



Service guarantee and optimal payout models

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ABSTRACT

This paper evaluates both the optimal service level and optimal economic payout in service payout models. A service guarantee level is explicitly taken into consideration to obtain the optimal payout. In this study, we consider a generic model to provide insights into the dynamic interaction between the service guarantee and optimal payout levels. Parametric analyses show that when the demand payout coefficient is high, the impact of the payout is positive only if the payout rate is high enough.

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1. Introduction

Service guarantees have become an important means in service industries, and even non-service-oriented suppliers, to attract and retain customers. According to [Kashyap \(2001\)](#), a typical service guarantee policy includes two elements: a meaningful promise of a certain service quality and a compensation or payout offer. Service failure occurs when a customer is dissatisfied with the provided service. Some service guarantee policies might also include an invocation procedure of service recovery when service failures occur.

Organizations strive to avoid the occurrence of service failure. Unfortunately, service failures are inevitable due to the complexity of real situations including the varying service quality of employees, the defection of products, different comprehensions of the service guarantee policy, some unfathomable customer preferences, and internal and external accidents. For example, a security breakout in the Royal Bank of Canada on May 31, 2004 collapsed the bank service for several days and spread dissatisfaction among customers who filed a lawsuit to claim \$500 for each affected customer ([Laudon and Laudon, 2003](#)). In another example, a discount brokerage firm, Quick & Reilly, promised to refund the commission fees if the customers were unsatisfied with their trades due to service quality ([Dunkin, 1992](#)).

The literature on service guarantees has been rich since the seminal work by [Hart \(1988\)](#). [Wirtz and Kum \(2004\)](#) suggest that

an explicit guarantee has strong impacts on customers' purchase intentions. Other studies also conclude that an appropriately designed service guarantee and payout can reduce customers' perceived risk and therefore attract new customers. In other words, a service guarantee can increase the demand of the service. [Baker and Collier \(2005\)](#) propose a quantitative model, the Economic Payout Model for Service Guarantees (EPMSG), for determining the optimal payout level for the service industry. In the EPMSG model, they assume that the probability of the customer retention rate is a function of the economic payout. In turn, the incremental profit depends largely on the shape of the pre-defined customer retention probability function, which could be strongly biased. Furthermore, they also assume that the unit service price and the service guarantee level are fixed. However, as an integrated dynamic service guarantee system, taking the service guarantee level and the unit service price out of consideration might result in a lack of flexibility and also lose the generality of the service industry. As [Tucci and Talaga \(1997\)](#) point out, in order to determine the payout, it is more comprehensive to take the cost of the service and the cost of recovery into consideration.

This paper has contributed to the literature in several ways. Firstly, we explicitly introduce the service guarantee level, which incurs a service cost, as a decision variable into the EPMSG model. We also detail the shortcoming of the customer retention distribution function in the discussion. Secondly, we assume that the economic payout has an impact on the demand. The next period demand will decrease as the probability of customer retention from the economic payout decreases. This generic model provides insights into dynamic interaction between the service guarantee level and the optimal payout. Thirdly, to avoid

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the strictness of the customer retention distribution function in the EPMSG model, we transform the model to allow a flexible unit service price in a more straightforward manner. Fourthly, we also explore a specific situation by assuming that the payout is a percentage of the unit service price. Finally, we provide parametric analyses for the models.

The remainder of this paper is organized as follows. In Section 2, we present a literature review regarding service guarantee. Section 3 introduces the base economic payout model that we will extend in the later sections. The relationship between the optimal service level and payout with a fixed demand is discussed in Section 4. Section 5 presents two generic models to examine the dynamic interaction of the optimal service level, payout, and demand. We provide parametric analyses and empirical examples in Section 6 and conclude our research in Section 7.

2. Literature

The concept of a service guarantee was first introduced by Hart (1988). Hart (1993) argues that a well-designed service guarantee should be unconditional, meaningful, easy to understand and communicate, and easy to invoke and collect on. The study of McDougall and Levesque (1998), on the other hand, find support for both unconditional and specific guarantees. Ostrom and Hart (2000) argue that a service guarantee is recommended when there are few acknowledged standards in the industry. Wirtz (1998) and Ostrom and Iacobucci (1998) also propose that a service guarantee is recommended in situations where the variability of supply is high. Ostrom and Iacobucci (1998) and Kennett et al. (1999) recognize that a service guarantee can reduce the perceived risk by setting the service standards that customers can expect.

