Online coopetition between hotels and online travel agencies: From the perspective of cash back after stay

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ABSTRACT

In the online marketplace, many hotels are concentrating on increasing their market share by establishing cooperation with online travel agencies (OTAs). Meanwhile, hotel websites and OTAs are marketing the hotel rooms at the same price as a result of the strong competition for the same pool of customers. Therefore, it is necessary to balance the cooperation and competition between hotels and OTAs. This study investigates the online coopetition (cooperation and competition) through an economical game analysis of an online supply chain consisting of a hotel and an OTA. It first provides an optimal solution to determine the unit commission fee of the hotel to maintain the cooperation. Afterwards, it studies the pricing process of the OTA to determine the cash back value for the customers with respect to the OTA's maximal profit. Moreover, the deeper analysis of the cooperative model demonstrates that a quantity discount contract based on the revenue sharing could eliminate the competition and coordinate the participants in the online supply chain.

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1. Introduction

With the rapid development of information technology, the traditional hospitality and tourism industry has entered the E-commerce age. According to a blog post from Thomson (2012), 57% of the rooms from the top 30 brand hotels are booked from the online distribution channels, including the host websites of the hotels and their third party websites such as OTAs in late 2010. At the same time, tourists are becoming increasingly dependent on online travel agencies (OTAs) for their journey plan (Guo, Ling, Dong, & Liang, 2013). The two most popular OTAs in mainland China, eLong, Inc. (http://www.elong.com) and Ctrip.com (http://www.ctrip.com), provide online reservation services for the travelers and market distributions for various cooperating hotels and airlines, globally.

Regarding the experience of purchasing hotel rooms from these two OTAs, an interesting issue is raised: in order to attract new customers and maintain loyal customers, the OTAs provide cash back to the travelers who will make reservations from the given website. A cash back example from eLong, Inc. is shown in Fig. 1, indicating that the cash back value reaches 10% of the average daily room rate (CNY100/(HK$1262 * 0.795CNY/HK$)).

The cash back strategy is similar to loyalty programs such as mileage service provided by the airlines to prevent customers from switching to other airlines (Kim & Li, 2009). However, the significant difference between cash back strategy and mileage service is that the cash back can be returned to the bank account immediately when the customer pays the bill at the hotel implying that the trade is successfully completed. In other words, the cash back only works for this "one-time deal" and this strategy cannot stop the customers from switching to other OTAs in future transactions.

Since this is a newly emerged issue in the online marketing channels and has been paid little attention by academic researchers, the purpose of this paper is to analyze the coopetition between the hotels and OTAs regarding the cash back effects. Through a leader–follower game model consisting of a single hotel and an OTA, this paper considers the following questions: (1) What is the difference between the cash back policy and direct price discount strategy? (2) Which channel do the travelers choose between the hotel-host website and OTA agent website when they make reservations, and how do they make these choices? (3) How does the OTA determine the optimal cash back value for its customers? (4) Which contract can eliminate the competition and coordinate the participants in the online supply chain?

A utility function for travelers making reservations from different distribution channels (the hotel-host website and the OTA website) is introduced to explain the difference between cash back and direct price discount. According to the purchasing utilities, the travelers make their decisions of the booking channels. Given the travelers' channel choice and the market size of the two distribution channels, the hotel and the OTA determine their optimal market decisions with respect to their own maximal profits. From the analysis of the decision process for the leader–follower game, we find that the classic principal–agent model cannot achieve full channel coordination.

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Hotel Name:

The Royal Pacific Hotel and Towers

Fig. 1. An example of cash back from eLong, Inc.

Fortunately, we are able to introduce a new contract based on the expanded market size of the hotel under the cooperation with the OTA.

