PERFORMANCE IMPLICATIONS OF MULTI-CHANNEL STRATEGIC DECISIONS

BY INCUMBENT RETAILERS: THE ROLE OF ORDER OF ENTRY

AND DEGREE OF INTER-CHANNEL COORDINATION

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The rapidly intensifying adoption of the Internet channel for marketing and sales by incumbent bricks-and-mortar retailers underscores the importance of assessing the impact of the online channel strategies on firm performance in the dynamic competitive environment. At the time when store-based retailers increasingly dominate online sales the questions of when and how an incumbent retailer should adopt an online channel to achieve and sustain a competitive advantage are of utmost interest for both marketing scholars and practitioners.

This dissertation investigates the role of two strategic decisions in affecting firm performance: (a) the order of adopting an online channel by incumbent retailers and (b) the degree of coordination between store and online sales channels. The resource-based view and the dynamic capabilities approach are used as theoretical foundations for the study. Following resource-based logic and applying a contingency perspective, this research proposes that firm-specific resource endowments determine the success of the order of online entry strategy for incumbent retailers. This dissertation utilizes the dynamic capabilities approach to propose that the strategy of inter-channel channel coordination leads to higher performance when core, unique dynamic capabilities pertaining to e-commerce are developed in-house, as opposed to being outsourced.

By posing and answering the research questions regarding the role of strategic decisions of order of online entry and channel coordination in enhancing long-term financial and operational performance, this dissertation contributes to the development of strategic theory in the nascent areas of electronic commerce and multi-channel retailing, provides further empirical support to resource-based theory of competitive advantage, and assists managers in formulating more informed strategic objectives for achieving multi-channel competitive advantage.

ACKNOWLEDGMENTS

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

Overview

Rapid proliferation of in-home broadband connectivity, and improved search engine technology have led to unprecedented growth in Internet product research and acquisitions (Aberdeen Group 2006). Online sales (excluding travel) have exceeded US$100 billion in 2006, following a spectacular average annual growth of 25% during the past 6 years (eMarketer 2007). With one-tenth of the world population now shopping online (ACNielsen 2005), the prospects for online selling are very optimistic. Development and speedy adoption of rich and flash technologies will make online stores more entertaining and convenient to users by providing proprietary video- and music-based content, and dynamic and customized product viewing. Advances in mobile technology allow targeted, on-demand contextual and localized advertising, and new levels of personalization and one-to-one marketing (Marketing News 2007). Competing in this dynamic and technologically complex retail environment is a challenge for incumbent store-based retail companies that are experiencing increasing product commoditization, retail space saturation, slow growth, and lagging legacy infrastructure (Retail Forward 2003). While adding an online channel to their existing channel mixes of stores, catalogs, and direct marketing appears to be a necessity just to keep up with the competition, new strategies need to be developed addressing the timing of online entry, and the nature of competing online. Surprisingly, current academic literature does not offer much insight on multichannel retail strategies and their impact on firm performance (Rangaswamy and Bruggen 2005).

Recent comprehensive reviews of multichannel retailing literature have emphasized insufficient research progress in the areas of strategic role of multichannel marketing,

1

performance advantages of multichannel marketing, resource deployment in multichannel systems (Rangaswamy and Bruggen 2005), channel synergy development, role of channel integration, and inter-channel coordination (Neslin et al. 2006). This dissertation addresses some of the gaps in the current multichannel literature, with particular focus on performance effects of multichannel competitive strategies.

<p align="center">Focus of the Study</p>

Rapidly increasing adoption of the Internet channel for marketing and sales by incumbent bricks-and-mortar retailers (Neslin et al. 2006, Parasuraman and Zinkhan 2002, Varadarajan and Yadav 2002) has emphasized the urgency of assessing the impact of online channel strategies on firm performance in new multichannel environment (Grewal, Iyer and Levy 2004). With online sales currently dominated by store-based chains (Shop.org 2006), the questions of *whether, when* and *how* an incumbent retailer should adopt an online channel to achieve and sustain a competitive advantage are of utmost interest for both marketing scholars and practitioners. Extant marketing literature on the issue of multichannel retailing strategies has yet to provide sufficient insight as to the role of early versus later adoption of the Internet, and the degree of store and online channel coordination in enhancing firm performance (Neslin et al. 2006, Grewal et al. 2004). This dissertation contributes to the strategic literature on multichannel retailing by investigating two types of strategic decisions: order of online entry by incumbent store-based retailers, and the degree of coordination between store-based and online sales channels. In this analysis, I answer the question of whether an incumbent retailer should adopt an online channel by including in the sample the retailers that have not yet started selling online, and comparing their performance to that of multichannel retailers.

The issue of online order of entry has been previously discussed in the context of pure-play retailers (Pandya and Dholakia 2005), with some authors suggesting that being first to market with the breakthrough, disruptive technology unconditionally renders advantages in terms of creating industry standards, solidifying network effects, and building valuable infrastructures (Useem 2000). Their opponents argued that due to the instant market access offered by the Internet, pioneering advantages can be easily wiped out by me-too competitors (Pandya and Dholakia 2005), and that success in online retailing can only accrue to companies that can support their online entry by marketing, merchandizing, and fulfillment expertise. In practice, as the first wave of pure-play e-tailers failed, store-based incumbents entered the e-tailing scene equipped with established brands and customer bases, and efficient supply chains and vendor relations. As multichannel retailers compete for customers both online and in the stores, an important strategic question is whether adopting an online channel earlier confers benefits to store-based companies, or whether being a late entrant and learning from others' mistakes constitutes a better strategy. The current study addresses this question from the point of view of contingency theory. In particular, following resource-based logic (Hunt 2000), I propose that firm-specific inimitable resource endowments will determine the success of the order of entry strategy. I advance and test hypotheses regarding the role of prior catalog experience, prior store-based experience, and firm size in impacting performance implications of online entry timing.

The inter-channel coordination has emerged as a best multichannel practice relatively recently (Gulati and Garino 2000, Shankar and Winer 2005). As opposed to separate, spin-off online channels (e.g. Borders.com, Victoriassecret.com, BN.com), the proposed advantages of coordinating order management, customer relationship management (CRM), marketing, merchandising, and fulfillment across channels include seamless brand image, better product

personalization, customer convenience, and lower costs (Steinfield, Mahler and Bauer 1999). The potential disadvantages are lack of operational flexibility, large capital investments for synchronizing and upgrading the infrastructure, and channel conflict (Ward 2001). No empirical research to date has investigated performance-related consequences of inter-channel coordination versus channel separation. I undertake this task and utilize the dynamic capabilities approach (Teece, Pisano, and Shuen 1997) to propose that the choice of channel coordination strategy necessitates the development of unique dynamic e-commerce capabilities and can be a source of sustainable competitive advantage. From the contingency perspective, channel coordination is hypothesized to enhance firm performance if more e-commerce functions are developed in-house, as opposed to being outsourced (Chung and Laseter 2007, Enders and Jelassi 2000).

Research Questions and Potential Contribution

The diversity of strategic moves implemented by and available to incumbent retailers entering the emerging multichannel environment illustrates the heterogeneity of their competitive opportunities and internal resources, as well as varied goals these moves are intended to accomplish. A thorough investigation of performance implications of these decisions from resource-based perspective (Barney 1991, Hunt 2000) can contribute to better understanding of how idiosyncratic firm attributes and resources impact the effectiveness of strategic decisions in improving firm competitive position. This dissertation undertakes such an investigation, and attempts to answer the following research questions:

1. Do incumbent store-based (bricks-and-mortar) retailers perform better when they adopt an online sales channel?

2. Does an early online mover advantage exist for bricks-and-mortar retailers?

3. How do firm resources and characteristics (store-based experience, catalog experience, and size) interact with online order-of-entry strategy in influencing multichannel retailer's performance (market share, gross margin, and net income)?

4. Does inter-channel coordination strategy enhance retailer performance?

5. How do firm dynamic capabilities (in-house development of e-commerce functions) interact with the channel coordination strategy in influencing multichannel retailer's performance?

By answering these questions this study intends to contribute to the development of strategic theory in the nascent areas of electronic commerce and multichannel retailing, to provide further empirical support to resource-based theory of competitive advantage, and to assist managers in guiding investment allocations and formulating more informed strategic objectives for achieving multichannel competitive advantage.

This study also contributes to multichannel strategy literature by investigating the impact of strategic decisions on traditional measures of firm performance. Previous research has mostly focused on market-based short-term performance, or online-only performance (Min and Wolfinbarger 2005). However, at the stage when multichannel retailers dominate the e-tailing space, "the lack of emphasis on profitability, or even on sales, has taken a serious toll on the various constituents with which e-tailers interact" (Grewal et al. 2004, p. 709). It has been noted that short-term oriented event study methodology might not accurately reflect the true firm performance over longer periods of time (Cheng et al. 2007). This is particularly true when investigating the effects of order-of-entry strategy effects. The most appropriate measures of market share and profitability have been widely adopted for this purpose (Kerin, Varadarajan and Peterson 1992). Moreover, reliance on stock-based performance measures and measures limited

to only the web channel performance ignores the potential for inter-channel synergies, and fails to account for the contribution of online channel to the overall firm performance (Varadarajan and Yadav 2002). Recent calls for research in the area of profit contribution of multichannel retailing emphasize the lack of traditional performance measures of multichannel strategies in current literature (Neslin et al. 2006). This dissertation intends to fill this gap in the literature by analyzing the relationship between incumbent retailers' e-commerce strategy and long-term financial and operational performance (market share, gross margin, and net income).

The remainder of the dissertation is organized in the following manner. In Chapter II, the review of relevant literature is provided, theoretical foundations are developed, and research hypotheses are advanced. The methods used in hypotheses testing are discussed in Chapter III. Chapter IV presents test results and their analyses. Finally, Chapter V provides a discussion of theoretical and practical implications of the findings, study limitations, and suggestions for future research.

CHAPTER II

LITERATURE REVIEW AND THEORETICAL DEVELOPMENT

Multichannel Retailing Imperative: Background and Rationale

Introduction

Since the mid-1990s, when online transactions became possible and ample amounts of

venture capital allocated to the mushrooming dotcom industry signaled the beginning of a new

retailing format, incumbent retailers have been engaged in strategic decision-making to

successfully compete in the new environment. Academic and industry literature at the time

promoted diverse and sometimes competing approaches. One strategic recommendation was the

"defender model" in competing with pure-play online retailers. It emphasized the attributes for

which store-based retailers had a comparative advantage – experience, personalized service,

unique merchandize, and non-informational benefits of shopping (Alba et al. 1997). An

alternative strategy involved "cannibalizing oneself" (Useem 1999) by setting up a separate

online company that would directly compete with the "doomed" bricks-and-mortar parent.

According to this view, by listening to existing customers, and following rational logic,

companies are suffering from "incumbent's curse" and are unable to adopt disruptive

technologies (Christensen 1997). Decentralizing channel structure by creating autonomous units

was supposed to make it possible for large firms to successfully adopt technological innovations

(Chandy and Tellis 2000). Yet another strategy focused on hybrid business models (Moriarty and

Moran 1990) that allowed incumbent retailers to gradually employ new online technology, at the

same time enjoying the leverage of existing advantages. Porter (2001) argued that rather than

cannibalizing, the Internet complements traditional activities of companies by contributing to a

"distinctive value chain" (Porter 2001, p. 71), which combines interdependent and mutually reinforcing activities and is hard to imitate.

The abrupt dotcom shakeout in 2000-2001 demonstrated the futility of purely price-based online competition for market share. It underscored the need for online retailers to develop and follow a competitive strategy that would leverage a firm's unique tangible and intangible resources and focus on profitability. As a result, in the following years, store-based retailers that used existing fulfillment infrastructure, vendor relations, economies of scale and scope, customer base, and trusted brand names have secured 41% of all online revenues (Internet Retailer 2006). Their pure-play counterparts started adding physical facilities, contributing to retail channel proliferation and multichannel competition.

With the Internet penetration reaching 63.6% in the US, and 16.6% worldwide (International Telecommunications Union 2007), establishing online presence appears to be beneficial for incumbent retailers in terms of potential market share increase, reduced marketing expenses, and improved customer satisfaction. Online sales including travel are estimated to contribute up to 7% to total retail sales (Internet Retailer 2006), and the annual growth of online business-to-consumer trade (25%) has been consistently higher compared to traditional retailing at 3-5% (Gonsalves 2006). According to Retail Wire, 75% of all US online households report having purchased product over the Internet (Retail Wire 2006). In addition to increasing the share of online purchases in their consumer basket, retail shoppers are using all available channels in their information search and decision-making processes. According to Shop.org (2006), 22% of offline sales are influenced by the Internet. Additionally, 65% of all customers shop through multiple channels, and 73% of store shoppers report researching their purchases online before buying in store (Shop.org 2006). While the advantages of becoming multichannel

are apparent, only 66 of the top 100 retailers sold online in 2004 (Shop.org 2004). This may be attributed to potential risk of sales cannibalization, high capital requirements of maintaining industrial-strength websites, or reluctance to change organizational routines.

As more incumbent retailers are adopting the multichannel strategy by adding an online channel (Aberdeen Group 2006), investigating potential advantages and disadvantages of adding an online channel to the existing stores and/or catalogs is gaining greater significance. Both researchers and managers are interested in finding the optimal approach to implementing multichannel retailing that would lead to sustainable competitive advantage. The following sections review the existing theoretical and empirical literature on potential benefits and drawbacks of adding an online channel to an incumbent retailer's infrastructure (summarized in Tables 2.1 and 2.2), as well as on performance implications of this strategic move (Table 2.3). Based on the literature review, the need to investigate in more detail the role of such strategic decisions as order of online entry and degree of channel coordination in firm performance is underscored, conceptual models are proposed, and research hypotheses are formulated.

Potential for Positive Impact of Adding an Online Channel

Adding an online channel can positively impact the existing operations by affecting the retailer's market reach and penetration, increasing sales, reducing costs, and contributing to differentiation.

- Increased market reach and penetration, and sales growth

Making online shopping possible at any time and from any place overcomes the geographic limitation for bricks-and-mortar retailers, and provides global visibility and access to new customers (Peterson, Balasubramanian and Bronnenberg 1997), thus contributing to sustainable growth. It also creates convenience for existing store customers to buy from the same retailer

using multiple points of contact. The possibility for cross-selling and cross-promotions among the channels may increase customer spending and drive traffic to both the online and store outlets. Unrestricted by physical store space, retailers may offer wider product assortments online, thus both increasing the share of the wallet of the existing customers, and attracting new customer segments. Additionally, during new product introduction, using more channels to create awareness and expose more potential customers to the product's benefits may facilitate better product diffusion among wider adopter population (Frazier 1999).

The abundance of information on the Internet and the resulting information overload (Biswas 2004) may contribute to customer lock-in effect due to familiarity with and trust towards a particular land-based retailer, leading to increased loyalty. Bricks-and-mortar retailers can leverage their brand names online to signal lower risk and higher reliability, and thus ensure customer patronage (Biswas 2004; Steinfield, Adelaar and Lai 2002). The retailer's investment in local physical facilities and personnel may also facilitate consumer trust (Goersch 2002) by symbolizing long-term commitment. This enables the retailer to command price premiums (Brynjolfsson and Smith 2000). Customer loyalty can be further enhanced by personalization of the online shopping experience enabled by CRM utilization (Srinivasan and Moorman 2005). Additionally, by using the social appeal of online communities, retailers can reinforce their customers' identification with their brand and help develop strong lasting bonds with the company leading to increased loyalty (Srinivasan, Anderson, and Ponnavolu 2002). Thus, adding an online channel can facilitate a retailer's growth through increased market reach and penetration by acquiring new online customers, driving traffic to physical stores, increasing the share of the wallet of existing customers, cross-selling, and cultivating customer loyalty and repeat patronage.

Empirical evidence supports these suppositions. According to Szymanski and Hise (2000), convenience of shopping electronically positively influences customer satisfaction, which has been empirically linked to customer retail loyalty (Wallace, Giese, and Johnson 2004) and increased usage level (Bolton, Kannan, and Bramlett 2000). The "Multi-Channel Retail Report 2001" study conducted by J.C. Williams Group and BizRate.com shows that store shoppers who also bought online from the same retailer spent an average of $600 more annually in the store than single-channel store shoppers. Min and Wolfinbarger (2005) report higher online market share for "bricks and clicks" compared to "pure-plays" that went public during the same period. Verhoef and Donkers (2005) note increased retention of insurance customers that were acquired online, while Wallace, Giese, and Johnson (2004) find higher satisfaction and the resulting higher loyalty among multichannel consumers of sporting goods. Srinivasan, Anderson and Ponnavolu (2002) report increased loyalty and resulting willingness to pay more for customers who participated in online communities by sharing their product experiences and recommendations with others.

- Potential for cost savings

Land-based retailers can leverage their economies of scale and scope by reducing variable customer service costs through investing into the fixed costs of e-commerce technology, thus making the consumer perform part of customer service and fulfillment activities online such as comparing products and prices, searching for relevant product information, assembling product bundles, placing an order, making payments, etc. (Sharma and Sheth 2004). Low customer acquisition costs experienced by store-based retailers due to their valued brands, marketing endowment, existing customer base, and local presence can be capitalized upon when adding an online channel (Dholakia, Zhao, and Dholakia 2005). The existing supply chain infrastructure,

distribution expertise (particularly for the retailers who also sell through catalogs), and vendor relations can be also utilized to lower costs for the added online channel. Due to the ability of an online storefront to offer a larger assortment of goods than any space-constrained physical store, inventory costs can also be reduced (Otto and Chung 2000). The information transmission costs (changes in assortments, prices, and promotions) are significantly lower online, thus making it possible for retailers to test various elements of the marketing mix in a fast and efficient manner (Dholakia, Zhao, and Dholakia 2005). Finally, the costs of individual shipping and returns of the merchandise sold online can be somewhat offset by the option of product pick-up and return in physical stores (Steinfield, Bouwman, and Adelaar 2002).

