

CREATING OPTIMAL SERVICE DELIVERY STRATEGY OF  
LONG-TERM SERVICE AGREEMENTS FROM RISK  
MANAGEMENT PERSPECTIVE

By

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## ABSTRACT

Long-term service agreements (LTSAs) for the maintenance of capital-intensive equipments, such as, gas turbines, medical equipments, aircraft and locomotive engines, are gaining wide acceptance. A typical LTSA contract spanning a period of 5-20 years makes a provider be responsible for fully maintaining customers' equipments. Effective management of LTSAs is very important, since these equipments are vital to the basic infrastructure and the economy of a country. This dissertation develops a rigorous framework for effectively managing the service delivery of LTSAs. Without a rigorous framework, the provider is exposed to extensive losses and endangers end-consumers' lives.

LTSAs combine several features of many problems, such as, service operations management, maintenance management, scheduling management, inventory management, and financial management. These problems are very well known and are studied extensively in the literature. However, these problems are often addressed separately. Our dissertation attempts to bridge these various disciplines through the perspective of risk management and assessment framework. The created integrated risk management framework focuses on strategic risks of the service delivery from the provider's perspective, since the provider plays the most critical role in creating the service. The framework allows us to develop an optimal service delivery strategy which provides the most reliable and top quality of service, meets the customer's requirements, reduces potential losses and risks with minimal costs while constantly looking towards improving profitability.

The framework begins by identifying potential sources of risks of the service delivery. After thorough identification of risks, we find a strategically optimal maintenance strategy for a multi-component product focusing only on product risks. Once we completely understand product risks, we integrate service risks into the framework where we attempt to develop an optimal service delivery strategy for LTSAs. We further enhance the framework by taking financial risks into account and develop an optimal buy and hold strategy which minimizes financial risks while

fulfilling customer's requirements with minimal costs. Finally, we streamline decisions made at strategic business level to vigilantly develop a maintenance schedule for the equipments, a corresponding inventory plan, and a resource management so the costs are minimized.