With the explosive growth of online sales, multi-channel retailers are increasingly focused on finding ways of integrating the online channel with traditional retail stores. The need for the development of effective multi-channel strategies is strongly felt by the retailers. The present research normatively addresses this issue and using a game theoretic approach, derives optimal strategies that maximize profits under different competitive market structures. Managerial implications are discussed and probable paths of future research are identified. [Article copies are available for purchase from InfoSci-on-Demand.com]

Keywords: Game Theory; Multi-Channel Strategy; Product Categories; Retailer Profits

INTRODUCTION

According to Comscore Networks, online retail spending in 2006 reached $102.1 billion, marking a 24 percent increase over 2005’s $82.3 billion. An estimated 6 percent of all non-travel consumer retail spending (excluding expenditures for autos, gasoline, and food) is spent online. Also, according to Forrester Research, European e-commerce is forecasted to surge to €263 billion in 2011, with travel, clothes, groceries, and consumer electronics all reaching the €10 billion per year mark. Consequently, the rapid development of commerce on the Internet has made it attractive for many marketers to engage in direct online sales. As a result, many firms are using or pursuing both direct and distributor-based approaches to sell products. In real business world, it is not uncommon for many brick and mortar firms to create e-commerce channels that operate independently from existing physical outlets (Steinfeld, Mahler and Bauer 1999; Useem 1999; Venkatsh 1999). However, recent trends indicate that an increasing number of firms have started to integrate the physical and online channels together to avoid channel conflict and gain benefits from channel integration (Ward 2001; Steinfeld et al. 2002).

When a retailer employs a mixed online and traditional retail channel to sell products, an important question is how the optimal channel
strategy should be identified by the retailer using a mixed online and traditional retail channel, so as to maximize its profit. In our research we use a game theoretical model to specifically examine how the product categories impact the channel strategy of retailer using a mixed channel approach under different competitive markets: two retailers and more than two retailers in the competitive market. Based on our analytical results, we determine optimal strategies for the retailers using a mixed channel approach in a competitive market.

The rest of our paper is organized as follows. Section 2 provides a summary of the relevant literature. Section 3 presents our modeling framework. In section 4, we determine optimal product categories and channel strategies for the retailer using a mixed online and traditional retail channel approach under a two-retailer competitive market. In section 5, we further analyze the optimal product categories and channel strategies for this retailer when the competitive market consists of \( n \) \((n > 2)\) retailers. In section 6, we illustrate our findings by means of numerical examples. In section 7, we extend our model by investigating the impact of internet coverage rate on the product categories and channel strategies. Concluding remarks are presented in section 8.

**LITERATURE REVIEW**

**Multi-Channel Retailing**

Multi-channel marketing allows multiple contact points between customers and marketers and affords the customers the ability to choose the time and mode of contact. In this paper, the focus is on multi-channel retailing where the retailer-customer interactions take place across multiple channels even within a single purchase. The growth of multi-channel retailing is an offshoot of the growth of online marketing. The proportion of multi-channel shoppers has gone up in recent years (Wallace et al, 2004). A recent analysis of online retail sales by the management consulting firm McKinsey indicates that multi-channel retailers accounted for over 50 per cent of internet sales, compared to the 31 per cent garnered by the retailers with an exclusively internet presence (Grosso et al, 2005).

The growing popularity of multi-channel retailing can be attributed to the benefits received by the consumers as well as the retailers. The greater utilitarian value of internet stores in the context of information search and price comparisons has been hypothesized by Noble et al (2005). However, their empirical results indicated that while customers derived greater utility from the internet stores in comparison to catalogs, physical stores provided the greatest utility in regard to price comparisons. But it is possible for consumers to use the different channels in order to maximize the utility. The portfolio of service outputs expected by customers of multi-channel retailers in fact increases as customers gain more experience (Wallace et al, 2004). Rangaswamy and Van Bruggen (2005) have linked the increased service outputs of multi-channel retailing to stronger customer relationships.

The benefits accruing to the retailers have been discussed by many marketing scholars. The review of online price dispersion by Pan et al (2004) provides theoretical as well as empirical evidence regarding the higher prices charged by multi-channel retailers in comparison to pure-play internet retailers. The price differentiation is justified by the higher service outputs provided by multi-channel retailers. According to the empirical study conducted by Kumar and Venkatesan (2005), the benefits provided by multi-channel customers include higher revenues, higher share of the wallet, greater profits as well as the likelihood of future purchases. The multi-channel loyalty framework proposed by Wallace et al (2004) suggests that the greater service outputs provided by the multi-channel retailers lead to greater customer satisfaction, which, in turn, results in greater customer loyalty to the retailer.

Benefits aside, multi-channel retailing gives rise to several managerial issues that need to be addressed. The decision to adopt a multi-channel retailing model itself can be
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