Only limited empirical data exist that illustrate the cost-related advantages of adding an online channel to the incumbent retailer operations. Goersch (2002) quotes a McKinsey study, which determined that compared to the average customer acquisition cost of $45 for a purely electronic retailer, the corresponding cost for a multi-channel retailer is only $5 (Goersch 2002). Brynjolfsson and Smith (2000) find that online consumers are willing to pay $2.49 more to buy from retailers they know, and that Internet retailers who also have conventional outlets command a price premium of over 8%, which illustrates the leverage of the existing loyal customers and reduced customer acquisition costs in a highly competitive online environment (Srinivasan, Anderson, and Ponnavolu 2002). Min and Wolfinbarger's (2005) analysis of the quarterly financial data from 42 online retailers suggests that "bricks and clicks" retailers have higher online marketing efficiency (low marketing and selling expenses compared to sales). A number of case studies conducted by Steinfield, Adelaar, and Lai (2002) identified that the benefits of lower marketing, fulfillment, and logistical costs accrue to companies that add an online channel to their land-based operations. Clearly, more research is needed in this area that would specify

the links between strategic decisions regarding adding online operations and the costs affected by their implementation.

- Differentiation

As the demise of numerous pure-play internet retailers has shown, achieving a sustainable competitive advantage based on technology-enabled operational efficiency is an exceedingly difficult task. Due to the open platform and common standards of the Internet, best practices are quickly copied leading to the price-based competition, which erodes industry profits and negatively affects all players (Porter 2001). Differentiation is increasingly achieved through value-added services (Steinfield, Adelaar and Lai 2002). Incumbent retailers can utilize the power of the Internet technology to target customers with customized and personalized offerings based on their purchasing history with the company. They can involve customers in designing unique product versions and assortments, offer proprietary content and information, and create synergies among store, catalog, and online marketing and distribution to improve customer convenience and service. It has been argued that incorporating interactive decision-making aides into an online storefront optimizes consumer decision-making, thus increasing customer perceived value (Yadav and Varadarajan 2005). Finally, such aspects of shopping experience as aesthetics and playfulness (Mathwick, Malhotra, and Rigdon 2001) can be promoted online by utilizing visual, entertaining, and "escapist" (e.g. virtual role-playing) elements made possible by advances in broadband connections and multimedia technology. In fact, the study by Childers et al. (2001) found that immersive and hedonic aspects play an equal role in online shopping experiences along with instrumental utilitarian aspects. Thus, creating a cognitively and aesthetically rich shopping "webmosphere" through more effective design can influence the experiential value for the retailer customers (Childers et al. 2001).

A number of incumbent retailers are successfully incorporating the advantages of the Internet technology to differentiate their offerings. For example, Gap uses online customer surveys to help shape its product selection. It has also introduced a virtual fitting room featuring male and female characters trying out newly offered outfits accompanied by entertaining music to create positive shopping environment. Office Depot offers an online space-planning design tool, Best Buy has a well-designed gift idea center that recommends products based on consumer criteria, and Circuit City now guarantees merchandise purchased online to be ready for store pickup in 24 minutes (Internet Retailer 2006). The British food retailer Tesco provides online personalized dynamic promotions based on its customers' in-store purchasing behavior reflected in the frequent-shopper database (Nunes and Cespedes 2003). Victoria's Secret website offers the options of creating wish lists and gift registries, provides personalized suggestions for gift selection and matching accessories, and sends out gift reminders to make shopping easier and more convenient (Vishwanath and Mulvin 2001). Through providing better service, and creating higher perceived value for customers, retailers leverage their multichannel strategy to raise entry barriers for new entrants (Neslin et al. 2006).

Potential Negative Impact of Adding an Online Channel

Incumbent retailers are aware of certain risks they face when they add an online channel to their marketing and distribution infrastructure. Those include possible sales decline, decreased customer loyalty, cost implication due to high capital requirements and the online information and price transparency, as well as the need to change established organizational routines and the resulting conflicts of interests.

TABLE 2.1
POTENTIAL ADVANTAGES OF ADDING AND ONLINE CHANNEL FOR INCUMBENT
RETAILERS

Potential Advantage Area	Advantages and Benefits	References
Market Reach and Penetration, Sales Growth	Higher market share through • Creating awareness among non-customers • Attracting competitors' customers • Attracting global customers • Better new product diffusion	Frazier (1999); Goersch (2002); Min and Wolfinbarger (2005); Peterson, Balasubramanian, and Bronnenberg (1997)
	Higher share of the wallet due to • Multiple contact points • Convenience leading to repeat purchase • Impulse and gift purchases • Possibility of wider online assortments • Price premiums for reputable and trusted retailers	Goersch (2002); Bolton, Kannan, and Bramlett (2000); Brynjolfsson and Smith (2000)
	Higher loyalty due to • Lock-in because of retailer familiarity and trust • Lower perceived risks • Personalization, customization, CRM • Social appeal of online communities • Convenience leading to satisfaction and retention	Biswas (2004); Brynjolfsson and Smith (2000); Goersch (2002); Srinivasan, Anderson, and Ponnavolu (2002); Srinivasan and Moorman (2005); Steinfield, Adelaar, and Lai (2002); Szymanski and Hise (2000); Verhoef and Donkers (2005); Wallace, Giese, and Johnson (2004)
Costs	Lower transaction costs due to • Customers performing order placement, payment, information search, etc. • Lower customer acquisition/marketing costs • Pre-existing supply chain infrastructure • Lower inventory costs • Lower shipping and return costs due to potential of store pick-up and return • Efficient test marketing and new product promotion	Brynjolfsson and Smith (2000); Dholakia, Zhao, and Dholakia (2005); Goersch (2002); Min and Wolfinbarger (2005); Otto and Chung (2000); Sharma and Sheth (2004); Srinivasan, Anderson, and Ponnavolu (2002); Steinfield, Adelaar, and Lai (2002); Steinfield, Bouwman, and Adelaar (2002)
Differentiation	• Personalization/CRM • Proprietary content • Convenience, better customer service • Decision-making aides • Entertainment, aesthetics • Interactivity, customer control • Product/bundle customization	Childers et al. (2001); Mathwick, Malhotra, and Rigdon (2001); Neslin et al. (2006); Nunes and Cespedes (2003); Steinfield, Bouwman, and Adelaar (2002); Vishwanath and Mulvin (2001); Yadav and Varadarajan (2005)

- Market share and sales implications

One frequently mentioned challenge of adding an online channel is its potential to cannibalize offline sales (creating channel shift as opposed to channel lift). Theoretically, there is no clear justification for the Internet or its applications to increase overall consumer spending (Peterson, Balasubramanian, and Bronnenberg 1997). Some authors believe that revenue redistribution among channels or among members within a channel is more likely to take place (Hagel and Eisenmann 1994). The convenience of online shopping may render trips to the store unnecessary if the desired assortments are available online. This will consequently reduce the firm's returns on physical assets, investment, and inventory, having a direct negative impact on its bottom line. Moreover, due to the lower information search costs (Alba et al. 1997), better deals from other providers would be available on the Web that may erode retailer loyalty (Steinfield, Adelaar and Lai 2002), further reducing market share, sales, and revenue. Useem (1999) cites research by Jupiter Communications that estimated that in 1999, 94% of online sales resulted from cannibalizing traditional channels. Another example is Merrill Lynch's assessment that 84% of its new online accounts are "conversions" from traditional accounts (Useem 1999). The finding by Geyskens, Gielens, and Dekimpe (2002) that "established firms that already have many other direct channels are financially hurt when adding a new Internet channel" (p. 116) leads them to conclude that adding an online channel may cause cannibalization.

The contrary argument holds that inherent heterogeneity of consumer needs creates opportunities for coexistence of different store formats and price ranges. Thus, the advent of discount stores characterized by lower customer service and lower prices did not cause extinction of department stores such as Nordstrom (Alba et al. 1997). In fact, a case study of Tower Records by Biyalogorsky and Naik (2003) found that online sales do not significantly

16

cannibalize retail sales. Deleersnyder et al. (2002) confirmed that offline newspaper sales are not cannibalized by the introduction of an online channel. Dholakia, Zhao, and Dholakia (2005), from the case study of a multichannel retailer conclude that "merchants do not lose their investments in older channels as they add new channels" (p. 72) and online customers incorporate multiple channels, but do not switch channels. Clearly, more empirical research is needed to understand if cannibalization is taking place in multichannel retailing, and the contingencies that increase or mitigate it.

     - Cost-related factors

The costs associated with running an industrial-strength website can add millions of dollars to the physical retail space costs of traditional stores and the costs of multichannel coordination (Bendoly et al. 2005). Although some researchers consider the costs of technology infrastructure "largely invariant with respect to volume" (Sharma and Sheth 2004, p. 699), and leveraged through the reduction of transaction and variable costs, others contradict this assertion. McKinsey Quarterly estimates that maintaining a website and its associated back-end systems requires annually $15 to $25 million (Barsh, Crawford, and Grosso 2000). The expenses on hardware and software (about 30% of the total website cost), as well as warehousing costs, are not fixed, but grow with site traffic, and as a percentage of revenues (Barsh, Crawford and Grosso 2000). A Harvard Business School survey of leading firms developing online presence revealed that close to 20% of respondents consider finding capital for new investments a barrier to their e-business change (Kanter 2001).

Due to availability of unlimited free product and price information, and electronic shopping agents that assist consumers with efficient decision-making, search costs online are low for most products and product attributes (Biswas 2004). This enables consumers to select and

17

purchase products at the lowest offered price, which can undermine not only retailer margins, but also retailer and brand loyalty. Frequently, lower transaction costs are wiped out by the lower prices online. Although selling tickets online saves airlines roughly $10-15 per booking, the price transparency facilitated by the Web makes the average online fare an estimated $50-100 lower than that of a ticket purchased through other channels (Myers, Pickersgill, and Van Metre 2004). Faced with more alternatives, and lower switching costs online, consumers will switch providers based solely on price, thus driving up customer acquisition and retention costs (Dholakia, Zhao and Dholakia 2005).

Customer free-riding, whereby they obtain information from the Internet channel of one retailer to eventually purchase from another retailer, whether off-line or online, poses a real cost disadvantage to multichannel companies. Van Baal and Dach (2005) report that retailers to a large extent are not compensated for their information services, and lose more customers across channels than they retain. Additional variable costs include freight, returns, and, for companies without prior experience in direct selling, costs of outsourcing order fulfillment and delivery of merchandise in small quantities to individual consumers (Alba et al.1997). The large investments required for establishing an on-line channel, combined with likely initial earnings hits and insignificant sales contribution (1-1.5% of total retail sales for some companies), present a disincentive for established retailers to go online.

- Organizational culture and conflict

The stream of literature on radical innovation by incumbents (Chandy and Tellis 2000) posits that the significant rents derived by incumbents from existing products and technologies foster an organizational culture that is less effective at spotting, developing, and utilizing radical innovations. Within such companies, organizational routines are "geared toward efficiently

18

developing incremental innovations based on current technology" (Chandy and Tellis 2000, p. 3). Adoption of radical innovations can require developing new routines that would increase company costs and risks. This theory can explain the experimental, incremental approach many incumbent retailers take towards introducing online channels (e.g. Williams-Sonoma launched its full-assortment, full-service website only after three experimental projects turned out to be very successful). Many retailers find that integrating an online channel into the existing business is much more difficult than to launch stand-alone e-commerce website (Lobaugh, Sampat and Kutyla 2007). The greatest challenge is the development of new processes, organizational models, and incentives. Options theorists argue that in "high velocity" environments, more effective firms sacrifice thorough planning for experimental action by generating large numbers of options, setting up low-cost, low-risk pilot projects, and providing them autonomy and authority. Only after the incremental roll-outs prove a success, the real systemic change can begin (Kanter 2001).

The opponents of the incremental introduction of the online channel state that such actions typically result in morale problems inside the organization, duplication of activities, and confusion among customers and vendors (Moriarty and Moran 1990). If incentives are not aligned across independently functioning channels, store managers see the online channel as competition, and lose motivation, which leads to organizational conflict. Channel conflict is one of the most serious concerns for companies as they are adding e-commerce (Webb 2002). Adding an online communication and transactional channel to the existing stores (and catalogs) can lead to conflicts regarding company resources (capital, personnel, products, and technology) allocation, differing channel goals, and compensation mechanisms (Webb and Hogan 2002). While this competition may help efficient distribution of the company priorities, it can also lead

to a focus shift from consumer needs to company-centered politics. Companies adding an online

channel may see sales decline as a result of channel conflict and decreased service to customers

(Van Baal and Dach 2005).

Empirical findings in the manufacturing industry show that adding an online channel

tends to increase goal incompatibility among existing channels, leading to channel conflict,

which, in turn, reduces channel performance (Webb and Hogan 2002). Virtually no literature can

be found on channel conflict within retailer organizations, although this appears to be an

important and promising area of research.

TABLE 2.2
POTENTIAL RISKS OF ADDING AND ONLINE CHANNEL FOR INCUMBENT
RETAILERS

Potential Risk Area	Risks and Disadvantages	References
Market Share and Sales	Lower market share and sales decline due to • Sales cannibalization (channel shift) • Low customer switching costs • Reduced customer loyalty	Alba et al. (1997); Geyskens, Gielens, and Dekimpe (2002); Hagel and Eisenmann (1994); Peterson, Balasubramanian, and Bronnenberg (1997); Steinfield, Bouwman, and Adelaar (2002)
Costs	High fixed and variable costs due to • Capital investment in industrial-strength website • Website and back-end systems maintenance • New distribution centers and warehouses • Higher customer retention and acquisition costs due to lower customer switching costs • Customer free-riding • Fulfillment and delivery outsourcing	Alba et al. (1997); Barsh, Crawford, and Grosso (2000); Bendoly et al. (2005); Biswas (2004); Dholakia, Zhao and Dholakia (2005); Kanter (2001); Myers, Pickersgill, and Van Metre (2004); Van Baal and Dach (2005)
Organizational Culture and Conflict	• Pre-existing organizational routines geared towards incremental innovations • Difficulties in channel integration • Duplications and confusion due to overlapping functions • Inter-channel conflict if goals and incentives are not aligned	Chandy and Tellis (2000); Lobaugh, Sampat and Kutyla (2007); Moriarty and Moran (1990); Van Baal and Dach (2005); Webb (2002); Webb and Hogan (2002)

Performance Implications of Multichannel Retailing

Previous sections have focused on potential advantages and risks for incumbent retailers who adopt a multichannel strategy by adding online channels. The implementation of bricks-and-clicks retailing by the growing number of incumbent companies has provided rich data for testing numerous theoretical and normative suggestions about the effectiveness and profitability of these strategic decisions. While researchers have devoted adequate attention to the effects of using multiple retail channels on customer satisfaction, loyalty, and retention (e.g. Bendoly et al. 2005; Danaher, Wilson, and Davis 2003; Shankar, Smith, and Rangaswamy 2003; Venkatesan, Kumar, and Ravishanker 2007; Verhoef and Donkers 2005; Wallace, Giese, and Johnson 2004), surprisingly little empirical research has been reported on financial performance implications of multichannel retailing.

The way electronic retailing performance has been assessed previously is very different from traditional retailing measures of performance (Grewal et al. 2004). Physical stores have traditionally used such performance criteria as profit margin, asset turnover, return on assets, and sales per square foot. At the early stage of online retailing, profitability was negative for the majority of e-commerce firms. Therefore, alternative measures of performance were used, based on website traffic, order size, and repeat visits. At the stage when multichannel retailers dominate the e-tailing space, "the lack of emphasis on profitability, or even on sales, has taken a serious toll on the various constituents with which e-tailers interact" (Grewal et al. 2004, p. 709). More traditional financial and operational retail performance measures should be used to assess the impact of retailer website as both sales and marketing channel on the total firm performance.

Below, I discuss the studies that investigate some aspects of retailer financial and operational performance affected by online marketing and sales, as well as findings in other industries related to performance implications of online channel adoption (Table 2.3).

The study by Lee and Grewal (2004) directly investigates the influence of store-based retailer adoption of the Internet on firm performance. The authors use archival data on 83 incumbent retailers representing different NAIC codes to test the impact of their speed of Internet adoption, speed of e-alliance formation, and slack resources on Tobin's Q (a stock-based measure of performance). Their findings show that earlier announcements of adopting the Internet as a communication channel positively affect firm stock valuation, with the slack resources (ratios of retained earnings and working capital to total assets) strengthening this relationship. The speed of announcing e-alliance formations positively affects firm stock performance as well. An interesting finding that announcing the adoption of the Internet for sales improves market value only for the firms with prior catalog operations, with slack resources weakening this relationship, may either reflect investors' fear of sales channel cannibalization potential, or demonstrate the limitation of using stock-based measure of performance. While the traditional performance measures (e.g. sales, profit, and market share) may not reflect the impact of the online sales channel addition in the short run, they appear to be better suited for capturing long-term effects of multichannel retailing and for guiding firm technology and asset investments.

Min and Wolfinbarger (2005) analyze 2 years of financial and operational performance of 42 online retailers to explore differences in their order of e-commerce entry, compare pure-plays with bricks-and –clicks, and generalists with specialists. Based on a multilevel repeated-measures assessment, they conclude that bricks-and-clicks combinations possess higher online

market share and marketing efficiency (ratio of sales to marketing expenses) than pure-plays. However, the bricks-and-clicks online sales do not generate higher profit margins than pure-plays. This may indicate that advantages of online channels for incumbent retailers lie in generating offline sales. However, offline sales were not measured, possibly because a large number of firms in the sample were pure-play retailers, and did not have comparable data. Specialists have been found to have lower market shares, but higher profit margins than generalists, indicating the feasibility of niche strategies in e-tailing. In their sample, earlier entrants into online retailing do not differ from later entrants in online market share, marketing efficiency, or profitability. The limitation of this study was its focus on online measures of performance, which may not have captured the synergistic effect of multichannel strategy.

