our benchmark study have incorporated IoT technologies into their products and systems to differentiate their warranty processes. They are able to predict service events and repairs, notify drivers and direct them to the nearest dealer or service center. In parallel, they can analyze the predicted events or repairs, compare them to known issues, identify the needed parts, and notify the nearest dealer or service center. This enables a significantly better customer experience: drivers get clear, early direction to resolve problems before the problems become apparent, and service centers are primed and ready for a customer's arrival.

Conversation-based AI advisors that use natural language search and programming can help dealer technicians find resolutions to service issues by accessing multiple technical manuals and bulletins in real time. This can save warranty cost by fixing things correctly the first time, and by improved technician efficiency in doing so. From a customer perspective, this means faster, more accurate detection of issues and a single trip to a dealer that has everything required available to repair or service the vehicle. All in all, a superior warranty experience.

Meeting these new customer expectations also requires designing a true seamless omnichannel experience with smart recommendations and contextual, relevant customer engagement. Product information should be offered through self-service portals. It can also tap Augmented Reality (AR), where the product information delivered over a tablet or smart phone can be enriched with context or tutorials, helping field technicians perform guided repairs, for instance.

Auto companies have already experimented with applications designed to understand and respond to questions from customers on recalls, product updates and warranty extensions related to their vehicles. Some even include a customized chat integrated with their vehicle master and CRM systems that can be launched from multiple touchpoints.

Insight from warranty data is proving valuable enough to justify business models built around its use. One company—We Predict—gathers warranty claim data from a variety of sources, including dealerships and independent service shops.<sup>3</sup> It has a database of more than 500 vehicle models of top automakers, with statistics on at least one-fifth the population of every model. The company sells a predictive analysis model that, among other things, projects when a given part will fail based on how it performed in the past.

Easier access to warranty data would permit one automaker to benchmark how a competitor is faring on the performance of a given part it commonly uses. Historically, an automaker knew only how its own parts were performing. And while a manufacturer might improve its warranty performance year over year, it still wouldn't know how that performance stacked up against rivals. Insight from warranty data has also helped one major luxury auto manufacturer to reassess and improve its Certified Pre-Owned (CPO) vehicle strategy.<sup>4</sup>

## Action guide

### *Data-powered automotive warranty reinvention*

#### **1. Benchmark warranty performance.**

First, understand the pressing strategic reason for warranty improvement in your organization. Is it to reduce cost through operational efficiencies? Or perhaps to improve customer experience and loyalty? Then examine key warranty metrics and compare your organization's performance with peers in the industry. Gaps represent areas where you can focus, highlighting where better use of data can help. To perform comparisons, some organizations offer formal benchmarking services. Alternatively, you can find warranty metrics in the financial statements of publicly traded companies, or via online sources such as *Warranty Week*.<sup>5</sup>

#### **2. Prioritize warranty improvement initiatives.**

Establish a clear warranty data strategy and roadmap to improve performance. Work with your CIO and internal partners to define places where technology and data can improve your understanding. Then focus on those where data is most readily incorporated. Evaluate and adopt a combination of practices that will help you collect and integrate data (not just warranty data) from multiple sources across your entire ecosystem. This includes other business functions within your company, as well as dealers, suppliers and customers. Analyze and extract insights from that combined data set, then share those insights across your value chain.

#### **3. Cultivate enabling capabilities.**

Data-driven reinvention demands new capabilities specific to integration, AI, trusted sharing, and experience creation. Use iterative design and application development techniques to adapt them, and cloud-based applications to launch them within your organization and across your ecosystem. Train employees in emerging technologies and, where necessary, re-organize teams. Provide mobile devices to increase employee efficiency, and collaboration tools to foster innovation.

#### **4. Integrate IoT technologies into your warranty processes.**

This can help enhance customer experience, drive new sources of revenue, improve operational efficiency and optimize costs. Start by defining warranty processes that can be applied across the enterprise. Then automate these processes to facilitate the integration of organizational functions and data—and the communication of information among them. Use equipment-mounted sensors in plants with communication technologies to collect the real-time performance data. Combine it with warranty information and data from other internal and external sources. Finally, apply advanced analytics and AI to map interactions and dependencies to uncover new insights.

#### **5. Prevent security breaches and the compromise or theft of information.**

While increasing collaboration and insight-sharing across your ecosystem, be sure to monitor and enforce security requirements. Define service level agreements (SLAs) for data security and privacy. To combat insider attacks, implement controlled access to data. Know who has been granted access to sensitive functions or data. Monitor and audit actions of those privileged users closely. Make sure your collaboration security software and onboarding/exit processes are state-of-the-art. Each IoT device represents a point of entry. Implement security controls that allow users to specify how data is stored on their devices, as well as how it is used and shared with third parties. Enable device authentication for machine-to-machine scenarios where devices are left unattended.

## About Expert Insights

Expert Insights represent the opinions of thought leaders on newsworthy business and related technology topics. They are based upon conversations with leading subject matter experts from around the globe. For more information, contact the IBM Institute for Business Value at [iibv@us.ibm.com](mailto:iibv@us.ibm.com).

## Notes and sources

- 1 “Worldwide Automotive Warranty Expenses.” *Warranty Week*. August 22, 2019. <https://www.warrantyweek.com/archive/ww20190822.html>
- 2 SAS. Customer Stories. 2020. [https://www.sas.com/en\\_my/customers/american-honda.html](https://www.sas.com/en_my/customers/american-honda.html)
- 3 Chappell, Lindsay. “Prying the lid off of warranty data” *Automotive News*. July 13, 2019. <https://www.autonews.com/suppliers/prying-lid-warranty-data>
- 4 We Predict. “A CPO that gives dealers real value.” [https://www.wepredict.com/wp-content/uploads/B0077086.005\\_We-Predict\\_Customer-Case-Studies\\_Case-study-2\\_cubes\\_v3.8\\_110918\\_Digital.pdf](https://www.wepredict.com/wp-content/uploads/B0077086.005_We-Predict_Customer-Case-Studies_Case-study-2_cubes_v3.8_110918_Digital.pdf)
- 5 <https://www.warrantyweek.com>

© Copyright IBM Corporation 2020

IBM Corporation  
New Orchard Road  
Armonk, NY 10504  
Produced in the United States of America  
May 2020

IBM, the IBM logo, [ibm.com](http://ibm.com) are trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the web at “Copyright and trademark information” at: [ibm.com/legal/copytrade.shtml](http://ibm.com/legal/copytrade.shtml).

This document is current as of the initial date of publication and may be changed by IBM at any time. Not all offerings are available in every country in which IBM operates.

THE INFORMATION IN THIS DOCUMENT IS PROVIDED “AS IS” WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, INCLUDING WITHOUT ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND ANY WARRANTY OR CONDITION OF NON-INFRINGEMENT. IBM products are warranted according to the terms and conditions of the agreements under which they are provided.

This report is intended for general guidance only. It is not intended to be a substitute for detailed research or the exercise of professional judgment. IBM shall not be responsible for any loss whatsoever sustained by any organization or person who relies on this publication.

The data used in this report may be derived from third-party sources and IBM does not independently verify, validate or audit such data. The results from the use of such data are provided on an “as is” basis and IBM makes no representations or warranties, express or implied.

