

Corporate social responsibility, coordination and profit distribution in a dual-channel supply chain

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Abstract

The dual-channel supply chain model has become increasingly popular in the industry and describes a scenario in which a firm, in addition to selling through the traditional supply chain of manufacturer and retailer, opens a direct channel to the customer through Internet sales. However, in the current global business environment, corporate social responsibility (CSR) is a determining factor of choices of the customers. Based on the above important factors, this article introduces a corporate social responsibility two-echelon dual-channel supply chain. In addition to operating an online channel, the manufacturer intends to increase stakeholders' welfare by exhibiting CSR. The pricing decisions for both the cases of the decentralized and centralized scenarios are studied analytically as well as numerically. The paper also examines the effect of the degree of concern of the manufacturer regarding CSR on product compatibility and discusses feasibility of the successful operation of a dual-channel supply chain. Finally, channel coordination through all unit quantity discounts with the agreement of a franchise fee and surplus profit division through bargaining is discussed analytically.

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Introduction

Currently, an impressive growth of e-commerce in the highly competitive global market drives

manufacturers to introduce online channels. A manufacturer captures the markets situated in geographically diverse locations through an online channel via the Internet that reduces the time consumption for purchasing, and hence it can also increase market share. In Western Europe, e-commerce spending hit 128 billion Euros in 2013, up 14.3% from that in 2012. In 2010, the Czech Republic earned 24% of the country's total turnover through online channels. Global e-commerce sales topped 1 trillion for the first time in 2012 [23]. It is forecasted that e-commerce spending in 2017 will

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reach 191 billion Euros in Western Union, a compound annual growth rate of approximately 11% [24]. E-commerce sales in the US were increased by 15.8% in 2013 compared to the year 2011. It is observed that consumers prefer alternatives and choose the one that is better suited to their needs, which compels manufacturers to restructure their traditional brick-and-mortar channels by engaging in direct sales through Internet channels [48].

Corporate Social Responsibility (CSR) can be defined as a doctrine that promotes the expansion of social stewardship by businesses and organizations. The CSR approach is holistic and integrated with the core of the business strategy by addressing social and environmental impacts of the businesses. CSR suggests that corporations embrace responsibilities toward a broader group of stakeholders, such as customers, employees, etc., besides their regular financial obligations to stockholders [20]. In the current global business environment, CSR is now a determining factor in consumers' and clients' choices that cannot be ignored by companies. The companies that fail to maximize their adoption of a CSR strategy will be left behind. Recently, empirical evidence has shown that customers are willing to pay a higher price for products with CSR attributes and that CSR programmes influence 70 per cent of all consumers' buying decisions [4,10]. As a result, many leading international brands, such as Walmart, Nike, Adidas and Gap, have been compelled to incorporate CSR in their complex supply chains via a code of conduct [3].

Several research works have been conducted in the area of supply chain coordination. Many of them concentrate on the direct collaboration between two individual members, whereas the models dealing with resolving channel conflict in dual-channel supply chains are notably fewer. The purpose of this present article is to incorporate CSR in a dual-channel supply chain comprising a manufacturer and a retailer. In addition to traditional retail channels, the manufacturer operates an online channel. The manufacturer, as the leader of the channel, considers stakeholders' welfare through CSR and influences the downstream channel members to behave socially. Instead of the manufacturer's CSR activity, we also incorporate the effect of CSR in the form of consumer surplus in its profit function. In a manufacturer-Stackelberg game, setting apart the discussion of the effects of CSR in decentralized and centralized decision-making, we apply all unit quantity discounts with the agreement of a franchise fee to resolve channel conflict and to find out win–win profits of the channel members.

Literature review

In the recent trends of global business scenarios, the dual-channel supply chain has a significant importance in supply chain management. In addition to a retail channel, an Internet channel of the manufacturer has the potential to reduce retailers' dominance, addressing different customer segments in order to gain a higher profit margin. For instance, with the popularity of the Internet, many top manufacturers, such as IBM, Cisco, Nike and Estee Lauder, have started selling online directly. Several electronics manufacturers, including Sony, PalmOne and Samsung, have set up boutique-style outlets in upscale locations. The largest English-language publisher, Random House, has publicly declared that it may sell books directly to the readers, putting them in direct competition with Barnes and Noble and Amazon.com [49].

Meanwhile, traditional companies are expanding their business through online access at retail stores. Dell has installed kiosks in shopping malls and now sells its computers through Costco [30]. These studies suggest that more consumers are embracing multiple channels to satisfy their shopping needs [47]. Some customers prefer purchasing online, whereas others prefer shopping in retail stores. As a result, manufacturers redesign their traditional channel structures by engaging in direct sales to reach different customer segments that cannot be reached by the traditional retail channel, giving birth to dual channels. Several issues in dual-channel supply chains have been addressed by researchers. Hua et al. [21] analysed the effect of delivery lead-time on the pricing decisions in a dual-channel supply chain. Dan et al. [14] determined the optimal retail service and prices in a dual-channel supply chain. Chen et al. [8] developed a dual-channel supply chain and proposed pricing strategies that maximize decentralized dual-channel performance. Sharma and Mehrotra [46] claimed that the dual-channel setup increases channel conflict, though it has the potential to increase customers' demand. Yan [50] developed a dual-channel supply chain and analysed the effect of differentiated branding. Chiang et al. [9] proposed a model that demonstrates that a dual-channel supply chain can be used to control retailers' prices. Panda et al. [39,42] analysed pricing and replenishment decisions in a dual-channel supply chain considering continuous unit cost decrease. All of the proposed models mentioned above have addressed pricing and replenishment policies, channel conflict and channel competition, mainly between brick-and-mortar and Internet channels, but they do not focus on corporate social responsibility.

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