The paper by Biyalogorsky and Naik (2003) uses data from Tower Records' Internet sales division to assess the impact of online consumer activities on off-line sales. In particular, the results of the latent variables time-series analysis show that the impact of online visits on off-line sales is negative, but not statistically significant. This allows the authors to state that "the contemporaneous cannibalization of off-line sales due to on-line sales is negligible" (Biyalogorsky and Naik 2003, p. 28). These results cannot, however, be generalized to other retailers who sell non-digitizable products, and are in other ways (size, brand equity, degree of channel coordination, etc.) different from this particular company.

A number of studies of performance implications of online channel additions done in other industrial contexts may have relevance for understanding multichannel retailing. For example, Geyskens, Gielens, and Dekimpe (2002) use event-study methodology to track changes in newspaper firms' stock prices as a result of website launch announcements. They find that firms that operate many direct channels are financially hurt when adding a new Internet channel

to their entrenched channel system, possibly due to the anticipated circulation and advertising cannibalization. They also show that early followers perform better in their stock performance than the Internet pioneers or late entrants. The cannibalizing effect of the online channel in the newspaper industry is refuted by Deleersnyder et al. (2002) who examine the long-run evolution of the 85 newspaper channels' revenues as a function of Internet channel addition. They conclude that "the Internet does not invalidate the importance of entrenched distribution channels" (Deleersnyder et al. 2002, p. 346), and cannibalization in newspaper industry takes place only when the overlap between online and offline content is too high.

Adding an online channel by financial services firms has been investigated by Coelho, Easingwood, and Coelho (2003). They find that multiple channels are associated with higher sales performance, but lower channel profitability. The number of channels positively affects performance only when sales by each channel reach at least 15% of total company sales. These results suggest that in the short to medium term multiple channels may increase costs and negatively influence customer retention, but as consumer acceptance for new channels increases, companies may reduce their costs and improve profitability in the long run. A study of Taiwan's financial services sector (Cheng et al. 2007) takes a long-term event study perspective at the relationship between an e-channel addition announcement and capital market-based measures of performance (Economic Value Added and Market Value Added). The results show that both performance measures are positively affected by e-channel announcements by financial services firms.

The study conducted by Wu, Mahajan, and Balasubramanian (2003) in the context of four technology-intensive industries (telecommunications, computer hardware, semiconductor, and manufacturing equipment) considers the impact of intensity of e-business adoption on

performance outcomes. After surveying 144 senior SBU executives, the authors conclude that the overall intensity of e-business adoption significantly influences such performance measures as efficiency, sales, customer satisfaction, and relationship development. However, the adoption of online order taking and procurement does not significantly influence any measure of performance, probably reflecting the early stage or the normative character of these processes.

To summarize, the results of the limited number of studies on financial and operational performance effects of multichannel strategy do not provide sufficient or consistent conclusions. For example, it is unclear whether early (Lee and Grewal 2004) or later (Geyskens, Gielens, and Dekimpe 2002) entrants into online retailing achieve competitive advantage in stock-based performance, or whether the order of entry plays any role in multichannel retailers' market share and profitability performance (Min and Wolfinbarger 2005). While some authors do not find any performance effects of selling online (Biyalogorsky and Naik 2003; Lee and Grewal 2004), others find sales and market share, but not profit improvements (Min and Wolfinbarger 2005). Additionally, the majority of existing studies are concentrated in industries with digitizable or intangible offerings that can be distributed via the Internet (newspapers and financial services), and in the manufacturing context. Only three studies have been conducted in the multichannel retailing context (Biyalogorsky and Naik 2003; Lee and Grewal 2004; Min and Wolfinbarger 2005), of which only one study has used traditional financial performance measures of sales and profitability, and an operational measure of market share (Min and Wolfinbarger 2005). This lack of empirical research is troubling, since important investment decisions that are currently being made by incumbent retailers regarding channel strategy need to be based on solid financial data.

Short-term oriented event study methodology might not accurately reflect the true firm performance over longer periods of time (Cheng et al. 2007), particularly when investigating the effects of order-of-entry strategy. The most appropriate measures of market share and profitability are used for this purpose (Kerin, Varadarajan and Peterson 1992). Reliance on stock-based performance measures and measures limited to the web channel performance only ignores the potential for inter-channel synergies, and fails to account for the contribution of online channel to the overall firm performance (Varadarajan and Yadav 2002). Recent calls for research in the area of profit contribution of multichannel retailing emphasize the lack of traditional performance measures of multichannel strategies in current literature (Neslin et al. 2006). This dissertation intends to fill this gap in the literature by analyzing the relationship between incumbent retailers' e-commerce strategy (order of online entry, and degree of channel coordination/horizontal integration) and long-term financial and operational performance (market share, net income, and gross margin). This relationship is tested while accounting for unique resources (bricks-and-mortar experience, catalog experience, size) and dynamic capabilities (degree of in-house development of new strategic competences) of retail firms.

TABLE 2.3
FINANCIAL PERFORMANCE EFFECTS OF ADDING AN ONLINE CHANNEL

Reference	Variables		Findings
	Independent	Dependent	
Lee and Grewal (2004) Industry: Retailing	-Speed of Communications channel adoption -Speed of Sales channel adoption -Speed of E-alliance formation -Slack Resources	-Tobin's Q	-Speedier communications channel adoption yields significant market performance returns -Firms with slack resources garner greater returns from communications channel -Sales channel adoption does not influence firm performance (except for firms with pre-existing catalog operations) -Speed of e-alliance formation enhances firm performance

Table 2.3 continued

Reference	Variables		Findings
	Independent	Dependent	
Min and Wolfinbarger (2005) Industry: Retailing	-Lag time of online entry -Existing bricks-and-mortar stores -Specialist vs. generalist	-Market Share -Profit margins -Marketing efficiency	-Earlier entrants have neither higher market share, nor higher margins, not higher marketing efficiency than do later entrants -Bricks-and clicks have higher market share and marketing efficiency than pure-plays -Specialists have lower market share, but higher profits than generalists
Biyalogorsky and Naik (2003) Company: Tower Records	-Number of online visits -Last year's offline sales	-Offline sales	-The contemporaneous cannibalization of offline sales due to online sales is negligible
Geyskens, Gielens, and Dekimpe (2002) Industry: Newspaper, Europe	-Order and time of online entry -Intensity and scope of experience -Firm size -Channel power -Publicity -Product- and channel-demand growth	-Daily stock prices	-Powerful firms fare better when adding an Internet channel -Established firms with many other direct channels are financially hurt when adding a new Internet channel -Superior resources and management skills do not provide advantages -Publicity contributes to the success of an Internet channel addition -Product or channel demand does not affect Internet channel success
Deleersnyder, Geyskens, Gielens, and Dekimpe (2002) Industry: Newspaper, Europe	-Internet channel addition event	-Circulation revenue -Advertising income	-When the new Internet channel is positioned as too close a copy (substitute) to its traditional counterpart, cannibalization will more likely take place
Coelho, Easingwood, and Coelho (2003) Industry: Financial Services, UK	-Single vs. multichannel strategy	-Sales performance -Profitability	-Using multiple channels does not ensure stronger sales performance -Profitability performance is higher among the single-channel cases
Cheng, Tsao, Tsai, and Tu (2007) Industry: Financial Services, Taiwan	-E-commerce addition announcement	-Economic Value Added -Market Value Added	-Both Economic Value Added and Market Value Added of firms after e-cannel addition were significantly higher than those before e-channel addition
Wu, Mahajan, and Balasubramanian (2003) Industry: computer hardware, semiconductor, telecommunications, manufacturing equipment	-Intensity of e-business adoption (communications, internal administration, order taking, procurement)	-Efficiency -Sales performance -Customer satisfaction -Relationship development	-Neither online order taking not procurement significantly influenced any performance measures -E-business adoption in communications strongly influenced all four performance measures -E-business adoption in internal administration strongly influenced customer satisfaction and relationship development

Theoretical Development and Research Hypotheses

Multichannel Strategies

With the potential for both positive and negative implications of adding an online channel to the incumbent retailers' existing channels, and based on different organizational structures, cultures, and histories, companies choose different objectives for their online channel, as well as different ways of implementing a multichannel strategy. The role of the retailer's website can range from supporting the land-based stores with information and communications functions, to being an independent e-commerce entity without structural links to the store-based operations, to a complete integration of store, catalog, and online channels operations, fulfillment, and customer service (Lankenau, Klein, and Wehmeyer 2004). One proposed classification of online retailing business models differentiates between two strategies: traffic drivers and triple plays (Grosso, PcPherson, and Shi 2005). Traffic drivers, characterized by relatively low margins and large scale, use the Internet both to draw customers to their physical stores and to offer shoppers a wider selection of goods and greater convenience. Target, The Home Depot, and Wal-Mart represent this category. They use the online channel to sell their higher-margin products, while the majority of their sales are generated in stores. Triple-play retailers (such as J.C. Penney and Williams-Sonoma) tailor their store, catalog, and online channels to complement each other fully. Their goal is to assign specific functions to each channel to create consistent customer experience (Grosso, PcPherson, and Shi 2005).

Another classification of retail multichannel strategies distinguishes between spin-off and integrated online operations (Goersch 2002). The logic behind creating an online entity independent of the bricks-and-mortar parent underscores an opportunity to not only safely experiment with the new technology, but also to avoid inter-channel conflicts of interests and the

28

inertia of large inflexible incumbents (Anderson, Day, and Rangan 1997). Gulati and Garino (2000), however, assert that by divorcing on-line business from traditional stores, companies may be sacrificing more than they gain in terms of potential marketing and distribution symbiosis. They claim that "the benefits of integration are almost always too great to abandon entirely" (Gulati and Garino 2000, p. 108), and propose to substitute the choice between a spin-off and in-house online channel for the choice among degrees of channel integration. According to their approach, the separation – integration decision is not a binary choice, but a spectrum ranging from a spin-off through strategic partnerships and joint ventures to in-house division. They also delineate such elements of integration as brand, management, operations, and equity, each of which can be integrated to a different degree.

The diversity of strategic moves implemented by and available to incumbent retailers entering the emerging multichannel retailing environment illustrates the heterogeneity of their competitive opportunities and internal resources, as well as varied goals these moves are intended to accomplish. A thorough investigation of performance implications of these decisions from resource-based perspective (Barney 1991) can contribute to better understanding of how idiosyncratic firm attributes and resources impact the effectiveness of strategic decisions in improving firm competitive position. This dissertation undertakes such an investigation, and attempts to answer the following research questions:

1. Do incumbent store-based (bricks-and-mortar) retailers perform better when they adopt an online sales channel?

2. Does an early online mover advantage exist for bricks-and-mortar retailers?

3. How do firm resources and characteristics (store-based experience, catalog experience, and size) interact with online order-of-entry strategy in influencing multichannel retailer's performance (market share, net income, and profit margin)?

4. Does inter-channel coordination strategy enhance overall retailer performance?

5. How do firm dynamic capabilities (in-house development of e-commerce functions) interact with the channel coordination strategy in influencing multichannel retailer's performance?

By answering these questions I hope to contribute to the development of strategic theory in the nascent areas of electronic commerce and multichannel retailing, to provide further empirical support to resource-based theory of competitive advantage, and to assist managers in guiding investment allocations, and in formulating more informed strategic objectives for achieving multichannel competitive advantage.

Order of Online Entry and Firm Resources

- Existing theoretical and empirical evidence

The order of market entry has been traditionally considered a strategic decision that can confer competitive advantages to firms who preempt their competitors in offering new products or adopting new processes. Among the commonly cited economic factors facilitating pioneers' success are: preemption of scarce assets, technological leadership, experience and scale effects, supply chain relationships, and buyer switching costs, all of which can act as barriers to entry and lead to temporary monopoly profits and larger market share (Kerin, Varadarajan, and Peterson 1992). In addition, such behavioral factors as ability to shape consumer preferences by creating an industry standard, potential for network effects, high consumer awareness leading to increased trial, and lower consumer risk and search costs when patronizing a familiar provider

can also contribute to first-mover advantages (Kerin, Varadarajan, and Peterson 1992). A competing approach proposes that late new market entrants are better positioned to succeed, since they take advantage of the pioneers' mistakes, lower costs of technology, technological discontinuities that may render the pioneers' efforts obsolete, and changes in consumer tastes and needs (Lieberman and Montgomery 1988). In fact, a historical analysis in manufacturing industries (Golder and Tellis 1993) finds that firms that commercialized new products or technologies on average 13 years after the pioneers, enjoyed higher market share and better survival rates than pioneers. This is explained, in addition to the above reasons, by better capabilities of the follower firms to sustain innovation, and possession of resource endowments needed to develop new infrastructure and unique competences. Early history of online retailing, where the majority of pioneer companies failed within a few years after adopting pure-play business models, supports the theory of first-mover disadvantage (VanderWerf and Mahon 1997), according to which firm resources should be the criterion used to determine the order of entry strategy. Consistent with this approach, the surviving pioneers Amazon and EBay had initial high probability of success due to their unique resources that not only allowed them to pioneer in online retailing, but also made them capable to withstand years of negative profitability.

While only a few pure-play pioneers survived in online retailing, the question that needs to be addressed at the stage when store-based incumbents are developing online strategies is whether the order of entry advantages currently exist in multichannel retailing. On the one hand, it appears that with online retailing representing an incremental innovation from the point of view of consumers (introduced to this technology earlier by pure-play pioneers), store-based retailers would benefit from faster adoption of the online channel. By delaying multichannel

31

adoption, companies risk projecting themselves as technology laggards, losing multichannel customers to competitors with online channels, foregoing increased sales from multiple points of contact and new global markets, and not being able to develop long-term individualized relationships with increasingly fragmented market segments (Geyskens, Gielens and Dekimpe 2002). On the other hand, with online sales representing less than 10% of total retail sales, incumbent retailers may benefit from waiting until the available technologies are more efficient, and standardized solutions become accessible. Moreover, the requirements of consumers who adopt online retailing en-masse at a later stage may differ from those of early adopters (Srinivasan and Moorman 2005), and establishing a relationship with early adopters may not prove beneficial when targeting early and late majority. With the established brand name, reputation, and vendor relations, incumbent retailers who delay their online entry can still leverage their resources and customer base, while taking advantage of better and less expensive technologies, and lower switching costs (Min and Wolfinbarger 2005).

The scarce empirical research on the order of entry effects in the context of online retailing does not provide a definitive answer regarding the existence of early mover advantages. For example, Lee and Grewal (2004) report that speedier adoption of the online channel for communications purposes positively influences market valuations of retail firms, but speedier adoption of the online channel for sales appears to benefit only retailers with pre-existing catalog operations. Min and Wolfinbarger (2005) do not find early entrant advantages in terms of online market share, profit margins, or marketing efficiency, suggesting that increased availability of homogeneous multichannel solutions may favor later adopters of online retailing. Srinivasan and Moorman (2005) find that moderate online retailing experience (approximately 4.5 years) increases the customer satisfaction returns on firm CRM investment. They propose that early

online entry targets a small segment of early adopters not sufficient for visible performance returns, and incurs disproportionately high technology investment, while late entry may forego the loyalty of the majority of consumers who have established online relationships with competitors (Srinivasan and Moorman 2005).

The contingency approach may be the appropriate perspective to adopt in order to resolve the uncertainty surrounding the order-of-entry strategic decision. A growing number of researchers propose that although certain impact of the order of entry on performance does exist, it is better conceptualized as interaction effects with industry and firm resource factors (Lieberman and Montgomery 1998; Szymanski, Troy, and Bharadwaj 1995).

- Industry effects on the order of online entry

Research on the industry effects on entry timing (Schoenecker and Cooper 1998) posits that industries vary in the extent to which first mover advantages may exist. In particular, industries with low customer switching costs (learning curve or idiosyncratic investments), low entry barriers in terms of hard-to-imitate tacit knowledge and skills required from companies, and absence of highly profitable market niches do not encourage pioneering. Online retailing is characterized by high compatibility of shopping experiences at different sites, and does not require time or other investments from consumers to change providers, exhibiting an industry with low switching costs. With the increasing availability of out-of-the-box e-commerce solutions, it may be argued that no specific firm capabilities are necessary to go multichannel, thus reducing the advantages of being an early online retailer. However, preemption of the multichannel customer segment can indeed be a competitive advantage, given that multichannel consumers demonstrate substantial retailer loyalty and higher than average spending levels. Additionally, inimitable e-commerce competencies may be developed by retailers in the process

of becoming multichannel and developing and implementing their coordination strategies. Thus, early entrant advantages appear to be feasible in multichannel retailing. Industry effects are controlled for in this study, which is limited to the retailing industry.

- *Firm-specific factors and order of online entry*

Resource-based view (Barney 1991, Rumelt 1984, Teece 1984, Wernerfelt 1984) posits that firms obtain sustained competitive advantages by implementing strategies that exploit their internal resources. Firm resources are categorized into physical (plant and equipment, geographic location, access to raw materials, physical technology), human (training, experience, judgment, relationships), and organizational (formal and informal planning, coordinating, culture, and structure). In the course of their history and functioning firms acquire heterogeneous, path dependent resources that may provide a competitive advantage if they enable a firm to conceive and implement strategies in response to environmental opportunities. The advantage can be sustained if these resources are imperfectly mobile (cannot be easily acquired by competitors), imperfectly imitable (acquired in unique historical conditions, are causally ambiguous, and/or socially complex), and non-substitutable (a long period of time is required to create strategically equivalent resources).

In the context of online retailing, such resources as pre-existing fulfillment infrastructure, direct sales experience (e.g. through catalogs), and vendor relationships can enable incumbent retailers to succeed as early movers. These factors appear to complement multichannel retailing, and to provide companies an advantage in acquiring multichannel customers early. On the other hand, companies with no experience in direct sales that do not have complementary fulfillment or informational networks would fare better as later adopters, since they can take advantage of the latest multichannel technologies, or outsource online order management and fulfillment to

multichannel solution providers. Such resources as an existing customer base, valuable retail brand and reputation, and strong financial position can be of value to both early and late movers in online retailing, and will assist store-based companies in competing with pure-play start-ups.

