



# COOPERATION CONTRACT IN TOURISM SUPPLY CHAINS: THE OPTIMAL PRICING STRATEGY OF HOTELS FOR COOPERATIVE THIRD PARTY STRATEGIC WEBSITES

**Xiaolong Guo**  
**Liuyi Ling**  
**Yufeng Dong**  
**Liang Liang**

University of Science and Technology of China, PR China

**Abstract:** This paper aims to find the optimal pricing strategy for tourism hotels when they operate their online distribution channel by cooperating with a third party website. The paper first gives the first-best solution when all the participants are integrated as a single system, and then leads to the second-best one under the decentralized scenario through a non-cooperative game model composed by a Stackelberg game between the hotels and the website and a Nash game among the hotels. Through a numerical example, we analyze the decision making process of the players; and give the service providers some useful suggestions for operating their cooperative relationship successfully. **Keywords:** hotel pricing, e-commerce, online distribution, revenue management, cooperative relationship. © 2012 Elsevier Ltd. All rights reserved.

## INTRODUCTION

### *Motivation and Research Questions*

Along with the growth of e-commerce, business and marketing models have invaded into a wide variety of industries. On the one hand, in order to reduce marketing cost and improve revenue, more and more traditional providers begin to establish internet channel to sell their products or services to customers directly. On the other hand, as retailers, taking the example of Bloomingdales and Best Buy etc., they open

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**Xiaolong Guo** (96 Jinzhai Road, Hefei, China. Email<gxl@mail.ustc.edu.cn>) is a PhD candidate at School of Management, University of Science and Technology of China, with interests in tourism economics, supply chain management, and service operations management. **Liuyi Ling** is a Lecturer at the same Faculty with interests in tourism economics, supply chain management and optimization. **Yufeng Dong** is a PhD candidate with interests in tourism management and management science. **Liang Liang**, Dean of the School of Management, is a Professor with research interests in supply chain management, DEA and decision science.

internet channel to meet the demands of those consumers who like shopping online. For example, in order to increase its operational efficiency and for the convenience of the tourists, airline industry provides web service, through which tourists may search information on all available flights and book it online whenever they like.

Faced with fierce competition and increasing online booking requirements, hospitality industry also turns to web channel. However, unlike the traditional industries, most hotels are not well-known (Bastakis, Buhalis, & Butler, 2004) so they seek to cooperate with famous third party website like online tour operators such as Expedia (<http://www.expedia.com>), Ctrip (<http://hotels.english.ctrip.com/>), Kuoni (<http://www.kuoni.com/>) etc., or a website has a mass of visitors and their customers who have purchased some services here can give some reviews about the service provider, like dianping.com (<http://www.dianping.com/>) in mainland China.

The cooperation mechanisms between provider and website are diverse (Clemons, Hann, & Hitt, 2002), among which the most famous two are the agent model and the merchant model. For instance, the cooperation between Target (<http://www.target.com>) and Amazon (<http://www.amazon.com>) is the agent one: Target determines the price of its products on Amazon, and pays Amazon a commission fee for each product sold there. However, since the information online can be searched and confirmed conveniently, the merchant model with different retail prices among different online distribution channels (such as the service provider's own website and online travel agencies' website) cannot be adopted for cooperation in the tourism and hospitality industries.

In our agent model between tourism hotels and third party websites, the hotels, as principal players, determine the commission fee for the agent websites; and then the websites determine how much effort will be done for each hotel, including but not limit to the ranking position on the webpage, picture views and video shows, etc., which influences the room sales directly. For this cooperative relationship, this paper tries to answer the following questions:

What is the equilibrium of the cooperation between the tourism hotels and their third party website?

How does a hotel make its decisions considering its own profits and the actions of the other hotels?

Is the cooperation based on agent model inefficient with regard to the total revenue compared with centralized scenario, and why?

### *Overview of the Cooperation Mechanism and Key Findings*

Although in practice the online distribution channel of tourism hotels can be operated in various forms, we employ an agent model through the cooperation with a third party website. Under the cooperation, the hotels provide commission fees to the cooperative website for each hotel room sold through the website. Then the website

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