



Business impact

Using SAS, Shanghai General Motors Co. reduced cycle times for finding and solving product quality issues by 70 percent (from 174 to 52 days) within the first six months.

Challenges

- **Massive amounts of data.** Dealers, service technicians and call centers generate lots of warranty claims and product quality data, but much of it is manually entered and error-prone, as well as being optimized for payments, not product performance analysis.
- **Lack of data integration.** Product complexity – numerous components from multiple suppliers, built across different plants and time frames, and sold through many channels – makes data integration difficult.
- **Manual transactional systems and processes.** Current tools and processes can't detect problems until they grow to a substantial size.
- **Lack of detail.** Because of the data volume, we can only look at high-level, summarized data, which doesn't give us enough detail on product quality and performance.
- **Limited resources.** There isn't enough manpower to look beyond top problems, and quality engineers spend more time tracking down critical issues than working on process refinement and product improvements.



**THE
POWER
TO KNOW®**

How can we identify product quality problems and minimize their effect on our customers and financial liability?

YOUR GOAL: Reduce warranty costs

Warranty service has become a critical differentiator for manufacturers, and customers expect warranty claims to be handled quickly and satisfactorily. Failure to meet that expectation can dramatically erode customer satisfaction, consumer loyalty and service revenues, ultimately leading to a loss of market share.

With all the emphasis on warranty and service, warranty costs are enormous (\$30 billion last year in the US alone). And thanks to recent compliance initiatives and governmental regulations around the world (such as FASB FIN 45 in the US) warranty information is now in the public domain. With analysts and the investment community now privy to how much money companies are spending or holding in reserve for warranty-related issues, manufacturers are under intense pressure to rein in warranty costs.

Warranty service isn't just about fixing product failures; it's also an opportunity to identify emerging issues and shorten the detection-to-correction cycle. Doing so will improve product quality and reliability, enhance your brand reputation and build customer loyalty, which will lead to reduced warranty costs, better profit margins and repeat business.

OUR APPROACH

Your warranty data is a gold mine of information—the closest representation you have of how your product operates in the customer's hands. But simply reporting on warranty data isn't enough if you want to make accurate predictions and avoid potential crises. We approach the problem by delivering warranty-specific software and services that will help you:

- **Integrate and decode huge volumes of warranty data from multiple sources**—sales, call centers, field service, etc.—into a single database that is optimized for warranty data analysis, tracking and reporting.
- **Transform warranty data into a more usable format automatically**, categorizing text and separating it into key concepts that can be used for analyzing relationships among isolated claims to find patterns and anomalies—without manual intervention.
- **Analyze warranty data—and send prioritized alerts to the appropriate people**—using automated, warranty-specific predictive analytics to surface emerging issues, identify fraudulent claims, uncover potential problems and determine their root cause.
- **Empower problem solvers with easy reporting functions** that let them access critical information in a format they can understand, without being experts in statistics.

Detailed analysis of your warranty claims data can help you identify suspect claims and uncover near- and long-term opportunities for additional service cost savings, incremental revenue, improved product quality and, of course, improved customer satisfaction and retention.

THE SAS® DIFFERENCE: Take full advantage of all your warranty data

Many vendors claim to offer warranty solutions that include analytics when they're really just selling reporting packages. But there's a big difference between warranty data reporting and warranty data analysis. While any reporting tool can tell you what happened, only a true warranty analytics solution can detect emerging issues before they become huge, costly problems. And only SAS offers a solution specific to warranty analysis, with an automated workflow for identifying and acting on emerging issues, including:

- **Detection**—Identifies the problem early on.
- **Prioritization**—Puts the problem into perspective, calculating how much it will cost to fix and how much it will cost if nothing is done.
- **Definition**—Determines the problem's root cause and takes steps toward correcting it.

SAS is the market leader and only technology vendor with true domain expertise in warranty analysis, which we've built directly into the solution. And true warranty analysis is just one piece of an entire service intelligence suite. You can start with warranty analysis and then build on this foundational piece to address all other service optimization areas—including accrual forecasting, service parts and service operations optimization, call center analytics and more.

CASE STUDY: Sub-Zero Freezer Co.

■ Situation

With product defects taking six months to a year to identify and address, Sub-Zero turned to its warranty claims data to find ways to improve product quality and customer satisfaction. But coding, classifying and sifting through the data to identify trends was unwieldy and really slowed down the product improvement process.

■ Solution

SAS delivered advanced warranty analytics and text mining software that:

- Automatically transforms textual data into a usable format for analysis.
- Combines restructured claims data with other types of data in a single database.
- Creates emerging issues reports showing new patterns in prior warranty claims data.
- Assigns potential issues to product engineers for immediate investigation.
- Sends e-mail alerts to engineers interested in specific issues on product components.

■ Results

- Sub-Zero now detects potential problems in half the time, and the company expects to shave two to three months off the problem identification cycle.
- Work-hour costs are significantly reduced, and valuable resources have been reassigned to more strategic areas.
- Customer satisfaction has increased as a result of earlier problem identification.



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■ The vision

Data integration

What if you could consolidate all data sources – including structured and unstructured data from call centers, dealers, service centers, etc. – into a single view that filtered out noise, giving you meaningful insight into the customer experience?

Advanced text mining

What if you could extract and categorize essential information from text-based warranty claims data (from call centers, service technicians, dealers, etc.), combine it with your structured data, and analyze it to gain valuable knowledge about your customers' critical service and product issues?

Predictive analytics specific to warranty analysis

What if you could automatically receive prioritized alerts to potential problems very early in the product's life cycle so you could investigate and take corrective action before problems reach your crisis-issue list?

Easy reporting

What if everyone who needed it – quality engineers, data entry clerks, senior executives, etc. – could access key warranty performance indicators, drill down to performance trends, and create ad hoc charts, graphs and reports through an easy-to-use Web interface without requiring specialized training and experience?

SAS FACTS

- The patent-pending SAS® Forecast Server earned a Product of the Year award from Technology Marketing Corporation's *Communications Solutions* magazine in 2006.
- SAS was ranked No. 1 in the "Business Performance" category of *Manufacturing Business Technology's* Global 100 list.
- SAS customers make up 96 of the top 100 companies on the 2006 FORTUNE Global 500®.

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