Thus, I propose that interaction effects exist between the order of online entry strategic decisions and firm resources (Lieberman and Montgomery 1998). In particular, firm *catalog experience* can contribute to expedited technology transfer of order processing and fulfillment, upgrading back-end infrastructure and logistics, managerial training, better customer service, and CRM utilization. Although there may be transitional difficulties, including changes in pre-established routines and agency issues, it is believed that the expertise and experience in this area constitute the unique, path dependent and socially complex resources that can provide a competitive advantage to early online movers. Inventory costs that traditionally represent the highest costs incurred by retailers are also believed to decrease due to synergistic management of warehouses and distribution centers. Additionally, firms with pre-existing catalog operations that delay online entry may lose their catalog sales to online competitors, as it has been found that online sales cannibalize catalog sales (Neslin et al. 2006, Webb 2002). Only one study to date has included catalog operations as a control variable in testing for online channel announcement impact on retailer market valuation-based performance (Lee and Grewal 2004). Its results showed that firms with catalog operations achieved higher market valuations after announcing the start of online sales compared to retailers without catalog operations. This study, however, did not account for the length of catalog experience in facilitating the impact of early online channel adoption on firm performance. Consistent with the resource-based framework I posit that catalog experience is a unique, path dependent and imperfectly imitable resource that enables early-mover advantages in online retailing for incumbents.

Hypothesis 1: Incumbent retailers with longer catalog experience will exhibit higher a) market share, b) net income, and c) gross margin if they adopt online retailing early.

Firm *bricks-and-mortar experience,* with its associated brand equity and established customer base, is beneficial for incumbent retailers in their competition against pure-play companies, due to lower customer acquisition and retention costs, ability to provide customers multichannel convenience, and capability to facilitate timely fulfillment and reverse logistics. However, because legacy store-based retailers can be characterized by incumbent inertia (Chandy and Tellis 2000), stabilized organizational routines, and reduced financial and technological flexibility, bricks-and-mortar experience can negatively influence the early-mover strategy that requires fast learning, flexibility, and agility to succeed. Srinivasan and Moorman (2005) report that CRM investments have higher customer satisfaction returns only for companies with moderate bricks-and-mortar experience (approximately 12 years). They attribute the diminishing customer satisfaction returns of CRM investments to the older retailers' "core rigidities" that prevent legacy firms from fast and flexible innovation adoption. It has also been reported that incumbent retail firms are more likely to adopt the Internet gradually, experimenting and "testing the waters", since retailers with "established brand presence, physical distribution relationships, and capital investment in traditional formats may be less inclined toward expansion into a non-store, electronic format" (Hart, Doherty and Ellis-Chadwick 2000, p. 956). As far as later online adoption, land-based experience can be quite beneficial to those retailers who are targeting the significant segment of the mainstream late majority customers. By learning from early adopters' mistakes, and leveraging their financial capabilities to acquire the latest and most effective technology, late multichannel retailers can better satisfy their loyal customers' needs and strengthen their high quality reputation. The majority of incumbent land-based retailers have significant bricks-and-mortar experience (in this sample, the mean is 54.76

(SD = 35.55). Therefore, it is logical to suggest that late-mover strategy should be more beneficial for firms with longer bricks-and-mortar experience.

Hypothesis 2: Incumbent retailers with longer bricks-and-mortar experience will exhibit higher a) market share, b) net income, and c) gross margin if they adopt online retailing late.

Firm size (most frequently operationalized by the number of employees, company sales, or assets) (Schoenecker and Cooper 1998) can reflect the degree of structural inertia and bureaucracy that impedes adoption of innovations (Chandy and Tellis 2000). At the same time, it has been shown that larger firms initiate more innovations (Chandy and Tellis 2000) than smaller firms due to higher R&D investments (Schoenecker and Cooper 1998) and financial resources that can more readily absorb losses and appropriate gains associated with innovations and major infrastructure investments (Lee and Grewal 2004). Existing empirical evidence does not provide a conclusive answer regarding the role of firm size in fostering (or impeding) the early-mover strategy. For example, slack financial resources (acting as a buffer protecting a firm from innovation failure) have been shown to strengthen the influence of early announcements of adopting online communications channel on firm market performance. Interestingly, however, they have been found to weaken early online sales channel adoption announcements' impact on firm market-based performance (Lee and Grewal 2004). The results from newspaper industry studies do not support any significant role of firm size on its stock market return as a result of adding an online channel (Geyskens, Gielens and Dekimpe 2002), while the findings in financial services show that smaller companies exhibit better returns from multichannel strategy (Coelho, Easingwood and Coelho 2003).

With the reports that "well-designed and well-maintained web site and back-end systems may cost between US$15 million and US$25 million annually" (Grewal et al. 2004, p.707), it appears that large firms better capable of amortizing such costs can use large capital investments

as barriers to entry for later adopters, and benefit from entering early. Considering that one of the major early mover advantages in online retailing is preemption of multichannel customers, large incumbent retailers appear to risk having a reputation of technology laggards if they delay their online presence. On the contrary, by entering early, large retailers can leverage their known brands, low customer acquisition costs and purchase volume discounts, and pass on these saving to customers in the form of online discounts and/or free shipping (Geyskens, Gielens and Dekimpe 2002). Contrary to earlier empirical evidence from Europe that smaller retailers are more likely to succeed in early Internet adoption due to their greater flexibility, limited marketing resources, and lack of scale (Auger and Gallaugher 1997, O'Keefe, O'Connor and Kung 1998), online adoption in the US was shown to be more extensive for large retailers (Morganosky 1997). Additionally, when retailer size was measured as the number of retail outlets, the largest UK retailers (with over 300 outlets) were the most likely to succeed selling online (Hart, Doherty and Ellis-Chadwick 2000). Based on the above reasoning, I argue that retailer size will facilitate the online early mover advantages through initial capital-based barriers to entry, cost reductions, existing positive reputation, solidified customer base, skilled personnel, and greater ability to absorb potential losses.

Hypothesis 3: Larger incumbent retailers will exhibit higher a) market share, b) net income, and c) gross margin if they adopt online retailing early.

Inter-channel Coordination and the Dynamic Capabilities Approach

Firms that have adopted multichannel retailing need to develop new competitive strategies in the novel dynamic environment of multichannel retailing. While academics discuss various strategic approaches (Gulati and Garino 2000, Porter 2001), industry analysts overwhelmingly support higher degrees of inter-channel coordination and integration because, as best practices show, they can provide synergies that would mutually benefit both channels, at the

same time positively affecting the bottom line (Johnson 2004). Multichannel coordination refers to simultaneous and consistent employment of online, store, and (where applicable) catalog channels. Synergy implies using these channels in a manner that increases the effectiveness of each separate channel in providing a seamless shopping experience for customers, and contributing to the superior performance of the company. Companies can coordinate their store, catalog, and internet marketing functions to create uniform consistent image and offer similar merchandise, integrate their order-processing, fulfillment, and distribution functions to reduce duplication and transaction costs, and combine their customer information databases to develop individualized customer service and targeting to increase customer loyalty. Thus, multichannel coordination appears to be a viable competitive strategy that adds value to the existing retailer offer. To date, no detailed analyses or tests of multichannel coordination's impact on firm performance have been conducted. As I argue below, channel coordination represents a strategy based on firm idiosyncratic dynamic capabilities that can be a source of competitive advantage for multichannel retailers by providing unique inter-channel synergies.

 - *Dynamic capabilities approach*

The role of firm-specific competences in acquiring a competitive advantage in "high velocity" environments is emphasized by the dynamic capabilities approach that extends resource-based view to industries with rapid technological and market change (Teece, Pisano and Shuen 1997). In such industries, winners are characterized by the organizational capability to effectively renew, coordinate and redeploy internal competences to achieve congruence with the changing business environment. "The very essence of most capabilities/competences is that they cannot be readily assembled through markets" (Teece, Pisano and Shuen 1997, p. 517), and represent unique organizational skills. Among these dynamic capabilities are: coordination/integration of

activities inside the firm, organizational learning processes, and firm reconfiguration and transformation. It follows that a firm-specific, unique way of integrating such e-commerce functions as order processing and fulfillment, back-end systems, logistics, and CRM into the pre-existing retailer infrastructure can lead to a competitive advantage. A number of authors suggest that information and communication technologies do not generate rents by the simple fact of their deployment by firms (Barney, Wright, and Ketchen 2001, Powell and Dent-Micallef 1997). It is the interface between skilled users and technology that may prove to be inimitable, and the "organizations highly proficient in translating computing power into knowledge" (Barney, Wright, and Ketchen 2001, p. 636) may develop a competitive advantage. Thus, the dynamic capabilities approach posits that the source of a capability/competency is always internal to the firm, is causally ambiguous and inimitable (Reed and DeFillippi 1990). Close coordination of retailer channels to provide a seamless customer experience with the company appears to represent a strategy that will be reinforced by the firm dynamic capabilities, since the inter-channel synergies can be unique to each retailer, and not easily imitated.

   - Coordination of marketing functions

Brand integration (Gulati and Garino 2000) appears to be the most visible element of synergistic coordination. It entails extending the retailer's brand name to its online channel, thus transferring the customer perception of the retailer's reputation, service quality, and merchandize mix to its website. While signaling trust and credibility and helping reduce customer risk, this decision also influences customer expectations and may affect their satisfaction with the company. By making the retailer's online channel easily located by typing its name, integrated branding automatically ensures site traffic, and supports the retailer's image of technological expertise (Goersch 2002). In order to utilize online capabilities to a greater extent, and to appeal to new customer segments,

retailers link the main website to secondary websites that along with the retailer brand name also include the segment description in their addresses. For example, in addition to JCrew.com, J. Crew Group Inc. has rolled out a new e-commerce site JCrewFactory.com for those interested in its discounted merchandise. Similarly, Foot Locker Inc. is operating WorldFootLocker.com, FootLocker.com, and LadyFootLocker.com to appeal to different segments, at the same time retaining the valuable brand name (Internet Retailer 2006).

The use of such Internet-based marketing tools as email marketing, viral marketing, and site search for targeting the existing and new store and online customers benefits both channels. By sending targeted emails to store shoppers to promote new arrivals or seasonal sales, and including links to their online outlets, retailers encourage browsing and buying online (Ansari, Mela, and Neslin 2005), as well as in the store. By making loyal store shoppers aware of additional opportunities to buy online, and online shoppers - of specific store events, retailers create and reinforce brand awareness at a fraction of the traditional media costs (Internet Retailer 2007). Using the website search tool, visitors can search for specific products, models, and colors, and, even if store inventories are not available for checking online, still get an idea of the assortments carried by the store. By giving consumers the opportunity to email a friend the description and a picture of the product, viral marketing uses word-of-mouth to substantially increase its customer base, both online and in the stores.

Sponsoring online communities may be another way to strengthen retailer loyalty. By facilitating customer discussions about the products bought in stores or online, retailers strengthen brand awareness and recall, and can also use the customer feedback information to improve operations in both channels. Some authors note that customer selection of a retailer channel is influenced by the belief that people similar to them use the channel (Neslin et al.

41

2006). Online communities can serve the role similar to the social environments of physical stores, thus helping their members identify with other members (Pentina 2006), and add the online channel to their consideration set. A similar result is achieved by proprietary content provided on the website (recipes, instructions, advice, other shoppers' recommendations), as well as interactive opportunities made possible by the rapidly advancing technologies. For example, HomeDepot.com offers 3D interactive demos, and a possibility to ask questions online that are directed to the most appropriate live experts via language recognition technology, and answered within minutes. By increasing the amount of time consumers spend on the retailer website, and helping them solve problems, companies solidify relationships that extend to all channels.

Channel cross-promotion and cross-selling is another powerful instrument of marketing coordination. Including website address in the physical store signage, store bags, and employee uniforms helps create the image of consistency between the two channels, and steers consumers to the online channel when they need information, customer service, or for assortment browsing (Goersch 2002). Some retailers (e.g. Gap, Sears, Staples) have access to the Internet in their stores through store kiosks that help customers order products unavailable in stores, or obtain more detailed information. Similarly, by including store listings, locations, and hours on the website, as well as by advertising special store offers, or offering coupons and gift cards redeemable in their stores, retailers encourage online search and off-line shopping (also known as research shopping). By encouraging research shopping, retailers reduce customer service costs and increase opportunities for cross-selling (Burke 2002; Neslin et al. 2006). Additionally, it has been shown that more website visits eventually account for the increase in store visits of the retailer (Teerling et al. 2005, cited in Neslin et al. 2006).

In order to maintain a certain level of channel uniqueness, cross-advertising of special offers, e.g. offering accessories online for the apparel purchased in a store, or selling parts in the store for the appliances and electronics acquired online, further facilitates traffic to both channels. It is interesting that when consumers perceive that online and store-based channels are integrated, they are less likely to switch retailers in the case of stock-outs in one channel. Bendoly et al. (2005) found that faced with product unavailability in one channel, customers are more likely to look for the item in the retailer's other channel(s) than buy from any of the competitors' channels if they perceive the retailer's channels closely integrated. Cost implications of integrated marketing have been considered by Berger, Lee, and Weinberg (in press) who developed an optimization model that suggests that communication expenses for fully integrated channels are lower than those for partially integrated, or separate channels.

Consistent merchandising and pricing in both channels help maintain the brand image of the retailer. Depending on the inventory capabilities and company goals, some companies offer wider selections online, while others limit online offerings only to certain categories of products. Some low-margin retailers use the Web for more expensive and bulky items (e.g. furniture on Target.com), while selling more low-margin merchandize in stores. High-end retailers limit their online offerings to create the image of exclusivity and increase store appeals. For instance, Nordstrom Inc. has launched its Designer Collection micro-site, featuring ten designers and showcasing highly stylized apparel. The site features store locations, and designer event listings (Internet Retailer 2006). Other retailers use online channel to sell items that are not in high demand in the stores (e.g. extended sizes on Gap.com). Across-channels discounts, coupons, and store loyalty programs provide customer convenience and reinforce seamless shopping experience. To emphasize channel uniqueness and account for differential inventory and

fulfillment costs, retailers can have store clearance events, or online specials, but without undermining the customer fairness expectations.

   - Operations, logistics, and information management

Coordination of purchasing, freight, warehousing, inventories, and logistics (Gulati and Garino 2000) is a complex and involved process. It is complicated by the company's existing distribution and information systems infrastructure that may not be compatible with the newly developed Internet solutions. This is the reason many bricks-and-mortar retailers outsource these functions for their online channels (e.g. Abercrombie & Fitch, Target, Walgreens). However, investing in an in-house order management and fulfillment provides not only significant cost savings, but also better control and guaranteed reliability for customers (Cao and Zhao 2004). It enables website visitors to check store inventories, to order products online and pick them up in a store, and to return and repair in a store the merchandise purchased online (Montoya-Weiss, Voss, and Grewal 2003).

   Closely related to operations coordination is the coordinated management of customer information (Goersch 2002). By sharing information on store and online transactions of individual customers, retailers can personalize offerings, reward loyal consumers, send individualized email promotions, and manage multichannel shopping behavior in ways that would maximize customer value and company profits. Multichannel shoppers have been found to be more loyal and profitable than single channel customers (according to Shop.org, they spend 33% per year more, and purchase 70% more frequently from stores), which makes them an attractive market segment (Shop.org, 2006). Creating and maintaining cross-channel databases and understanding individual preferences for channel use can help firms create superior multichannel shopping experiences. This can be achieved by using Customer Relationship

Management (CRM) systems synchronized with the operations and logistics functions. By using

the information on customer purchase history and patterns, firms may engage in price

discrimination (Varadarajan and Yadav 2002) based on customizing offerings to provide higher

value that commands premium prices (Zettelmeyer 2000). By providing maximum convenience

and value, personalized service and individualized communication at every point of contact,

multichannel coordination can be a source of retailer differentiation and competitive advantage.

By utilizing incumbent retailer's existing resources and competencies, and by implementing the

coordination in a distinct manner with a unique goal, the multichannel competitive advantage can

be sustained for a long period of time. I believe that closely coordinating its channels, a retailer

can achieve both higher market share and profitability performance, and significantly increase its

online sales performance.

Hypothesis 4: Incumbent retailers with higher degree of inter-channel coordination will exhibit
higher a) market share, b) net income, c) gross margin, and d) online sales

> *- Advantages and risks of e-business functions outsourcing*

The growing practice of outsourcing e-business solutions to third-party logistics (3PL) and third-

party fulfillment (3PF) providers, and web hosting and customer service providers offers

significant efficiency advantages to multichannel retailers (Enders and Jelassi 2000). Developing

a state-of-the-art fulfillment operation (dedicated warehouses, information systems,

telecommunications infrastructure, and human resources) requires large initial capital

investments, as well as sustained infusions of money over time, particularly when the lifecycles

of IT systems continue to compress with rapid technology changes (Harrington 2000). By

outsourcing these functions, retailers can not only realize cost savings, but also speed up their

online channel introduction. Other reasons why multichannel retailers outsource e-business

functions include: access to superior expertise, business risk mitigation, strategic flexibility, and

asset transfer (by taking advantage of 3PL inventory financing) (Chung and Laseter 2007). In line with the Transaction Cost Theory (Coase 1937, Rindfleisch and Heide 1997, Williamson 1975, 1981, 1985), non-core business functions should be outsourced if market production costs exceed the transaction costs of vendor selection, adaptation, performance monitoring, and assets safeguarding (Stump and Heide 1996). However, if companies consider channel coordination their core and unique competency, outsourcing part or all of their e-business functions may detract from their competitive advantage. It will not allow developing socially complex, causally ambiguous and inimitable dynamic capabilities of integrating e-business and land-based operations and processes. Additionally, using different providers for website hosting, payment processing, order fulfillment, customer service, and security, will make channel coordination difficult and more costly, since numerous platforms and standards would need to be brought in sync. Further, agency and opportunism issues, as well as cultural differences may increase costs and complicate the process of multichannel coordination and integration.

