



# DATA-DRIVEN WARRANTY RISK PROFILE ANALYSIS HELPS IDENTIFY STRATEGIC PRIORITIES

Most manufacturers must handle large numbers of warranty claims related to a variety of products and components. The volume of claims can easily run to millions per year for consumer goods manufacturers. Patterns within claims data may indicate emerging quality or design problems; therefore, identifying and prioritizing the issues requiring high priority responses is critical to improving quality and reducing the financial impact of claims.

Warranty risk profile analysis, sometimes referred to as quality issue prioritization, is a vital part of any ongoing quality improvement process. The data from warranty claims, once cleansed and sorted, is one of the most valuable parts of the feedback loop that enables companies to improve their products' reliability and customer satisfaction.

## Sorting and Categorizing Claims Data

Machine learning (ML) is the optimal technology for analyzing large volumes of warranty claims data. Systems that support a visual, no-code approach to selecting, building, and testing ML algorithms save time compared to writing custom code. They make it easier for everyone involved in the decision-making process, from engineering personnel to senior management, to understand how the algorithms work and how the results are generated.

To get at the actionable insights contained within the claims data, manufacturers typically use a combination of ML algorithms to first identify patterns, clusters, and outliers. Easy-to-understand and explainable models like decision trees or strategy trees can prioritize issues in the claims. The analytics team can then apply weighting factors and develop a prescribed approach to address these issues.

## RFM: Recency - Frequency - Monetary Value

The RFM model is useful in many applications beyond warranty analytics, but in this case, it is an excellent way to quantify the importance of a single customer or group of customers as well as the importance of different warranty issues or groups of issues. In the warranty analytics case, RFM typically measures:

- Recency: How recently a warranty issue has arisen
- Frequency: How often the same or similar issues have occurred
- Monetary value: How much it costs for the company to remedy the issue and how much it may cost in terms of future business opportunities, brand reputation, and other factors

Machine learning software can automatically group claims data based on weighted RFM models and help prioritize which claims and sets of claims require urgent attention. Using the RFM model in this

CLEANSING DATA FROM MULTIPLE REPOSITORIES IS CRITICAL

USE MACHINE LEARNING TO DETECT EMERGING QUALITY OR DESIGN PROBLEMS

MACHINE LEARNING CAN PRIORITIZE PROBLEMS BASED ON RFM WEIGHTING

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way helps improve customer satisfaction and brand image. Sales teams can also use this information to detect sales patterns in different geographies that previously weren't fully understood and find new upsell and cross sell opportunities.

### Cleansing Warranty Claims Data

It is critical that the claims data be consistent and clean in order to formulate appropriate responses to the many types of issues that they will reveal. Inaccurate or incomplete data and duplicated records can skew the output of ML algorithms, which can then lead to misallocation of scarce engineering resources, reductions in product quality, and a tarnished brand image.

Ensuring that the data inputs are properly prepared is no small task since, in most firms, claims may be generated and tracked using multiple systems, including systems managed by channel partners and other third parties. The data may be stored in a variety of formats, including spreadsheets, PDF reports, and databases, and it all must be brought together and transformed into a consistent set of records.

Claims must be scrutinized to ensure that they are internally consistent to reduce warranty fraud. For example, a claim must be checked to ensure that the date of claim correlates properly to the time when the related product was available on the market.

It is easy to underestimate the amount of time and resources required for data preparation, especially in situations involving claims data from channel partners and/or disparate internal systems. While there are many ways to clean up and harmonize data from multiple sources manually, including the ever-popular Excel spreadsheet, these approaches require enormous investments of personnel time and are prone to error. Implementation of automated, repeatable data preparation solutions are the best way to manage this critical phase of the process at the lowest cost and with the fastest turnaround times.

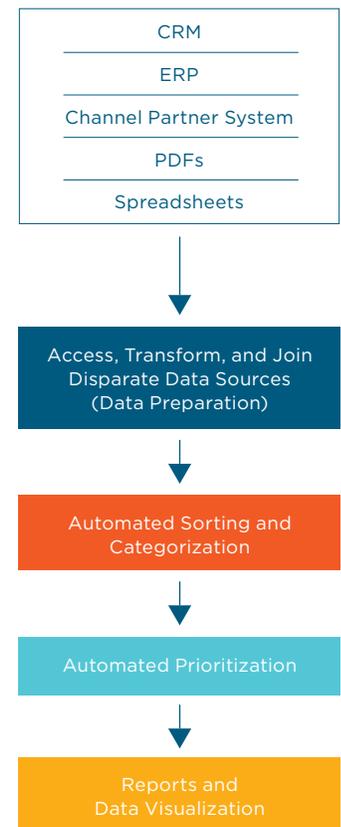
### Altair Data Analytics for Warranty Risk Profile Analysis

Altair's complete range of data analytics tools support implementation of highly granular and informative risk profile analysis processes for manufacturers. They allow analytics teams to collect, collate, and sort claims data from virtually any set of sources and produce governed, secure, and trusted data sets. Our machine learning tools enable efficient development of prioritized issues to support continuous quality improvement, reduced costs, and enhanced brand image.

**Data Preparation:** Access, cleanse, and format data from virtually any source without any manual data entry or coding. Automate laborious and time-consuming data preparation tasks and improve the accuracy of data being fed into machine learning algorithms.

**Machine Learning:** Altair's industry-leading visual approach to data analytics enables businesses to build and deploy machine learning models in almost any analytic infrastructure. Altair's automated ML and explainable AI functions eliminate repetitive tasks, makes data scientists and business analysts more productive, and enables people to make fully-informed decisions.

**Streaming Analytics:** Build complex stream processing applications with a fully drag-and-drop interface and sophisticated real-time dashboards without writing any code. Solve difficult problems quickly, understand complex relationships in seconds, and identify issues requiring further investigation with just a few clicks.



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