

Preface

Reliability of products is becoming increasingly important due to a rapid technological development and tough competition in the product market. One effective way to ensure reliability of the sold product/asset is to consider the after-sales services linked to the warranty and service contract. One of the major decision variables in designing a warranty is the warranty period. A longer warranty term signals better reliability and provides higher customer/user peace of mind. The warranty period offered by the manufacturer/dealer has been progressively increasing since the beginning of the twentieth century. Currently, a large number of products are being sold with long-term warranties in the form of lifetime warranty, extended warranty, warranty for used product, and long-term maintenance contracts. Long-term warranties and service contracts are becoming more and more popular as these types of warranties and after-sales services provide assurance to the customers for a long reliable service and protecting customers against poor quality and the potential high cost of failure occurring during the long uncertain life of the product. Offering a long-term warranty incurs costs to the manufacturers/service provider over the warranty/contract period. This cost needs to be factored into the price. Otherwise, the manufacturer/service provider may experience loss instead of profit. On the other hand, customer needs to be aware of the cost of maintaining it over the useful life and needs to decide whether these policies/services are worth purchasing or not.

The analysis of warranty policies and cost models associated with short-term or fixed-term policies has received a significant attention of the academic researchers and practitioners. A significant amount of academic research has conducted in modelling policies and costs for such warranties. In contrast, long-term warranty policies have not been studied and published well. This inspires the authors to write a book on long-term warranties and after-sales services.

This book is divided into six chapters. [Chapter 1](#) introduces the long-term warranty and after-sales service contracts and reviews various popular long-term warranty policies such as lifetime warranty, extended warranty, warranty for used product, and service contracts. [Chapter 2](#) discusses the concepts, taxonomy, and policies for lifetime warranty based on the current practice. Finally, mathematical

models for predicting failures and expected costs for different one-dimensional lifetime warranty policies are developed at system level and analysed by capturing the uncertainties of lifetime coverage period and the uncertainties of rectification costs over the lifetime. Failures and costs are modelled using stochastic techniques. [Chapter 3](#) deals with concept, policies, and taxonomy of warranties for used product and then cost models developed for such warranties. [Chapter 4](#) reviews concept, policies, and the cost models proposed by academic researchers. [Chapter 5](#) overviews maintenance contract policies. Three policies for maintenance contracts are proposed in this chapter considering the concepts of outsourcing assets to the service providers. Conceptual models are developed for estimating servicing costs of outsourcing through maintenance contracts by considering time-dependent failure mode. [Chapter 6](#) provides a case study of outsourcing rail maintenance by applying the maintenance contract models developed in [Chap. 5](#).

This book is concerned with the practice and theory of warranty management, particularly in relation to long-term warranties. Models developed in this research can be used for making right decisions in purchasing long-term warranty policies, and for managerial decision in considering maintenance contracts or outsourcing maintenance for large equipment and/or assets.

Long Term Warranty and After Sales Service

Concept, Policies and Cost Models

Rahman, A.; Chattopadhyay, G.

2015, XVI, 113 p. 23 illus., 13 illus. in color., Softcover

ISBN: 978-3-319-16270-6