Using integrated e-business solutions from a single provider (e.g. IBM's WebConnections) with out-of-the-box services may reduce the retailer's opportunity to differentiate itself from other multichannels, and to create unique and inimitable inter-channel synergies. A recent survey of 175 online retailers has shown that many retailers prefer to operate most e-commerce programs internally (Internet Retailer 2007). For example, 75% of respondents manage their own order fulfillment, 69% do not use an outside agency to help with paid and natural search programs, 76% do not employ an affiliate management company, and 71% do not employ an e-mail marketing company. The only functions the majority of online retailers in the survey currently outsource are payment processing (72%) and web hosting (77%). No academic research to date has investigated the role of in-house development of e-business functions for

strengthening firm online or overall performance. Using the logic of the dynamic capabilities

approach, I propose that developing the majority of e-business related functions in-house (as

opposed to outsourcing) will strengthen the positive role of inter-channel coordination for

increasing company performance.

Hypothesis 5: Incumbent retailers with higher degree of inter-channel coordination will exhibit higher a) market share, b) net income, c) gross margin, and d) online sales if they have more e-business functions developed in-house.

CHAPTER III

METHODOLOGY

Data Sources

The sample includes all publicly traded retail companies listed in the COMPUSTAT database under the following Standard Industrial Classification (SIC) codes: 53 (general merchandise), 54 (food stores), 56 (apparel and accessories), 57 (home furniture, furnishings, and equipment), and 59 (miscellaneous retail, with the exception of non-store retailers (5960), catalog (5961), auto (5962), direct (5963), and fuel (5980) vendors). The information missing in the COMPUSTAT for these retailers was supplemented with the information available in the Hoover's database, annual company reports, US Census, and other publicly available sources. Out of the 259 retailers listed in the COMPUSTAT under these SIC codes I retained 158, for which I was able to collect complete data for the period of interest. I omitted the retailers that have no store presence, since they are not the focus of this research concerned with performance implications of incumbent retailers' multichannel strategies. I consider the 11-year period from 1996 (when the first land-based retailer was reported to go online) until 2006 (the latest year for which the financial information was available).

Using secondary data obtained by historical (archival) method is very appropriate to this analysis, since I am interested in evaluating longitudinal data. This method is also considered "best suited to analyzing the rewards of order of market entry", especially because it allows to include the records of non-surviving companies (Golder and Tellis 1993). Historical analysis, unlike survey research based on human recollection, produces unbiased information because it relies on "authenticating, establishing the credibility of, and corroborating" the evidence it uses (Golder 2000, p.167). This approach provides a "prospective" look at order-of-entry effects

because information is based on records taken at the time online entry took place, while surveys or interviews with current managers of surviving companies may be considered "retrospective" because respondents report on past events (Golder and Tellis 1993, p.162). I made sure to include the information obtained through historical (archival) research only after it had been confirmed by at least two available sources to avoid any possible mistakes (Lee and Grewal 2004).

Using historical research allowed us to obtain new measures of such constructs as order of online entry by incumbent retailers, retailer catalog experience at the time of online entry, and retailer bricks-and-mortar experience at the time of online entry, from the existing historical information. This, in turn, serves to test the proposed hypotheses regarding contingency effects of resources on the order of entry strategy - performance relationship. Using the historical method alone, however, is not sufficient to test theory (Golder 2000). To strengthen the theory testing ability, I have employed such powerful statistical technique as Time Series Cross Sectional (TSCS) regression (described in detail in the Empirical Analysis section), which was successfully used in the past to account for constant and random variation among and within companies during long periods of time (Allison 2005).

<div align="center">Sample Characteristics</div>

Table 3.1 with the descriptive statistics of the sample contains mean values and standard deviations of such company indicators as the number of employees, sales, net income, and the length of bricks-and-mortar, catalog and online experience. The average company size in the sample, measured by the number of employees (in thousands), is 43.5 (SD=129.4), with the largest companies being represented by the General Merchandise (mean=113.3, SD=276.9) and Food (mean=67.4, SD=83) sectors. These retailer categories also represent the oldest land-based

sales operations (mean for food companies = 80.58, SD=37.87; mean for general merchandise companies = 60.27, SD=34.94). Based on annual sales (in millions of dollars) in 2006, General Merchandise stores exhibit the highest performance (mean=16,772.2, SD=45,191.4), with the Food stores closely following (mean=11,561.7, SD=15,779.6). The length of catalog operations is the largest for the Miscellaneous Retail category (mean=13.4, SD=33.31), represented by sporting goods, books, office supplies, jewelry and other specialty products. The shortest catalog experience is manifested by Home Furnishing and Electronics companies (mean=4.6, SD=13.92), with food retailers in the sample not using catalogs to sell their products. The average length of online sales operations for the whole sample is 2.27 years, with the Food and Apparel and Accessories stores showing the latest e-commerce adoption time (means of 1.43 (SD=2.39) and 1.93(SD=2.68) respectively).

TABLE 3.1
DESCRIPTIVE STATISTICS FOR RETAILERS IN THE SAMPLE

SIC code	No of Cos	Number of Employees, thousands (mean and Std. Dev.)	Length of Bricks-and-Mortar Experience, years (mean and Std. Dev.)	Length of Catalog Experience, yrs (mean and Std. Dev.)	Length of Online Sales Operations, yrs (mean and Std. Dev.)	Sales, $$ mln (2006)	Net Income, $$ mln (2006)
53	26	113.3 (276.9)	60.27 (34.94)	8.08 (23.63)	2.87 (4.17)	16772.2 (45191.4)	458.3 (1571.8)
54	24	67.4 (83)	80.58 (37.87)	0	1.43 (2.39)	11561.7 (15779.6)	150.6 (331.7)
56	54	16.75 (29.67)	45.11 (28.45)	6.42 (15.51)	1.93 (2.68)	1603.7 (2837.7)	78.5 (188.3)
57	22	14.19 (21.3)	45.55 (27.88)	4.6 (13.92)	2.63 (2.9)	2493.8 (5024.7)	71.5 (179.8)
59	32	25.29 (36.07)	53.51 (39.29)	13.4 (33.31)	2.72 (3.09)	4501.1 (7725.84)	112.4 (303.9)
Total	158	43.5 (129.4)	54.76 (35.55)	6.88 (21.03)	2.27 (3.09)	6499.9 (21224.02)	162.28 (712.01)

Measures

The measures used in this research are summarized in Table 3.2, and discussed below.

- *Performance*

Retailer performance is measured by three indicators: market share, net income, and gross margin. *Market share* is a traditional measure used when assessing the effect of the order of entry strategy (Kerin, Varadarajan, and Peterson 1992, Min and Wolfinbarger 2005). It is calculated by dividing the annual sales of a retailer by industry category sales. Annual retail sales values for each retailer in the sample, as well as industry sales values are available in the COMPUSTAT database for the whole period of interest. *Net Income* represents the "bottom line" performance measure and indicates how well the company manages its costs and expenses in addition to the revenue performance. It is an important indicator of company profitability over time, and is also used in calculations of earnings per share. Net income is calculated by subtracting the cost of doing business, depreciation, interest, taxes and other expenses from revenues, and is provided in the COMPUSTAT database. *Gross margin* is the proportion of sales contributed to profit, and is calculated by using the (sales revenue – cost of goods sold)/sales revenue formula (Min and Wolfinbarger 2005). It is a traditional retail performance measure and accounts for managing the cost of the major retail investment: merchandize available for sale. The annual value of gross margin for each company is also provided in the COMPUSTAT.

- *Order of online entry*

The order of entry has been measured in the literature as natural logarithm of lag time of entry since the first entrant in industry (Min and Wolfinbarger 2005), number of days since the entry of the first entrant (Srinivasan and Moorman 2005), number of days since the first release of Netscape Navigator (Geyskens, Gielens and Dekimpe 2002), and as an ordinal variable that

51

changes with time (Lee and Grewal 2004). This dissertation adopts the latter measure of online

entry, since it is the most amenable to the TSCS regression method of analysis that is used in this

study. Following Lee and Grewal (2004), I coded the year the retailer adopted the online channel

for sales as 1, all previous years as 0, and each following year by adding increments of 1.

- Catalog and bricks-and-mortar experience

I measure the catalog and bricks-and-mortar experience at the time of online entry by ordinal

numbers, with 1 representing the year of catalog launch and firm founding, respectively. Prior

years are coded as zeros, and consequent years are coded in increments of 1. To correctly

identify and verify the dates when retailers started their store-based operations, introduced

catalogs, and added online sales, I used content analysis of company annual reports (e.g. K-10

and Q-10 statements) by identifying statements that contained the relevant dates. To ensure

validity of the content analysis measures, two independent coders were employed for the content

analysis, with the inter-coder differences being resolved by verifying the dates with the firm

customer service department.

- Firm size

Traditional measures of firm size include: number of employees (Coelho, Easingwood and

Coelho 2003, Geyskens, Gielens and Dekimpe 2002, Herold, Jayaraman and Narayanaswamy

2006), natural logarithm of firm sales the year before market entry (Mitchell 1989), total assets

(Herold et al. 2006), and market value of the firm (Geyskens, Gielens and Dekimpe 2002). Firm

size of a retailer has also been measured in the literature by the number of retail outlets (Hart,

Doherty and Ellis-Chadwick 2000). This study adopts the *number of employees* as the measure

of company size based on earlier literature, and in order to avoid any potential multicollinearity

with the financial measures of performance that may result if sales are used as a measure of size. The annual number of firm employees is available in the COMPUSTAT database.

- Degree of channel coordination

The degree of channel coordination was assessed by conducting a retailer website content analysis. Content analysis of websites has been previously done in research on online advertising and website interactivity (Bush, Bush and Harris 1998, Perry and Bodkin 2002, Philport and Arbittier 1997). A coding sheet (Appendix 1) was developed based on the existing channel coordination literature (Bendoly et al. 2005, Goersch 2002, Steinfield, Mahler and Bauer 1999, Vishwanath and Mulvin 2001), and the review of 50 randomly selected online retailing sites. It lists the parameters of store and online inter-channel coordination (e.g. ability to check store inventory, ability to buy online and pick up in store, cross-channel promotions, etc.) that in aggregate reflect the intensity of integrating online channel into the retailer's overall operations. The coding sheet had been pre-tested and validated on a student sample. Two independent judges assessed the presence of listed parameters on the websites of retailers in the sample. Inter-judge reliability coefficient was 0.88 ($p=0.01$), and the disagreements were resolved by discussion. The score for the degree of channel coordination reflects the number of all coordination-related features available on each retailer's website (ranging from 0 to 42).

- Degree of in-house e-commerce capability

The historical method (Golder 2000, Savitt 1980) was used to identify how many areas of e-business each retailer develops in-house as opposed to outsourcing. The following areas were considered: web hosting, site design, content management, order management, fulfillment, payment processing, site search, search engine marketing, e-mail marketing, affiliate marketing, web analytics, CRM, e-commerce platform, web performance monitoring, rich media, and

content delivery. The number (minimum 0, maximum 16) of these functions developed in-house

reflects the degree of in-house e-commerce capability. Two coders conducted the content

analysis of the company records, current business press, and company web sites to record the

number of e-commerce programs operated internally in 2006, the year when the latest

performance indicators of profit margin and market share are available. The inter-rater

disagreements were resolved by discussion and revisiting the sources.

TABLE 3.2
MEASURES USED IN THE STUDY

Measure	Formula / Description	Range in the sample
Performance: - Market Share - Net Income - Gross margin	 Annual Sales / Industry Category Sales Sales Revenue – Costs and Expenses, in $$ mln (Sales Revenue – Cost of Goods Sold)/Sales Revenue, %	 0–0.63 -3219-11284 0-70.9
Order/Speed of Online Entry	Ordinal, changes with time (1=first year of online sales through the first online channel)	0 - 18
Catalog Experience	Ordinal, changes with time (1=first year of catalog sales)	0-161
Bricks-and-Mortar Experience	Ordinal, changes with time (1=the year of company founding)	0-313
Firm Size	Annual Number of Employees, in thousands	0-1900
Degree of Inter-Channel Coordination	Count of inter-channel coordination parameters present on retailer's website	0 - 26
Degree of in-house e-commerce capability	Count of e-business related capabilities developed in-house	0 - 16

Method

Time Series Cross Sectional Regression Model

To test Hypotheses 1-3, the fixed and random effects of the two-way Time Series Cross

Sectional (TSCS) regression models were used. The SAS statistical package provides the

capability to conduct this procedure. This technique is appropriate for analyzing change over

time in continuous dependent variables (annual gross margin, net income, and market share)

when events (adding an online sales channel) and continuous variables (annual firm size

measured as the number of employees) serve as independent variables (Johnson 1995). It also allows testing for interactions of continuous (order of online entry, catalog, bricks-and-mortar experience, and size) variables. TSCS regression model also has advantages in the interpretation of the estimated effects. The fixed effects estimator effectively controls for the effects of all measured and unmeasured differences between individual firms that do not change over time. This feature aids in accounting for a very significant problem of unobservable effects (Jacobson 1990) that has been recognized in marketing for a long time (Buzzell 1990, Jacobson 1990).

The random effects model allows the results to be generalized to the population, since it assumes that individual firms are a random sample from the population, and treats constant effects for individual firms as a random variable. Another assumption (that makes random effects model more efficient) is that unobserved differences between individual firms that are constant over time are also treated as random variables. Thus, calculation of the coefficients makes use of information from both within and between observations.

Generally, when researchers believe the model being tested has no omitted variables, random effects estimator is preferred, since it provides lower standard errors and p-values. However, researchers are not always confident that the model is completely specified, and often there are variables not included in the equation that may affect both the dependent and independent variables. In this case, fixed effects estimator is preferred, since it allows for correlations of unobserved variables with the dependent and independent variables. The TSCS regression method has been used with data similar to the data in this study in a number of existing research papers (e.g. Lee and Grewal 2004). Generally, both fixed and random effects estimators are computed, and then the Hausman specification test is conducted to compare both methods (Hausman 1978). The null hypothesis of the Hausman test is that the individual effects

are uncorrelated with the other regressors in the model. If rejected, a random effects model is

considered to produce biased estimators (violating one of the Gauss-Markov assumptions), and

the fixed effects model is preferred.

In order to test the first three hypotheses with the firm gross margin, net income, and

market share as the dependent variables, the following equations were formulated:

Fixed Effects Model

(1) $Y_{it} = (\alpha + \mu_i) + \beta X'_{it} + \gamma Z'_{it} + v_{it}$ where

Y_{it} is the gross margin of firm i at time period t
α is the intercept
μ_i is the constant effect for individual firm i across time of all unobserved variables
β is the vector of coefficients for catalog experience, bricks-and-mortar experience, order of online entry, and annual firm size
γ is the vector of coefficients for the interaction variables of order of entry with bricks-and-mortar experience, order of entry with catalog experience, and order of entry with firm size
v_{it} is random error at each point in time

(2) $Y_{it} = (\alpha + \mu_i) + \beta X'_{it} + \gamma Z'_{it} + v_{it}$ where

Y_{it} is the market share of firm i at time period t
α is the intercept
μ_i is the constant effect for individual firm i across time of all unobserved variables
β is the vector of coefficients for catalog experience, bricks-and-mortar experience, order of online entry, and annual firm size
γ is the vector of coefficients for the interaction variables of order of entry with bricks-and-mortar experience, order of entry with catalog experience, and order of entry with firm size
v_{it} is random error at each point in time

(3) $Y_{it} = (\alpha + \mu_i) + \beta X'_{it} + \gamma Z'_{it} + v_{it}$ where

Y_{it} is the net income of firm i at time period t
α is the intercept
μ_i is the constant effect for individual firm i across time of all unobserved variables
β is the vector of coefficients for catalog experience, bricks-and-mortar experience, order of online entry, and annual firm size
γ is the vector of coefficients for the interaction variables of order of entry with bricks-and-mortar experience, order of entry with catalog experience, and order of entry with firm size
v_{it} is random error at each point in time

Random Effects Model

(4) $Y_{it} = \alpha + \beta X'_{it} + \gamma Z'_{it} + (\mu_i + \nu_{it})$ where

Y_{it} is the gross margin of firm i at time period t
α is the intercept
β is the vector of coefficients for catalog experience, bricks-and-mortar experience, order of online entry, and annual firm size
γ is the vector of coefficients for the interaction variables of order of entry with bricks-and-mortar experience, order of entry with catalog experience, and order of entry with firm size
μ_i is the random effect for individual firm i of all unobserved variables
ν_{it} is random error at each point in time

(5) $Y_{it} = \alpha + \beta X'_{it} + \gamma Z'_{it} + (\mu_i + \nu_{it})$ where

Y_{it} is the market share of firm i at time period t
α is the intercept
β is the vector of coefficients for catalog experience, bricks-and-mortar experience, order of online entry, and annual firm size
γ is the vector of coefficients for the interaction variables of order of entry with bricks-and-mortar experience, order of entry with catalog experience, and order of entry with firm size
μ_i is the random effect for individual firm i of all unobserved variables
ν_{it} is random error at each point in time

(6) $Y_{it} = \alpha + \beta X'_{it} + \gamma Z'_{it} + (\mu_i + \nu_{it})$ where

Y_{it} is the net income of firm i at time period t
α is the intercept
β is the vector of coefficients for catalog experience, bricks-and-mortar experience, order of online entry, and annual firm size
γ is the vector of coefficients for the interaction variables of order of entry with bricks-and-mortar experience, order of entry with catalog experience, and order of entry with firm size
μ_i is the random effect for individual firm i of all unobserved variables
ν_{it} is random error at each point in time

The SAS commands that were used for the above six equations, respectively, are:

```
(1) PROC TSCSREG DATA = WORK.RETAIL;
ID RETAILER YEAR;
MODEL GPROFITMARGIN = FOUNDED CATALOG ECOMMERCE SIZE
ECOMMERCE*FOUNDED ECOMMERCE *CATALOG ECOMMERCE *SIZE
/FIXTWO;
RUN;

(2) PROC TSCSREG DATA = WORK.RETAIL;
ID RETAILER YEAR;
```

MODEL MARKETSHARE = FOUNDED CATALOG ECOMMERCE SIZE
ECOMMERCE*FOUNDED ECOMMERCE *CATALOG ECOMMERCE *SIZE
/FIXTWO;
RUN;

