REDUCING SERVICE PROVIDER AND WARRANTY FRAUD
FOR AN INDUSTRY-LEADING COMPUTER TECHNOLOGY PROVIDER

Elder Research designed, prototyped, piloted, and deployed an automated fraud detection system credited with saving over $67 million in service provider and warranty fraud.

INDUSTRY

» Retail

» Computer and Electronic Product Manufacturing

BUSINESS NEED

» The warranty department needed to reduce return rates and proactively identify cases of warranty fraud or claim anomalies indicative of fraud among its service provider base

SOLUTION

» Developed a service provider and warranty fraud detection system

BENEFIT

» Prioritized investigative workload to maximize resource utilization and minimize loss to fraud

» Identified warranty trends leading to over $67 million in cost savings over five years

The Challenge

Warranty fraud is a crime committed when a person or organization intentionally deceives a company or its partners to receive service, hardware, or financial compensation under the guise of a warranty claim. These types of crimes have a huge impact on the success of companies worldwide. Warranty fraud directly impacts profits and the public perception of companies and their service partners. How can companies adequately screen customers and authorized service providers for fraudulent claims, while also authenticating existing customers and complying with federal regulations? The answer lies in fraud reduction systems that perform intelligent, multi-sourced data analysis, returning single and consistent entitlement information that authenticates the claim and the customer.

The client needed to reduce or eliminate fraudulent activity among its service provider base. By stopping these fraudulent activities, they could realize significant cost savings and potentially recover warranty expenses.

The Solution

An in-depth analysis by the client estimated that they were losing $100 million per year to warranty fraud and ineligible claims. A historical review of 60,000 warranty claims across 16 branches was completed to identify common methods used to defraud the company. As a direct result of this analysis, the warranty team received sponsorship from the executive board to tackle warranty fraud company-wide as one of three breakthrough opportunities to reduce overall warranty cost. The client contracted with Elder Research to help build the Global Analytics team, the internal fraud investigations group, and to develop an automated fraud detection solution.

> "I've been working with three Elder Research professionals for the past several months and am thoroughly impressed with their work. I've found them to be a cost-effective alternative to hiring and growing very hard-to-find talent in-house. They are a true extension of my group. In all, the quality has been superior and their client-service attitudes are tremendous."
>
> Charles Thomas, PhD
> Advanced Analytics & Research

For this project Elder Research was able to successfully scope, design, prototype, pilot, and deploy an automated fraud detection system. Data sources were identified that contained the information that had been employed to commit the fraud. The detection system and associated models (using cluster analysis and model ensembles) were implemented by developing SQL software that calculated the metrics via the database and provided the raw data to support these metrics. The fraud detection system combined internal and external data that had never been used together before, automated metric development, and used clustering, decision trees, neural networks, and model ensembles to generate suspicion scores for each service provider. These tools also identified service technicians and companies that had abnormal rates of returning serviced components that were not faulty. The system allowed the team to discover a problem that was previously unsuspected: a few large corporate customers were systematically abusing their product warranties by claiming to have a (nonexistent) problem with devices just before their warranties expired.

The warranty fraud solution addressed the challenges of analyzing incoming data for patterns indicative of warranty fraud and provided the detailed claims data required to facilitate investigation by corporate security and the compliance teams. The automated solution collected the data and ranked cases based on their likelihood of being fraudulent. This allowed the analysts to prioritize
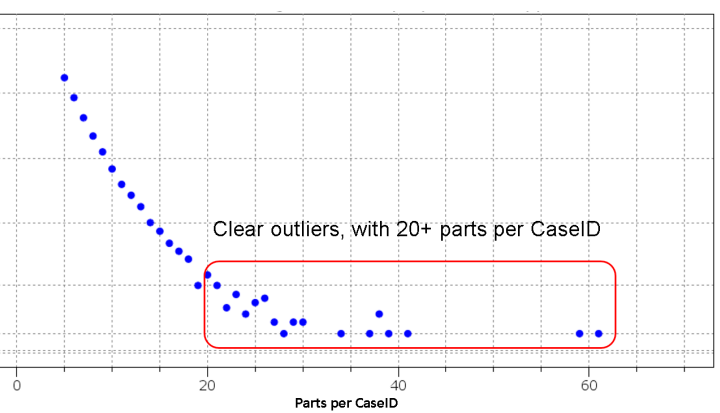

Figure 1. Frequency of cases involving an unusually high number of parts. More than 20 parts per case was determined to be particularly unusual and indicative of fraud.
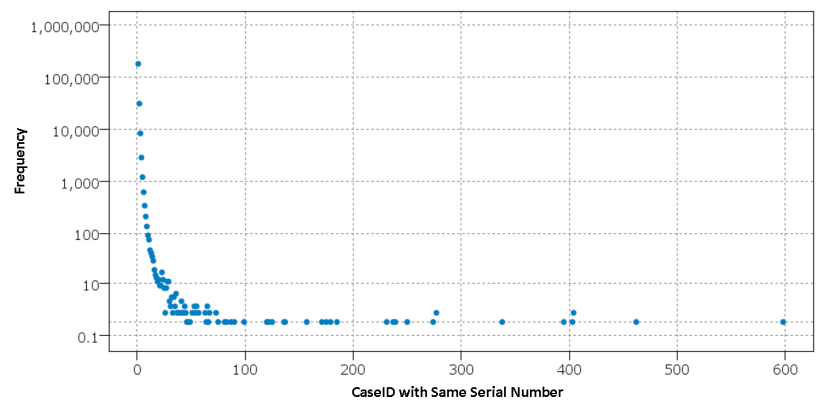

Figure 2. Another fraud metric was to identify serial numbers associated with multiple cases. Note the far right point where one serial number was used with 600 different cases.

workload by investigating the most likely and severe examples of fraud first, maximizing resource utilization and minimizing loss to fraud.

Results

In the first nine months of working with the fraud investigations team, the models uncovered $11 million in service provider contract fraud. Over a five-year engagement, the fraud detection system was credited with saving over $67 million in service provider and warranty fraud.

About Elder Research

Elder Research is a recognized leader in the science, practice, and technology of advanced analytics. We have helped government agencies and Fortune Global 500® companies solve real-world problems across diverse industries. Our areas of expertise include data science, text mining, data visualization, scientific software engineering, and technical teaching. With experience in diverse projects and algorithms, advanced validation techniques, and innovative model combination methods (ensembles), Elder Research can maximize project success to ensure a continued return on analytics investment.