

Service Outsourcing: Capacity, Quality and Correlated Costs

This paper studies how to design service outsourcing contracts to ensure fast, quality services from an independent service provider. The outsourcer does not have perfect information about either the service provider's capacity cost (i.e., cost for providing fast service), or her quality cost (i.e., cost of achieving a high quality level). Moreover, the two unknown costs may be correlated with each other. We solve for the outsourcer's optimal outsourcing contract, and show that the structure of the optimal contract depends on the relationship between the costs. Specifically, we highlight the following observations when the two costs are negatively correlated: First, under certain conditions, the outsourcer may be able to squeeze the supplier's profit (information rent) to zero for an intermediate range of cost realizations; second, it is possible that the service supply chain is coordinated by using the outsourcer's optimal contract. We then examine the performance of two classes of commonly observed contracts that are relatively simple to implement. It has been found that these simple contracts generally perform well when the costs are positively correlated, but they could perform much worse when the costs are negatively correlated. Our results therefore caution outsourcing companies that the potential trade-off between capacity cost and quality cost may require a careful design of outsourcing contracts.

Keywords: Outsourcing, service, capacity, quality, information asymmetry, contracting, queueing systems

1 Introduction

Service outsourcing has been rapidly growing during the past decades. For example, the revenue of the global service outsourcing industry increased from 45.6 billion U.S. dollars in 2000 to 88.9 billion in 2015 (Statista 2016). However, many companies are just beginning to discover the true cost of outsourcing, and suddenly find themselves in a disadvantaged position. Service providers are frequently located thousands of miles away, often in a foreign country, and it can be very difficult to obtain perfect information on every aspect of their service operations. After companies