However, an ill-designed service guarantee may have minimal benefits or even disastrous effects on the firm's value. Hays and Hill (2001) prove that a service guarantee would have no effect on the marketing strength of the firm. Tucci and Talaga (1997) and Wirtz (1998) present that customers may perceive the presence of a service guarantee as an acknowledgment of persistent failures. To ensure an appropriate service guarantee, Fabien (2005) proposes a five-step service guarantee development model to design, implement, and communicate service guarantees. The five steps begin with preliminary analysis of internal and external factors, followed by service quality signaling, guarantee design, implementation and communication, and finishing with performance analysis. Service quality signaling is based upon the signaling theory, which suggests that service guarantee is a "signal" of service quality that sent to a company's customers, competitors and partners. His study is based on in-depth interviews with managers who are responsible for designing and implementing service guarantees and a literature review of service guarantees.

Analytical models and empirical studies have been proposed to model the service guarantee problem and to evaluate the impact of service guarantees on the business. Hoffman et al. (1995) uses the critical incident technique to identify 11 unique failure types and eight different recovery strategies from 373 critical incidents reported by restaurant customers. He finds that customers prefer compensation-based service recoveries and immediate payouts rather than non-economic payouts and delayed payouts. So and Song (1998) present a mathematical model to find the optimal pricing, delivery time guarantee and capacity selection so as to maximize the average net profit. They also show that management gains insights from choosing the best strategies from the study. This optimization model has some similarities with the model we will present in this paper. So and Song (1998) focus on the interrelations between pricing and

delivery time guarantee decisions; between delivery time guarantee and capacity expansion; and among pricing, delivery time guarantee, and capacity expansion; while our paper focuses on the interrelations among service guarantee level, economic payout and demand. Hays and Hill (1999) present a static service satisfaction framework and a dynamic service satisfaction/market share model to predict how a company's market share is influenced by its service success rate, complaint rate, and service recovery rate in an equilibrium market with no competitive response. Miller et al. (2000) propose a framework and use an empirical study of 48 business students to examine the service recovery process. Their research suggests that delivery speed and proactive service recovery are important to maintain customer loyalty. Wirtz et al. (2000) use a before–after experimental design with a role-playing approach to investigate the impact of a service guarantee for an outstanding versus a good service provider in the hotel industry. Their study indicates that an explicit service guarantee has no negative effect for the outstanding service provider, and it has a more significant impact on the good service provider than on the outstanding service provider. Palmer et al. (2000) develop a framework to study the effect of equity on customers of service failure and recovery. They find that levels of equity following a service failure and recovery processes are important in influencing customers' repurchase intention, and the service recovery processes should be tailored according to customers' characteristics. Chen et al. (2001) propose a mathematical model to investigate the influence of pricing-matching guarantee, which is a specific type of service guarantee. Their study proves that a pricing-matching guarantee can facilitate competition. Marmorstein et al. (2001) use a conceptual model and an empirical study to examine the effects of service guarantees. Their study concludes that consumers' primary interest is service reliability and the interest in compensation for service failures is secondary. Their research supports the idea that including service process evidence can increase consumers' willingness to try the service provider significantly; in addition, the compensation is more persuasive if service process evidence is specified in the service guarantee.

Sum et al. (2002) address the relationship between service guarantees and perceived service quality by analyzing empirical data obtained from employees and customers of a multinational hotel chain through an alternating conditional expectations algorithm. On the basis of their analysis, they propose that significant non-linear relationships exist between perceived service quality and its determinant variables. Boshoff (2003) presents an empirical study to explore the impact of service guarantees, along with general service information and price information, on potential customers' intentions to buy a service. The results of their study suggest that all of them can significantly enhance customers' intentions to buy. A surprising finding in this study is that an unconditional service guarantee is not as important as is often suggested in the literature. Lidén and Skalen (2003) study the impact of service guarantees on service recovery through the critical interview technique with customers of RadissonSAS. They find that the implicit service guarantee can reduce the risk of service failure after the consumption stage. They also find that service guarantees influence the outcome of service recovery by affecting how employees behave in recovering the customer.

Lidén and Sandén (2004) realize the lack of systematization and customer involvement in service development; therefore, they propose an empirical study to examine how service guarantees may support service development by systemizing customer involvement when service failures occur. Tucker (2004) makes an empirical study on the operational failures encountered by hospital nurses. His study concludes that service failures can have significant financial implications for hospitals; however,

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