(3) PROC TSCSREG DATA = WORK.RETAIL;
ID RETAILER YEAR;
MODEL NETINCOME = FOUNDED CATALOG ECOMMERCE SIZE
ECOMMERCE*FOUNDED ECOMMERCE *CATALOG ECOMMERCE *SIZE
/FIXTWO;
RUN;

(4) PROC TSCSREG DATA = WORK.RETAIL;
ID RETAILER YEAR;
MODEL GPROFITMARGIN = FOUNDED CATALOG ECOMMERCE SIZE
ECOMMERCE*FOUNDED ECOMMERCE *CATALOG ECOMMERCE *SIZE
/RANTWO;
RUN;

(5) PROC TSCSREG DATA = WORK.RETAIL;
ID RETAILER YEAR;
MODEL MARKETSHARE = FOUNDED CATALOG ECOMMERCE SIZE
ECOMMERCE*FOUNDED ECOMMERCE *CATALOG ECOMMERCE *SIZE
/RANTWO;
RUN;

(6) PROC TSCSREG DATA = WORK.RETAIL;
ID RETAILER YEAR;
MODEL NETINCOME = FOUNDED CATALOG ECOMMERCE SIZE
ECOMMERCE*FOUNDED ECOMMERCE *CATALOG ECOMMERCE *SIZE
/RANTWO;
RUN;

Multiple Regression

In order to test Hypotheses 4 and 5, a number of multiple regression procedures (available in

all major statistical packages) were conducted. The equations representing the cross-sectional

multiple regressions are:

(7) $Y_i = \alpha + \beta x_i + \gamma z_i + \varepsilon_i$ where

Y_i is the gross margin of firm i
α is the intercept
β is the coefficient for the degree of firm channel coordination

γ is the coefficient for retail category
ε_i is random error

(8) $Y_i = \alpha + \beta x_i + \gamma z_i + \varepsilon_i$ where

Y_i is the market share of firm i
α is the intercept
β is the coefficient for the degree of firm channel coordination
γ is the coefficient for retail category
ε_i is random error

(9) $Y_i = \alpha + \beta x_i + \gamma z_i + \varepsilon_i$ where

Y_i is the net income of firm i
α is the intercept
β is the coefficient for the degree of firm channel coordination
γ is the coefficient for retail category
ε_i is random error

(10) $Y_i = \alpha + \beta x_i + \gamma z_i + \varepsilon_i$ where

Y_i is the online sales of firm i
α is the intercept
β is the coefficient for the degree of firm channel coordination
γ is the coefficient for retail category
ε_i is random error

(11) $Y_i = \alpha + \beta x_i + \delta v_i + \lambda x_i v_i + \gamma z_i + \varepsilon_i$ where

Y_i is the online sales of firm i
α is the intercept
β is the coefficient for the degree of firm channel coordination
δ is the coefficient for the degree of in-house e-commerce development
λ is the coefficient for the interaction term $x_i v_i$
γ is the coefficient for retail category
ε_i is random error

(12) $Y_i = \alpha + \beta x_i + \delta v_i + \lambda x_i v_i + \gamma z_i + \varepsilon_i$ where

Y_i is the net income of firm i
α is the intercept
β is the coefficient for the degree of firm channel coordination
δ is the coefficient for the degree of in-house e-commerce development
λ is the coefficient for the interaction term $x_i v_i$
γ is the coefficient for retail category
ε_i is random error

(13) $Y_i = \alpha + \beta x_i + \delta v_i + \lambda x_i v_i + \gamma z_i + \varepsilon_i$ where

Y_i is the market share of firm i
α is the intercept
β is the coefficient for the degree of firm channel coordination
δ is the coefficient for the degree of in-house e-commerce development
λ is the coefficient for the interaction term $x_i v_i$
γ is the coefficient for retail category
ε_i is random error

(14) $Y_i = \alpha + \beta x_i + \delta v_i + \lambda x_i v_i + \gamma z_i + \varepsilon_i$ where

Y_i is the gross margin of firm i
α is the intercept
β is the coefficient for the degree of firm channel coordination
δ is the coefficient for the degree of in-house e-commerce development
λ is the coefficient for the interaction term $x_i v_i$
γ is the coefficient for retail category
ε_i is random error

The cross-sectional data for 2006 (the latest available information) was used as input in these

models, since longitudinal information was not available.

CHAPTER IV

EMPIRICAL ANALYSES AND RESULTS

Time Series Cross Sectional Regression

To test Hypotheses 1 – 3, the Time Series Cross Sectional Regression technique was

used. Table 4.1 shows descriptive statistics and correlations between the main constructs. Natural

logarithm of the number of employees was used as a measure of firm size to account for high

skewness of the number of employees in thousands and to reduce its high correlation with

performance measures.

TABLE 4.1
MEANS, STANDARD DEVIATIONS, AND CORRELATIONS OF THE MAIN STUDY
VARIABLES

VARIABLES	MEAN	SD	1	2	3	4	5	6
1. Bricks-and-Mortar Exp.	54.76	35.55						
2. Catalog Experience	6.88	21.03	0.324					
3. Firm Size (log of employees)	2.38	1.7	0.323	0.118				
4. Order of Online Sales Entry	2.27	3.09	0.108	0.120	0.205			
5. Market Share	0.014	0.044	0.115	0.025	0.526	0.084		
6. Gross margin	33.87	10.35	-0.109	0.272	-0.189	0.132	-0.203	
7. Net Income	162.28	712.01	0.032	-0.025	0.396	0.109	0.887	-0.085

Correlations in bold are significant at the 0.01 level (2-tailed).

The results of the Time Series Cross Sectional Regression model tests are presented in

Tables 4.2, 4.3, and 4.4. The Hausman (1978) tests determined that fixed effects models would

be more efficient and consistent in estimating the data for the gross margin (m-value = 24.07, p =

0.001), net income (m-value = 27.3, p = 0.003), and market share (m-value = 23, p = 0.002)

dependent variables. Thus, only the fixed effects results are reported below.

The findings do not support Hypothesis 1a that incumbent retailers with longer catalog

experience should achieve higher market share if they adopt online retailing early (Table 4.2).

61

The parameter estimate for the interaction variable Order of Online Sales Entry * Catalog Experience is significant, but with the opposite sign (b = - 0.001, p = 0.0076). This finding is novel and can be explained by a number of factors. Companies with catalog operations that started selling through the online channel early may be prone to cannibalization of their catalog sales both by their own online channel (due to customer cost savings, increased convenience, and higher control of the buying process) and by other online merchants. Once online, customers are exposed to numerous incentives and promotions from multiple sites, and can easily compare product information and prices. This leads to low switching costs and the potential breach of brand loyalty. Studies in the newspaper industry found that online editions do not cannibalize print editions only if their contents do not overlap (Deleersnyder et al. 2002). By extension, I could suggest that earlier e-commerce websites were more likely to cannibalize catalog sales by copying the merchandize assortment of the catalogs, and only recently have some retailers begun to offer different selections of products on their websites (Grosso, PcPherson, and Shi 2005). The sales cannibalization explanation is also supported by testing the impact of early online sales entry by retailers with long catalog operations on their sales (Table 4.6). The results show that the length of catalog experience does not significantly influence sales (b = - 4.24, p = 0.331) of retailers that enter online sales early. Increased competition and sales cannibalization from global online retailers as well as from land-based stores is also a factor in the lack of sales growth that leads to reduced market share in the industry with the annual growth of 2-3%. Retailers with longer catalog operations do not benefit from adding an online sales channel early, apparently because they have not developed a sound competitive strategy for their online channel assigning it a particular function, distinct from those of the catalog and land-based stores to prevent sales cannibalization.

The results do not support Hypothesis 1b that longer catalog experience helps incumbent retailers achieve higher net income if they adopt an early online mover strategy (Table 4.3). The respective indicator for the Net Income dependent variable is b = 0.208 (p = 0.312). A potential explanation for no significant increase in net income as a result of early addition of online sales by companies with long catalog experience along with lack in sales growth may be the increase in expenses associated with the required infrastructure and culture change. Adding an online sales channel may require companies to change their pre-established catalog sales procedures, order management and fulfillment patterns, warehousing and payment methods, as well as customer service arrangements. These changes necessitate higher expenses that, combined with lack of sales growth, may contribute to the absence of profitability (they may also lead to changes in the company culture, thus affecting company image and market share, supporting the above finding of the negative market share impact). Longer catalog experience presupposes more entrenched practices and high inertia and resistance to change that can negatively influence efficiency, customer service quality and, as a consequence, company net income and market share. Starting an online channel may also introduce channel conflict if the goals of the catalog and online sales are not aligned, and the duties are not assigned in a consistent manner. Channel conflict may lead to loss of inter-channel coordination and, as a result, to overlapping functions, higher expenses, and inconsistent service that will influence net income and market share through lowering customer satisfaction.

The empirical test supports Hypothesis 1c (Table 4.4) that posited positive interaction effect of early online sales entry and the length of catalog experience on the firm gross margin (b = 0.007, p = 0.001). It means that firms with longer catalog experience should add the online sales early and firms that have short catalog experience, or do not operate catalogs at all, should

enter online sales later for better gross margin results. This finding is in line with the earlier research finding of the positive role of pre-existing catalog operations in strengthening the effect of adding online sales early on retail company performance (Lee and Grewal 2004). Since the gross margin formula has inventory costs as a component, I suggest that longer experience and expertise with merchandizing, warehousing and distribution for the catalog operations may help lower inventory-related costs for the new online channel, including shortening the learning curve for the personnel. Consequently, the earlier the online channel is set up, the higher the inventory cost savings for the company with lengthy catalog experience, and the higher its gross margin. I conducted an additional test (Table 4.5) to assess whether catalog experience affects the impact of early online sales entry on an incumbent retailer's cost of inventory. The results show that retailers with longer catalog experience exhibit lower average annual inventory costs ($b = -0.837$, $p = 0.0293$) if they add online sales early. This finding helps explain the beneficial influence of catalog experience on the gross margin for retailers who decide to sell online early: having pre-existing infrastructure, expertise and experience with direct sales to individual customers makes inventory operations more cost efficient and helps offset other costs associated with online pioneering. It also explains the discrepant effects of the length of catalog experience on the three performance measures for early adopters of online sales: lower market share results from sales cannibalization by other online merchants and by the retailer's own customers' "channel shift" from catalog to online in the context of the growing (albeit slowly) retail industry. Under the conditions of no sales growth, gross margin increases due to reduced inventory costs for those retailers with pre-existing catalog experience. No significant change in net income, in turn, results, from the increased expenses necessary to overcome inertia and potential channel conflict.

TABLE 4.2
TSCS PROCEDURE, FIXED EFFECTS, DEPENDENT VARIABLE: MARKET SHARE

Model Description:

Estimation Method	FixTwo
Number of Cross-Sections	158
Time Series Length	11

Fit Statistics:

SSE	MSE	R-Square	DFE	Root MSE
0.1152	0.0001	0.9654	1300	0.0094

Fit Test for No Fixed Effects:

Num DF	Den DF	F Value	Pr > F
167	1300	153.22	< .0001

Parameter Estimates:

Independent Variables	Estimate	Standard Error	t-Value	Pr > | t |
Intercept	- 0.013	0.006	- 2.04	0.041
Order of Online Sales Entry	- 0.001	0.000	- 3.18	0.002
Catalog Experience	- 0.001	0.000	- 5.29	< .0001
Bricks-and-Mortar Experience	0.001	0.000	1.46	0.145
Firm size	0.005	0.000	5.9	< .0001
Order of Online Sales Entry * Catalog Experience	- 0.001	5.994E -6	- 2.67	0.0076
Order of Online Sales Entry * Firm Size	0.001	0.000	12.65	< .0001
Order of Online Sales Entry * Bricks-and-Mortar Experience	- 0.001	4.232E -6	- 2.43	0.015

TABLE 4.3
TSCS PROCEDURE, FIXED EFFECTS, DEPENDENT VARIABLE: NET INCOME

Model Description:

Estimation Method	FixTwo
Number of Cross-Sections	158
Time Series Length	11

Fit Statistics:

SSE	MSE	R-Square	DFE	Root MSE
134665088	104149	0.8289	1293	322.72

Fit Test for No Fixed Effects:

Num DF	Den DF	F Value	Pr > F
167	1293	29.29	< .0001

Parameter Estimates:

Independent Variables	Estimate	Standard Error	t-Value	Pr > | t |
Intercept	- 187.1	223	- 0.84	0.402
Order of Online Sales Entry	- 31.33	12.26	- 2.55	0.01
Catalog Experience	- 29.29	8.71	- 3.36	< .0008
Bricks-and-Mortar Experience	3.231	2.284	1.41	0.157
Firm size	60.81	31.87	1.91	< .0566
Order of Online Sales Entry * Catalog Experience	0.208	0.21	1.01	0.312
Order of Online Sales Entry * Firm Size	28.55	2.435	11.73	< .0001
Order of Online Sales Entry * Bricks-and-Mortar Experience	- 0.394	0.145	- 2.71	0.0067

TABLE 4.4
TSCS PROCEDURE, FIXED EFFECTS, DEPENDENT VARIABLE: GROSS MARGIN

Model Description:

Estimation Method	FixTwo
Number of Cross-Sections	158
Time Series Length	11

Fit Statistics:

SSE	MSE	R-Square	DFE	Root MSE
15158.36	11.93	0.904	1271	3.45

Fit Test for No Fixed Effects:

Num DF	Den DF	F Value	Pr > F
167	1271	57.96	< .0001

Parameter Estimates:

Independent Variables	Estimate	Standard Error	t-Value	Pr > | t |
Intercept	48.18	2.396	20.11	< .0001
Order of Online Sales Entry	0.094	0.132	1.71	0.48
Catalog Experience	- 0.13	0.094	- 1.43	0.15
Bricks-and-Mortar Experience	- 5.67E-7	0.025	- 0.00	1.00
Firm size	0.672	0.346	1.94	0.05
Order of Online Sales Entry * Catalog Experience	0.007	0.002	3.2	0.001
Order of Online Sales Entry * Firm Size	0.032	0.027	1.17	0.24
Order of Online Sales Entry * Bricks-and-Mortar Experience	- 0.0002	0.002	- 0.15	0.88

TABLE 4.5
TSCS PROCEDURE, FIXED EFFECTS, DEPENDENT VARIABLE: AVERAGE
INVENTORY COSTS

Model Description:

Estimation Method	FixTwo
Number of Cross-Sections	154
Time Series Length	10

Fit Statistics:

SSE	MSE	R-Square	DFE	Root MSE
320782760.4	281141.8	0.9551	1141	530.23

Fit Test for No Fixed Effects:

Num DF	Den DF	F Value	Pr > F
162	1141	102.56	< .0001

Parameter Estimates:

Independent Variables	Estimate	Standard Error	t-Value	Pr > |t|
Intercept	- 149.02	383.3	- 0.39	0.698
Order of Online Sales Entry	- 86.65	21.98	- 3.94	< .0001
Catalog Experience	- 71.79	16.42	- 4.37	< .0001
Bricks-and-Mortar Experience	6.744	3.87	1.74	0.0814
Firm size	238.79	58.7	4.07	< .0001
Order of Online Sales Entry * Catalog Experience	- 0.84	0.38	- 2.18	0.029
Order of Online Sales Entry * Firm Size	68.34	4.43	15.42	< .0001
Order of Online Sales Entry * Bricks-and-Mortar Experience	- 0.655	0.26	- 2.49	0.0128

TABLE 4.6
TSCS PROCEDURE, FIXED EFFECTS, DEPENDENT VARIABLE: NET SALES

Model Description:

Estimation Method	FixTwo
Number of Cross-Sections	158
Time Series Length	11

Fit Statistics:

SSE	MSE	R-Square	DFE	Root MSE
60705977749	46877203	0.913	1295	6846.7

Fit Test for No Fixed Effects:

Num DF	Den DF	F Value	Pr > F
167	1295	57.48	< .0001

Parameter Estimates:

Independent Variables	Estimate	Standard Error	t-Value	Pr > |t|
Intercept	- 2719.7	4730	- 0.57	0.565
Order of Online Sales Entry	- 1067.1	260.2	- 4.1	< .0001
Catalog Experience	- 963.13	184.7	- 5.21	< .0001
Bricks-and-Mortar Experience	66.19	48.44	1.37	0.172
Firm size	1475.7	676.1	2.18	0.029
Order of Online Sales Entry * Catalog Experience	- 4.239	4.36	- 0.97	0.331
Order of Online Sales Entry * Firm Size	825.63	51.63	15.99	< .0001
Order of Online Sales Entry * Bricks-and-Mortar Experience	- 8.029	3.079	- 2.61	0.009

Hypothesis 2a stated that, in line with the first-mover disadvantage theory (VanderWerf and Mahon 1997), incumbent retailers with longer bricks-and-mortar experience would have lower market share if they enter e-commerce early. This hypothesis is supported (Table 4.2). The parameter estimate for the interaction variable Order of Online Sales Entry * Bricks-and-Mortar Experience is negative and significant (b = - 0.001, p = 0.015), which means that earlier entrants into online sales who have had longer land-based experience, exhibit lower market share. This

finding supports the incumbent inertia argument (Chandy and Tellis 2000), whereby stabilized organizational routines and reduced financial and technological flexibility of older companies negatively influence their ability to successfully use innovative channels. Their "core rigidities" (Leonard-Barton 1992) prevent them from understanding the needs of innovator customer segments and from developing distribution channels that would attract new customers and sufficiently increase the share of the wallet of their loyal customers. The market share outcome of the early-mover strategy can also be reduced for older companies with established brand names and customer bases due to their lack of expertise in targeting innovator and early adopter segments. On the contrary, by introducing their online channels later, older retailers target the early and late majority adopters of the web channel and can leverage their economies of scale, pre-existing vendor relations and brand names with this larger customer base.