The remainder of the study is organized as follows. After introducing the related literature as research background, we describe the problem about the online supply chain and marketing distribution channels in Section 3. Afterwards, we provide the optimal decisions of the participants in both integrated and decentralized scenario in Section 4. Next, in Section 5, we show a numerical example and introduce a new contract based on realized sales of hotel rooms and revenue sharing to coordinate the online supply chain in the decentralized scenario. Finally, we conclude this study by summarizing the findings and discussing the directions for future research in the last section.

2. Research background

In recent years, studies on the online marketing issue about tourism products have increasingly acknowledged the existing literature (Zhang, Song, & Huang, 2009). Shon, Chen, and Chang (2003) study the cooperation between airlines and OTAs. Yoon, Yoon, and Yang (2006) verify the impact of e-commerce on the distribution of flight tickets form adopting Korea as an example. Göymen (2000) points out that cooperating with third parties is beneficial for hotels' development. Likewise, Schulz (1994) demonstrates that hotels and travel agencies or other third-party companies are coming to realize the advantages of collaboration over competition. Ling, Guo, and Liang (2009, 2011) investigate the optimal marketing strategy of hotels when cooperating with travel agencies (for both offline and online) from the pricing perspective. Guo and He (2012) present the optimal pricing strategy of hotels for different tourism packages under cooperation with tour operators.

Pricing strategy, an important marketing element and an effective management leverage, is always an important research topic. Followed by the prior pricing model for hotel rooms to optimize the profitability of hotels provided by Gu (1997), many researchers continue to work on this topic in the hospitality industry. Lai and Ng (2005) propose an optimization model for hotel pricing in the circumstances of demand uncertainty. Likewise, Schwartz (2006) proposes a booking project to increase hotel revenue through analyzing the relationship between room booking and hotel revenue, and Ling, Guo, and He (2012) propose an optimal hotel pricing model for long-term stay. Further, demand is influenced by the product price heavily and is actually a key factor affects the decision maker's choices. Pan (2007) explains how market demand and hotel capacity affect the pricing strategy of the hotels. Moreover, van der Rest and Harris (2008) demonstrate that discount

is the best pricing strategy for hotels in the case of high costs and rigid changes in demand.

Guo et al. (2013), which is the most relevant research to ours, study the cooperation contract among the third-party websites and hotels. Employing a theoretical game analysis, they have provided the equilibrium decisions of the hotels and third-party websites. However, the competition between the two players and the cash back strategy are not taken into account in their study, and there is little understanding of this issue in existing literature. Therefore, to fill this research gap, the present paper aims at investigating the coopetition relationship (Casadesus-Masanell & Yoffie, 2007) between hotels and OTAs with cash back effect.

3. Online supply chain and marketing channels description

This section gives the description of the online supply chain consisting of a hotel and an OTA, and the marketing channels hosted by the two participants. Since the purpose of this paper is to analyze the online coopetition between the two players (a hotel and an OTA), we only focus on the travelers who make reservations through these two online distribution channels, while the other ones who book rooms by phone or in person are ignored in this paper. Thus, in this situation, we suppose the hotel only has two types of customer source: one books hotel rooms through the hotel website and the other from the OTA. In accordance with the prior studies (e.g., Guo et al., 2013; Ling et al., 2011), we use *t-travelers* to denote the travelers who book the hotel rooms through the hotel website and *w-travelers* for the customers from the OTA.

3.1. Cooperation description

Considering the significant market share of online sales of hotel rooms, a hotel with capacity of C rooms would like to cooperate with an OTA to expand its online market to increase its occupancy rate for generating more profit. Suppose that all the C rooms of the hotel are identical and each room only accommodates one customer without any influence in the findings of the model (Guo et al., 2013; Ling et al., 2011). Suppose the daily fixed operational cost of the hotel is F_c, and the daily variable cost for each room is zero, which has no effect on our findings.

In the cooperative relationship of the hotel and the OTA, the OTA distributes the hotel rooms at the same price, p_0, to their customers as the hotel website, and receives a commission fee, ω, for each sold room from the hotel (Guo et al., 2013; Ling et al., 2011; Toh, DeKay, &