# Forecasting models for manufacturer warranty returns: a case study

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**Abstract**

In this paper, we consider the analysis of some failure data during the warranty period, with regard to some electrical products.

Our goal is to define some innovative models for warranty forecasting, which are transferable to the company where this study has been carried out. We present two innovative procedures for warranty control: the former allows to determine the probability of failure, while the second model can be used to establish a general quality index. The performance of the proposed methods are illustrated by considering real data.

***Keywords and phrases :*** *Warranty returns management, warranty claim analysis, reliability engineering, quality control.*

## 1. Introduction

Warranty analysis and forecasting is an important activity for manufacturing companies. It plays a crucial role in financial planning for warranty repair cost estimates and in detecting alarming reliability issues.

This paper deals with the problem of forecasting the number of produced and commercialized machines that, for various reasons, are unable to perform satisfactorily the functions for which they have been arranged; consequently they need to be repaired or replaced.

We also examine the possibility to estimate the probability distribution of the returns during the warranty period and to find out the failure rate of machines.

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