Hypothesis 2b proposed that those incumbent retailers that have longer bricks-and-mortar experience will show lower net income if they adopt online sales early. This hypothesis is supported (Table 4.3), with the parameter estimate for the interaction variable Order of Online Sales Entry * Bricks-and-Mortar Experience being negative and significant (b = -0.394, p = 0.007). In addition to the reduced sales revenue (Table 4.6), older incumbents appear to incur larger investment expenses for establishing an on-line channel early that, combined with likely initial earnings hits, negatively influence their profitability. On the contrary, by going online late, older retailers can lower their technology expenses by acquiring tested efficient e-commerce solutions, as well as customer acquisition and retention costs by appealing to their traditional customer base.

The interaction parameter Order of Online Sales Entry * Bricks-and-Mortar Experience is negative, but not significant for the Gross Margin dependent variable (b = - 0.0002, p = 0.88),

failing to support Hypothesis 2c (Table 4.4). The latter finding indicates that the length of the

pre-existing land-based operations does not provide an advantage for either early or late adopters

of online sales in terms of their gross margin. To better explain this finding, I conducted separate

tests with the net sales and inventory costs (gross margin formula components) as the dependent

variables (Tables 4.5 and 4.6). I find that early online entry by older incumbent retailers

negatively influences both sales (b = - 8.029, p = 0.009) and inventory costs (b = - 0.654, p =

0.0128). This result is consistent with the finding of the market share decrease provided above. It

appears that non-significant results for gross margin can be explained by the fact that

simultaneously with lowering sales early online entry by incumbent retailers also reduces

inventory costs, thus not making a significant impact on gross margin. However, the cost

reduction experienced by older retailers is not sufficient to significantly improve their gross

profit to justify early online entry. Thus, it is advisable for older retailers to enter online sales

later, when they can achieve higher sales, market share, and net income by capitalizing on their

visibility with loyal customers, while keeping the gross margin essentially unchanged.

The positive role of firm size in strengthening the impact of early online entry strategy on

firm performance is supported for the market share (Hypothesis 3a) and net income (Hypothesis

3b) dependent variables, but not supported for the gross margin dependent variable (Hypothesis

3c). The respective parameter estimates of the interaction variable Order of Online Sales Entry *

Firm Size reported in Tables 4.2, 4.3, and 4.4 are: b = 0.001 (p < .0001) for the market share

dependent variable, b = 28.55 (p < .0001) for the net income dependent variable, and b = 0.032

(p = 0.24) for the gross margin dependent variable. I suggest that larger incumbent retailers

possess superior resources that help them create better visibility for their new online channels

through increased marketing expenditures, amortize the costs of developing, maintaining and

modifying innovative e-commerce systems, and erect entry barriers for competition by solidifying customer relationships and setting system standards early. This leads to market share and net income advantages for larger retailers that enter online sales early. Additionally, increased market share leads to higher net income for larger retailers. The positive impact of larger retailers' early online entry on their sales performance (a non-hypothesized effect, Table 4.6) may provide an explanation for the insignificant effect of size * entry timing interaction on gross margin. Since, apart from the net sales, the other component in the gross margin formula is the cost of inventory, I can assume that inventory costs increase for larger retailers pursuing the early entry strategy. This supposition is supported (Table 4.5), showing that the Firm Size * Order of Online Entry interaction variable is positive and significant ($b = 68.34$, $p < 0.0001$) for the inventory cost dependent variable. Apparently, larger retailers incur higher inventory costs when adding online sales early due to high volume of potential duplication and confusion in merchandizing, warehousing and distribution (Moriarty and Moran 1990), higher degree of difficulties in channel integration, and channel conflict (Webb 2002) leading to overlapping inventories and functions.

The results of the above procedures allowed us to assess the non-hypothesized main effect of the Order of Online Entry strategy on such long-term performance measures as market share ($b = - 0.001$, $p = 0.002$), net income ($b = -31.33$, $p = 0.01$), gross margin ($b = 0.094$, $p = 0.48$), average annual inventory costs ($b = - 86.65$, $p < 0.0001$), and net sales ($b = -1067.1$, $p < 0.0001$). Although main effects should be interpreted with caution when interaction effects are present in the equation, it may be possible to suggest that adding an online sales channel early benefits incumbent retailers in terms of lowering their inventory costs, but hurts them as far as sales, market share, and net income are concerned. Further, the order of online entry does not

appear to impact a retailer's gross margin, probably because sales decreases are offset by lower inventory costs.

Multiple Regression Results

In order to test Hypotheses 4 and 5, the data set was reduced to include only the stores that had e-business outsourcing/in-house development and inter-channel coordination data available in public sources. This condition has limited the sample to 51 retailers. The sample was further reduced to 50 retailers by removing the single SIC 54 (Food) retailer due to potential multicollinearity problems in the process of dummy-coding. A six-month lag was used between the measures of the degree of inter-channel coordination (assessed by the content analysis of retailer websites) and the company performance indicators (obtained from the COMPUSTAT database and company reports). The one-time measure of the degree of in-house e-commerce functions development was obtained from the 2006 directory of online retailers published by the Internet Retailer, company press releases, and other public information. Frequencies, descriptive statistics, and correlations of the main variables used in testing Hypotheses 4 and 5 are reported in Tables 4.7 and 4.8.

TABLE 4.7
SAMPLE CHARACTERISTICS: MEANS AND STANDARD DEVIATIONS

SIC Code	Frequency	2006 Online Sales (in millions $$)	2006 Market Share	2006 Gross Margin (%)	2006 Net Income (in millions $$)
SIC 53	10	771.83 (756.23)	0.12 (0.19)	33.58 (8.42)	2040.2 (3342.5)
SIC 56	25	163.27 (253.74)	0.01 (0.02)	41.36 (10.29)	180.2 (228.2)
SIC 57	4	258.95 (445.54)	0.01 (0.002)	36.84 (9.82)	53.2 (195.4)
SIC 59	11	935.76 (1820.15)	0.01 (0.015)	36.7 (10.95)	489.3 (604.7)
Total	50	462.58 (971.45)	0.032 (0.09)	38.51 (10.27)	610 (1641.6)

TABLE 4.8
MEANS, STANDARD DEVIATIONS, AND CORRELATIONS OF VARIABLES

VARIABLE	MEAN	SD	1	2	3	4	5
1. Inter-Channel Coordination	17.64	3.45					
2. In-house e-commerce functions	3.38	2.84	- 0.51				
3. Gross margin (%)	38.51	10.27	0.10	0.008			
4. Market Share	0.32	0.09	0.08	- 0.09	- 0.32		
5. Online Sales ($ million)	462.58	971.45	0.35	0.012	- 0.2	0.203	
6. Net Income ($ million)	610.02	1641.6	0.178	- 0.12	- 0.24	0.21	0.246

Correlations in bold are significant at the 0.05 level (2-tailed).

To test Hypothesis 4, four multiple regressions were conducted, with the respective dependent variables of market share (H4a), net income (H4b), gross margin (H4c), and online sales (H4d). The independent variable for all the three multiple regressions was the degree of inter-channel coordination, and the SIC codes served as categorical dummy-coded control variables, with SIC 56 selected as reference. The results are reported in Table 4.9.

TABLE 4.9
RESULTS OF REGRESSION ANALYSES: HYPOTHESES 4A, 4B, 4C, AND 4D

Dependent Variable / Independent Variables	Market Share Hypothesis 4a β	p	Net Income Hypothesis 4b β	p	Gross margin Hypothesis 4c β	p	Online Sales Hypothesis 4d β	p
Constant		.808		.715		.000		.111
Inter-Channel Coordination	- .005	.974	.078	.591	.251	.102	.280	.060
SIC 53	.423	.007	.432	.006	- .375	.019	.161	.289
SIC 57	- .023	.873	- .039	.784	- .179	.232	- .037	.797
SIC 59	- .009	.951	.057	.701	- .262	.094	.253	.093
R Square	.184		.206		.146		.193	
Adjusted R Square	.111		.135		.069		.121	

Note: the greatest Variance Inflation Factor (VIF) among all models was below 1.25

Hypothesis 4a predicted that incumbent retailers with higher degree of inter-channel coordination will exhibit higher market share. This hypothesis was not supported (β = - 0.005, p = 0.974). The reason may be the short time lag between the measures of inter-channel coordination and market share. Conducting this test at a later date, when the market share data

74

are available to provide for a longer lag, appears to be advisable. Hypothesis 4b that stated that higher degree of inter-channel coordination would increase net income was not supported either ($\beta = 0.078$, $p = 0.591$). Hypothesis 4c predicted higher gross margins for companies with more closely integrated store and online channels. It was not supported ($\beta = 0.251$, $p = 0.102$). A possible reason may be similar to the reason for insignificant role of coordination in the market share performance: the lag time was not sufficient to assess gross margin change as a result of close inter-channel coordination. Another explanation for the lack of support of Hypotheses 4a, 4b, and 4c may be the relatively small number of companies in the sample that was used to test these suppositions, and the unequal distribution of companies in terms of their SIC codes (e.g. SIC 54 only had 4 companies represented in the sample). The result of testing Hypothesis 4d, however, shows marginally significant coefficient ($\beta = 0.28$, $p = 0.06$). This means that retailers with the higher degree of inter-channel coordination achieve higher online sales. It may be that short-term consequence of closely coordinating store and online channels operations is more prominent in the online performance measures. Since online sales are reported to constitute only up to 7% of total retail sales, the changes in traditional firm performance resulting from inter-channel coordination may require longer periods of time to manifest.

A number of SIC code control variables were significant or marginally significant (Table 4.9), suggesting that different retail categories may have higher or lower performance indicators than others due to the specifics of their products. I tested Hypotheses 4a, 4b, 4c, and 4d separately for companies in each SIC code. The role of inter-channel coordination in impacting firm performance was significant only for SIC code 59 (Miscellaneous Retail). Table 4.10 reports these results. The positive significant coefficient for the Inter-Channel Coordination variable in the regression equation with the Online Sales as the dependent variable is in line with

the general finding supporting Hypothesis 4d. The negative significant coefficient for

coordination in the equation with the Market Share as the dependent variable can be explained

by the sales cannibalization taking place in this particular retail category as a result of inter-

channel coordination. Making low-touch and easy-to-ship products conveniently available on the

web may increase the retailer's online sales, but simultaneously decrease its overall (off-line and

online) market share. For example, products in this category (jewelry, sporting goods, office

supplies, toys) have been reported as having the fastest growing online sales. In 2006, online

jewelry sales grew 67%, toys - 35%, and sports & fitness - 32% (ComScore Networks 2006).

This growth is more indicative of the "channel shift" (channel cannibalization) than "channel

lift" (synergistic increase in sales in all channels) (Peterson, Balasubramanian, and Bronnenberg

1997). Additionally, multichannel customers have access to many other online vendors when

shopping at a retailer's website and are exposed to a great number of online targeted advertising

and search results. This may take consumers away from the multichannel retailer, thus reducing

its total online and off-line market share.

TABLE 4.10
IMPACT OF INTER-CHANNEL COORDINATION ON PERFORMANCE FOR SIC CODE
59

Dependent Variable β p Independent Variables	Market Share		Online Sales	
	β	p	β	p
Constant		.003		.029
Inter-Channel Coordination	- .751	.008	.714	.014
R Square	.563		.510	
Adjusted R Square	.515		.455	

Hypotheses 5a, 5b, 5c, and 5d were tested with a multiple regression that included the

interaction independent variable of Inter-Channel Integration * In-House E-commerce

Development in addition to the main effects of Inter-Channel Coordination and In-House E-commerce Development, and the control dummy-coded variables denoting SIC codes (Table 4.11).

TABLE 4.11
RESULTS OF REGRESSION ANALYSES: HYPOTHESES 5A, 5B, 5C, AND 5D

Dependent Variable / Independent Variables	Market Share Hypothesis 5a		Net Income Hypothesis 5b		Gross Margin Hypothesis 5c		Online Sales Hypothesis 5d	
	β	p	β	p	β	p	β	p
Constant		.509		.439		.013		.571
Inter-Channel Coordination	.210	.390	.280	.319	.066	.822	.208	.473
In-House E-commerce	1.981	.005	.550	.475	- .505	.529	- .227	.775
Inter-Channel Coordination * In-House E-commerce	- 1.82	0.01	- .731	.354	.616	.455	.233	.774
SIC 53	- .102	.453	.434	.008	- .411	.015	.165	.310
SIC 57	.052	.687	- .057	.699	- .184	.239	- .031	.841
SIC 59	.279	.054	.019	.907	- .259	.133	.268	.116
R Square	.426		.241		.187		.188	
Adjusted R Square	.342		.129		.065		.069	

The results show that the only significant influence of the hypothesized interaction variable on the company performance is present for the market share dependent variable (H5a), but in the opposite to the hypothesized direction (β = - 1.82, p = 0.01). This means that incumbent retailers that develop more e-commerce solutions in-house to increase the degree of their inter-channel coordination achieve lower market share compared to those that achieve coordination by outsourcing the majority of their e-commerce functions. This finding appears counter-intuitive, particularly that the main effect of the In-House E-commerce variable on market share is positive and significant (β = 1.981, p = 0.05). These somewhat contradictory results may be interpreted by suggesting that in-house development of website content, CRM, fulfillment and order management creates competitive advantages to companies by fostering inimitable and causally ambiguous capabilities that help companies increase the share of the

wallet of their loyal customers. In order to grow market share beyond current customers and attract new customers loyal to competing retailers, firms need access to superior expertise of outside providers while integrating their off-line and online operations. Thus, by outsourcing their e-commerce functions, companies may strengthen the role of multi-channel integration in increasing their market share. Hypotheses 5b, 5c, and 5d were not supported (Table 4.11), showing that outsourcing does not impact the strength of inter-channel coordination - profitability, or inter-channel coordination – online sales relationships.

TABLE 4.12
MODERATING ROLE OF IN-HOUSE E-COMMERCE DEVELOPMENT FOR SIC CODE 59

Dependent Variable Independent Variables	Market Share		Online Sales	
	β	p	β	p
Constant		.505		.004
Inter-Channel Coordination	.903	.397	1.865	.003
In-House E-commerce	3.102	.017	3.427	.021
Inter-Channel Coordination * In-House E-commerce	- 2.83	.025	-2.879	.028
R Square	.834		.792	
Adjusted R Square	.763		.703	

Due to the presence of significant coefficients for the SIC code control variables in the interaction regression results, I tested Hypotheses 5a, 5b, 5c, and 5d separately for companies in each SIC code. The moderating role of the degree of in-house e-commerce development on inter-channel coordination - firm performance relationship was significant only for SIC code 59 (Miscellaneous Retail). Table 4.12 reports these results. More e-commerce functions developed in-house by a retailer weaken the impact of inter-channel coordination on both the market share and online sales performance measures. This means that in this retail category it is more beneficial to outsource channel coordination-related e-commerce to third-party providers, apparently because they possess superior technological expertise, and possibly because these

78

providers may help integrated retailers offset their potential sales cannibalization by attracting

new online customers by means of affiliate marketing, search engine marketing and

optimization, e-mail marketing, and web performance monitoring.

The summary of the research hypotheses and their results are provided in Table 4.13. The

theoretical and managerial implications of the findings, as well as limitations and further

research suggestions, are discussed in detail in Chapter V.

TABLE 4.13
SUMMARY OF RESEARCH HYPOTHESES

Hypotheses	Test Results
Hypothesis 1a: Incumbent retailers with longer catalog experience will exhibit higher market share if they adopt online retailing early.	Significant ($p < .01$); not in the expected direction
Hypothesis 1b: Incumbent retailers with longer catalog experience will exhibit higher net income if they adopt online retailing early.	Not Supported
Hypothesis 1c: Incumbent retailers with longer catalog experience will exhibit higher gross margin if they adopt online retailing early.	Supported ($p < .01$)
Hypothesis 2a: Incumbent retailers with longer bricks-and-mortar experience will exhibit higher market share if they adopt online retailing late.	Supported ($p < .05$)
Hypothesis 2b: Incumbent retailers with longer bricks-and-mortar experience will exhibit higher net income if they adopt online retailing late.	Supported ($p < .01$)
Hypothesis 2c: Incumbent retailers with longer bricks-and-mortar experience will exhibit higher gross margin if they adopt online retailing late.	Not supported
Hypothesis 3a: Larger incumbent retailers will exhibit higher market share if they adopt online retailing early.	Supported ($p < .01$)
Hypothesis 3b: Larger incumbent retailers will exhibit higher net income if they adopt online retailing early.	Supported ($p < .01$)
Hypothesis 3b: Larger incumbent retailers will exhibit higher gross margin if they adopt online retailing early.	Not supported
Hypothesis 4a: Incumbent retailers with higher degree of inter-channel coordination will exhibit higher market share.	Not supported
Hypothesis 4b: Incumbent retailers with higher degree of inter-channel coordination will exhibit higher net income.	Not supported
Hypothesis 4c: Incumbent retailers with higher degree of inter-channel coordination will exhibit higher gross margin.	Not supported
Hypothesis 4d: Incumbent retailers with higher degree of inter-channel coordination will exhibit higher online sales.	Marginally Significant ($p < .1$)
Hypothesis 5a: Incumbent retailers with higher degree of inter-channel coordination will exhibit higher market share if they have more e-business functions developed in-house.	Significant ($p < .05$); not in the expected direction
Hypothesis 5b: Incumbent retailers with higher degree of inter-channel coordination will exhibit higher net income if they have more e-business functions developed in-house.	Not supported
Hypothesis 5c: Incumbent retailers with higher degree of inter-channel coordination will exhibit higher gross margin if they have more e-business functions developed in-house.	Not supported
Hypothesis 5d: Incumbent retailers with higher degree of inter-channel coordination will exhibit higher online sales if they have more e-business functions developed in-house.	Not supported

CHAPTER V

DISCUSSION AND IMPLICATIONS

Discussion

The purpose of this research was to examine the role of pre-existing complementary resources and higher-order unique competencies in assessing the impact of online channel adoption strategies on incumbent retailer performance outcomes. The results show that firm historic endowments in terms of catalog experience and expertise, size, and bricks-and-mortar experience differently influence the effects of order of online entry strategy on long-term market share, net income, and gross margin performance. In particular, incumbent retailers who adopt the early mover strategy with respect to adding an online sales channel benefit in terms of market share if they are large, relatively young, and have short (or no) catalog experience. Having more capital and human resources, as well as fewer rigid routines and legacy infrastructure constraints helps these retailers experiment with the new technologies, be flexible in adapting to changing customer and competitor developments, and better target innovator customer segments. By going online early, younger companies can capture and maintain the market share of online customers by setting the procedural standards and creating switching costs through personalized service and Customer Relationship Management. Interestingly, findings in the newspaper industry do not support the role of size in strengthening the effect of early online entry on firm performance: Geyskens, Gielens and Dekimpe (2002) suggest that superior resources and management skills of larger companies do not provide stock price advantages for them. The reason for the different results appears to be the difference in measuring performance: long-term market share in this study and short-term stock price in the study by Geyskens, Gielens and Dekimpe (2002).

81

Late online entry strategy appears more viable for increasing market share for stores with longer catalog experience, longer bricks-and-mortar experience, and smaller size. These companies can take advantage of the stabilized lower cost technologies, learn from the mistakes of early entrants without spending resources on initial trial-and-error attempts, and can leverage their pre-existing brand-loyal customer base. By building full-fledged e-commerce websites later, known store brands reinforce their image of high quality and increase their market share by providing their loyal customers with multiple points of contact. A finding similar to the negative role of catalog experience for early online entry was reported by Geyskens, Gielens and Dekimpe (2002) for the newspaper industry. The authors discovered that established firms with many direct channels are financially hurt when adding a new Internet channel to their entrenched channel system. They explain this by stating that adding an Internet channel is not likely to bring new demand, but instead causes "cannibalization and/or brand-damaging interchannel conflict" (p. 116).

As far as the net income performance outcome, early online entry benefits larger and/or younger companies, while smaller and/or older retailers have higher net income if they add the online sales later. The length of catalog experience does not appear to affect net income of multichannel retailers, whether they adopt online sales early or late. The rationale behind these findings is consistent with that of the market share outcomes: companies with more resources are better able to absorb the expenses and adversities of adding a new distribution and marketing channel. Younger companies possess the agility and adaptability that permits them to introduce change and mobilize resources more effectively and efficiently. Early online entry by companies with established catalog operations, while cannibalizing sales, also helps to efficiently redistribute inventory costs among the channels, thus offsetting the lack of sales growth.

Interestingly, this conclusion is not supported in the financial services industry: Coelho, Easingwood and Coelho (2003) report higher profitability among single-channel financial institutions as opposed to multichannel ones. This may be due to the specifics of the industry, country (their sample is located in the UK), or the timeframe in which their research was conducted.

In terms of gross margin performance, early movers appear to benefit only if they possess longer catalog experience, regardless of their size or company age. More extensive catalog expertise allows early movers to leverage their order management, distribution, and merchandizing skills to lower inventory costs. This finding corresponds to Lee and Grewal's (2004) result that adopting an online sales channel early positively influences retailer performance (measured as Tobin's Q) only for retailers with pre-existing catalog operations. Lee and Grewal (2004) did not, however, consider the length of catalog operation, which is shown to be important in this test. Late mover strategy, on the contrary, appears to improve a retailer's gross margin only if it has short (or no) catalog experience. In this case, cost savings would be based on not having to deal with transitioning from older catalog routines and procedures to the new technology, on technological free-riding and learning from early entrants' mistakes. The obtained results differ from those obtained by Min and Wolfinbarger (2005) for online performance: they did not discover any early entrant advantage in terms of online market share or online profit margins. This may be attributed to a number of factors: they only considered online performance, while multichannel advantages may accrue to a firm's overall performance; they only considered main effect of the order of entry without testing for moderating role of resources. The main effect of order of entry for the sample of incumbent retailers is, in fact, negative in terms of market share and net profit, and insignificant in terms of gross margin.

However, in the presence of significant interaction effects, main effect results cannot be considered perfectly reliable. Thus, it is believed that testing for moderating role of resources clarifies the impact of order of online entry in this study.

The multi-channel retailer strategy of closely coordinating inventories, customer information, logistics, marketing, and merchandizing among the channels does not appear to improve its short-term (six-month) market share, net income, or gross margin. It does, however, improve short-term online sales. This finding should be considered in the context of a small (fifty retailers) sample and the relatively short time lag allowed by the data availability, and would benefit from later replication with a larger sample. Apparently, large investments in inter-channel coordination and related changes should be evaluated using longer-term performance indicators, since they may affect multiple processes within an organization and become visible at a later time. However, the fact that online sales are positively affected by inter-channel coordination provides grounds to consider inter-channel coordination an important e-commerce strategy capable of providing multi-channel retailers with a competitive advantage.

The role of unique higher-order competencies and skills in making inter-channel coordination strategy more successful was not supported in this research. Integrated retailers that outsource more e-commerce functions, such as website hosting, site design, content development, order processing, email and search engine marketing, web performance monitoring, e-logistics, etc., show higher market share performance than those who develop them in-house. Possibly, strategic outsourcing is a more beneficial approach at the initial stages of multi-channel retailing when access to superior expertise is a key to competing in highly dynamic and turbulent environment. I suggest that in-house development of e-commerce-related unique capabilities may help create and maintain a competitive advantage at more advanced

stages of inter-channel coordination, when multi-channel customer needs are better understood and standards and expectations for inter-channel coordination are solidified. This proposition can be tested in the future by following the dynamics of retailers who take the initially outsourced skills and capabilities back in-house. An alternative explanation would be to treat e-commerce related capabilities as peripheral to retail business, and to invoke the Transaction Cost theory in justifying the outsourcing of non-core processes. The issue of the importance of e-commerce capabilities to multichannel retailers certainly deserves more in-depth investigation, since it may determine future strategies and investment policies for tomorrow's retail practices.

Theoretical Implications and Contribution

This study used a contingency approach (Szymanski, Troy, and Bharadwaj 1995) in testing the impact of order of entry strategy on long-term company performance in the context of multichannel retailing. I followed Lieberman and Montgomery (1988, 1998) and the resource-based View (Barney 1991, Hunt 2000) in proposing that firm-specific resource endowments determine the success of the strategic decisions regarding the timing of adding an online sales channel by incumbent retailers. This longitudinal analysis of 158 US retailers confirmed the moderating role of pre-existing firm resources in the effects of order of entry strategy on market share, net income, and gross margin. In particular, although the main effect of being early in adding an online sales channel is negative in terms of market share, it is moderated by such firm-specific resources as size, age, and catalog experience. Similarly, the impact of early online entry strategy on retailer's net income is moderated by the retailer's size and bricks-and-mortar experience. The order of online entry influence on gross profit is moderated by its catalog experience. Thus, this dissertation contributes to the resolution of the long-standing argument regarding performance implications of the order of entry strategy by supporting the contingency

approach (Szymanski, Troy, and Bharadwaj 1995) and further corroborating the resource-based View (Barney 1991, Hunt 2000). Another contribution to the order of entry strategy issue is the finding that order of entry differentially influences market share and profitability performance measures. Historically, the advantages of pioneering have been predicted and tested using mostly market share outcomes. By showing that under certain conditions (long catalog experience for the gross margin outcome, and size and age for the net income outcome) early entry facilitates company profitability, this research invites further use of profitability and cost-related outcome measures in considering the advantages of order of entry strategy.

The dissertation attempted to utilize the dynamic capabilities approach (Reed and DeFillippi 1990, Teece, Pisano and Shuen 1997) in suggesting that developing unique, causally ambiguous and inimitable e-commerce capabilities of web design, content management, customer relationship management, email marketing, merchandizing, etc., would increase the success of inter-channel coordination strategy. The fact that our results did not support this proposition may indicate that multichannel retailers do not consider e-commerce capabilities as their core competencies at the stage when online sales still constitute less than 7% of total retail sales. With more multichannel retailers moving their e-commerce functions in-house (Internet Retailer 2007), it would be interesting to test this proposition in the future. At present, it appears that the Transaction Cost Theory (Coase 1937, Williamson 1975, 1981, 1985) considerations prevail in retailers' decisions to outsource e-commerce functions to third-party providers. The findings show that outsourcing more e-commerce related capabilities positively influences multichannel retailer market share. I believe, this research shows a dialectic connection between the Transaction Cost theory and the dynamic capabilities approach by suggesting that at the initial stages of adopting channel innovation, transaction costs play an important role in

managerial decisions, since using third-party solutions helps retailers lower transaction costs. As multichannel retailing matures, the need for differentiation may turn e-commerce related skills and capabilities into core advantage-creating higher-order processes, and retailers would perform these functions in-house. It is an interesting idea that deserves further development and testing in the future.

This study contributed to developing strategic theory in the nascent areas of electronic commerce and multichannel retailing by testing the role of inter-channel coordination strategy in affecting firm performance. The results showed a positive online sales outcome as a result of higher degree of inter-channel coordination. This is an interesting finding that poses further research objectives of distinguishing the role of brand-name and marketing-related coordination from that of logistics and infrastructure-based coordination. It would be interesting to find out whether these types of coordination among store, catalog, and online channels differentially affect market share and profitability.

The empirical measure of inter-channel coordination was first developed and introduced in this dissertation based on prior theoretical discussions. The development and empirical validation of this construct contributes to future research on multichannel retailing by providing a reliable and convenient way to assess the magnitude of the integration effort retailers are directing at creating seamless brand experiences for consumers across channels. This measure can be instrumental to marketing researchers studying the role on multi-channel integration on such important performance indicators as customer satisfaction and brand loyalty.

Finally, this dissertation was among the first to directly test the impact of multi-channel retailing on long-term traditional performance metrics by using longitudinal Time Series Cross-Sectional regression technique. Previous research on multi-channel retailing utilized short-term,

market-based, or online-only performance measures. By obtaining a number of significant long-term traditional performance results, this study may encourage further research to utilize bottom line performance measures, thus reinforcing the relevance of theoretical marketing research work.

Managerial Implications

This study has provided important insights for managers and executives in retail industry in the process of making strategic decisions regarding adding online sales channels to their existing channel structures. In particular, the following guidelines are suggested as a result of this research:

1. Do incumbent store-based retailers perform better when they adopt an online sales channel?
In general, incumbent retailers that adopt online sales exhibit lower overall net income, market share, and sales revenues, and do not significantly differ in gross margin from retailers without an online sales channel. Although adding an online sales channel helps lower a retailer's average inventory costs, the sales decreases due to cannibalization outweigh this achievement at the early stages of multichannel retailing. It should be noted that retailer specific resources mitigate this negative effect: retail companies that are large, young, and have short (or no) catalog experience perform better if they adopt an online sales channel than companies that are smaller, older, and with longer catalog operations.

2. Does early online mover advantage exist for bricks-and-mortar retailers?
The results do not support the early mover advantage strategy for incumbent retailers in terms of market share, net income, or profit margin. In fact, later online entrants exhibit higher market share than early movers. The findings do support the early mover advantage in terms of reduced inventory costs. It appears that adding an online channel early exposes the retailer to higher sales

cannibalization and loss of market share, but helps lower costs that may eventually lead to profitability. Again, large and young companies, and those without long catalog operations benefit from entering online sales early as opposed to smaller and older companies with the catalog legacy.

3. *How do firm resources and characteristics (store-based experience, catalog experience, and size) interact with online order-of-entry strategy in influencing multichannel retailer's performance (market share, net profit, and gross margin)?*

According to the findings, large and younger companies with less catalog experience achieve higher market share as early entrants into online sales. On the contrary, older and smaller companies that have had catalog operations for a long period of time, fare better as late entrants in terms of obtaining overall market share. Having longer catalog experience helps early entrants achieve higher gross margins. In terms of lowering inventory costs, smaller and older companies with longer catalog experience exhibit better savings if they add online sales early compared to large younger companies with short or no catalog experience. Only large and young companies benefit from early online entry in terms of their net income performance.

4. *Does inter-channel coordination strategy enhance retailer performance?*

A high degree of inter-channel coordination increases retailer's online sales, but does not significantly influence its short-term market share, net income, or gross margin.

5. *How do firm dynamic capabilities (in-house development of e-commerce functions) interact with the channel coordination strategy in influencing multichannel retailer's performance?*

When integrating their channels, multichannel retailers that outsource more of their e-commerce related functions achieve higher overall market share than retailers that develop these functions

in-house. The short-term (6 months) online sales, net income and gross margin performance are not affected by the in-house development vs. outsourcing of e-commerce functions.

From the above guidelines, it is clear that incumbent retailers should consider a number of factors when adopting multi-channel strategies: their major goals for adding online sales (increasing sales, market share, net income, gross margin, or reducing costs), their pre-existing resources (age, size, catalog experience, and other pertinent resources), the desired degree of inter-channel coordination and the related outsourcing decisions. They should keep in mind that based on their firm specifics, different approaches to online sales entry would need to be followed to achieve the desired performance results.

Limitations and Future Research

This research is among the first endeavors to understand the results of implementing various multi-channel retailing strategies on long-term traditional measures of firm performance. As such, the study has certain limitations that may simultaneously be considered suggestions for future research. In an attempt to identify the moderating role of resources in strategy – performance relationship, I limited the firm-specific resources to catalog experience, bricks-and-mortar experience, and size. Undoubtedly, other resources, such as organizational culture, structure, top management preferences, type of ownership, location, and certain events (changes in leadership and ownership, mergers and acquisitions, expansion and contraction), play an important role in both the choice and potential success of any strategy. Future research may consider these characteristics and events in assessing the impact of multichannel strategies on incumbent retailer performance.

Due to data availability limitations, the sample included only publicly traded retailers, and in the process of data collection was reduced to 158 retailers (Hypotheses 1-3), and 50

90

retailers (Hypotheses 4 and 5) respectively. This made the results less representative of the whole population of US retailers, as well as all SIC (or NAICC) codes. Future research may consider more representative samples, or focus on separate retail classification codes to account for specifics of retail categories.

Although Time Series Cross Sectional regression method was very powerful for the longitudinal investigation, it did not take into account certain historic discontinuities that may have biased the results. For example, it may be advisable for future research to split the period of interest into before- and after- the Internet bust (1999-2000) to account for the potential negative attitude of consumers to e-commerce that may have negatively influenced market share or online sales indicators.

The relatively short time lag used in testing the effects of inter-channel coordination and e-commerce capabilities outsourcing (Hypotheses 4 and 5) may have contributed to insignificant performance results. I suggest this test be replicated at a later time when more recent data become available, and with a larger sample that would represent more retail categories. Additionally, it is possible to trace the dynamics of e-commerce outsourcing decisions as inter-channel coordination becomes more widely adopted. It would be interesting to understand whether transaction costs or unique dynamic capabilities determine the "make or buy" decision with respect to e-commerce related functions for retailers.

In conclusion, this dissertation has contributed to the body of marketing knowledge by addressing the issues of order of entry strategy in the context of multi-channel retailing, the impact of inter-channel coordination on performance, and the need for e-commerce functions outsourcing at the initial stages of multi-channel integration. Its findings have provided valuable guidelines to managers by identifying the firm-specific resources and competencies that can

strengthen or weaken the speed and manner of adopting multi-channel strategies. Its findings may be useful to theorists by identifying the relevant variables to be considered in research, and suggesting research directions to be pursued. This research is also beneficial to practitioners developing entry strategies for digital and mobile marketplaces by outlining potentialities for competitive advantage. By starting the conversation about multi-channel strategies, this study may have initiated a new research stream that may turn out to be both managerially relevant and theoretically solid.

APPENDIX

CODING INSTRUCTIONS FOR CONTENT ANALYSIS

Company Name _____

Please browse the website of the retailer and indicate if the following items and services are available to customers:

Store Locator

Provides store listing based on zip code	Yes	No
Provides store addresses	Yes	No
Provides store telephone numbers	Yes	No
Provides store hours	Yes	No
Provides directions to stores	Yes	No
Provides information on store sales	Yes	No
Provides opportunity to browse store circulars and advertising	Yes	No
Provides opportunity to purchase online from store circulars	Yes	No
Creates printable shopping lists for shopping in stores	Yes	No

Inventory

Allows to check store inventory in real time	Yes	No
Allows to put items on hold in a store	Yes	No
Allows to buy online and pick up in store	Yes	No
Allows store exchanges of items bought online	Yes	No
Allows returns to stores of items bought online	Yes	No
Allows tracking the order progress online	Yes	No
Operates gift registry across the store and online channels	Yes	No

Value-Added

Offers gift wrapping/boxes for items purchased online	Yes	No
Offers gift messages for items bought online	Yes	No
Allows personalization of items bought online	Yes	No
Allows packing several items bought online as one gift	Yes	No
Allows product customization (special color, packaging, etc) online	Yes	No

Cross-Promotions and Consistency

Recommends products based on customer's prior online purchasing and browsing history	Yes	No
Allows to browse catalogs online	Yes	No
Allows to order from catalogs online	Yes	No

Allows to order catalogs	Yes	No
Offers coupons online for off-line purchases	Yes	No
Allows to redeem offline coupons in the online store	Yes	No
Allows to redeem gift cards in both channels	Yes	No
Advertisement of store events	Yes	No
Website can be found by typing the retailer's name	Yes	No
Provides online support and customer service for products bought in other channels	Yes	No
Provides information on product lines available in stores	Yes	No

If you have shopped both in stores and online from this retailer, please respond to the following:

Website design reflects offline image and positioning of retailer (e.g. high/low-end, lifestyle, etc.)	Yes	No
Offers wider assortment online than in stores	Yes	No
Offers fewer items online than in the store	Yes	No
Prices are consistent across channels	Yes	No
Merchandise is consistent across channels	Yes	No
Customer support and policies are consistent across channels	Yes	No
Offers online unique products to supplement store purchases	Yes	No

Information Management

Customers have online access to personal purchase history from the website	Yes	No
Customers have online access to personal purchases history in stores	Yes	No
Pending online orders are modifiable and cancelable	Yes	No
Pending store orders are modifiable and cancelable online	Yes	No
Recommendation of products and services based on previous purchases in all channels	Yes	No
Provides information services that add value to customer shopping experience (e.g. price comparisons, decision-making tips, etc.)	Yes	No

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