A THEORETICAL AND EMPIRICAL STUDY OF RETAILERS' OMNICHANNEL INTEGRATION AND ITS EFFECTIVENESS

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Lay Abstract

Omnichannel retailers coordinate their online (e-commerce, mobile) and offline distribution channels (physical stores, catalogues) to provide value to customers, enabling seamless transition across various channels. With emerging capabilities in the industry inevitably raises consumer expectations, which the retailers cannot fulfill without a higher degree of channel coordination. Additionally, retailers facing competitive pressures must decide how quickly to implement a higher degree of channel coordination, which can steeply drive-up coordination cost. So, the effectiveness of retailer's channel coordination efforts and its speed of implementation is not clear. I investigate these issues first with a systematic review of multichannel marketing literature and then examine marketing strategy factors that impact the effectiveness of channel coordination efforts. Building a unique dataset of U.S. retailing firms and using various analytical techniques, I develop two theory-driven empirical studies that reveal that channel coordination and its speed can deliver value to customers and help drive firm performance, however certain characteristics of coordination costs can undermine the benefits.

Abstract

With the emergence of digital channels, new technologies and increased data availability-omnichannel strategy has increasingly been viewed as crucial for retailers to meet evolving consumer expectations and drive firm performance. Channel integration is a key element of this strategy, which refers to the degree to which retailers coordinate various channel functions to provide a seamless customer experience across various channels. With emerging capabilities in the industry inevitably raises consumer expectations, consumers perceive value only beyond a certain degree of channel integration. While higher degrees of coordination help meet elevated consumer expectations, these are endogenous to coordination costs. These coordination costs are not evident beforehand and can steeply rise to sabotage the presumed strategic dividends associated with channel integration. In addition to the degree of channel integration, retailers face decisions about the speed of omnichannel adoption given the entrenched competitors and strategic benefits associated in terms of securing a dominant market position and accelerated organizational learning. This dissertation contributes to the marketing channels and coordination literature with (a) a systematic review of the multichannel marketing literature by synthesizing current knowledge, its evolution, and future directions; and (b) Two theory-driven empirical research studies that provide new insights and novel implications to enrich our understanding of omnichannel integration decisions, and certain characteristics of coordination costs can derail the strategic dividends from channel integration. Together these research studies contribute to a growing literature that has outlined the complex nature of these coordination costs but few of which explain their role in determining the outcomes of omnichannel retailing.

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1 INTRODUCTION

Omnichannel integration emphasizes purposeful intra- and inter-firm coordination to deliver a seamless customer experience across various channels. The growth of online and mobile platforms has transformed the channel ecosystem, while the ubiquity of smartphones, social media, and emerging technologies (e.g., artificial intelligence, machine learning, blockchain) has accelerated its adoption. A shift towards seamless transition across channels has gained traction across diverse industries. In retail, omnichannel integration has become a critical focus, with industry reports identifying it as a top investment priority (Neslin, 2022; Ratchford et al., 2022).

In this thesis, I study omnichannel integration, a concept that is still emerging, in the retail sector that has been undergoing a drastic change with digitalization and changing consumption behavior (Neslin 2022; Vaishnav and Ray 2023). Omnichannel integration requires coordination of strategy, management and implementation of marketing mix, operational systems, and organizational structures across retailer's different off- and online distribution channels in anticipation of an enhanced consumer experience. Moreover, it requires synchronizing different business processes, people, vendors, and technology. This synchronization needs cooperation from different functional entities, some internal and others external. For example, prior research points to Walmart as the top U.S. cross-channel retailer, which began synchronizing its channel functions as part of creating value from omnichannel integration (Cao and Li 2015).

The growing emphasis on omnichannel integration in retail presents both opportunities and challenges. Rooted in delivering a personalized and cohesive cross-channel customer

experience, omnichannel integration offers strategic dividends, including improved customer performance outcomes such as satisfaction (Herhausen et al. 2015), loyalty (Bendoly et al. 2005), and sales (Cao and Li 2015). Consumer expectations of omnichannel retailing have steadily increased, partly driven by early omnichannel adoption in other sectors (e.g., travel and banking services) and coverage in the popular press (McKinsey 2021). I study this rising consumer expectations specific to the emerging omnichannel ecosystem, which has been a part of popular press discourse (Gulati and Garino 2000).

Although the benefits of omnichannel integration are evident, the challenges and barriers to its implementation are not as clear. In particular, the cost of coordination across various operational groups within a firm and with external partners could be significant and is not as evident. Moreover, research on coordination costs is limited, especially in the intra-firm context. I aim to contribute to this nascent literature (Gulati, Wohlgezogen, and Zhelyazkov, 2012; Dessein, Lo, and Minami, 2022).

Empirical research linking omnichannel integration to firm performance is sparse, with a few notable exceptions (Cao and Li 2015; Tagashira and Minami 2019). However, questions persist about the relationship between channel integration and firm profitability. Without a stronger base of evidence on how channel integration impacts financial performance, the business case for investing in emerging technologies will remain uncertain (van Baal, 2014). This limitation can be partly attributed to data constraints. Prior studies have relied on small samples, short timeframes (1–4 years), and have focused on early integration efforts (Gallino & Moreno, 2014; Cao & Li, 2015). These studies often omit the substantial transformation of the channel ecosystem in recent years. This thesis comprises three substantive, self-contained

chapters. In table 1.1, I summarize research questions, summary of findings and contributions from each of the three self-contained research papers.

Table 1. 1 A summary of research questions, key findings and contributions

Ch 2

Research questions	Knowledge Gaps	Data Collection	Key Findings	Key Contributions
1. What is the current research knowledge about multichannel marketing (MCM) research?	1. Lacks an organizing framework to interpret heterogeneity in literature	1. Systematic review 2. Keyword analysis 3. Topic categorization 4. Citation analysis	1. Observes a shift in research topics, which we organize into three distinct eras	1. Offers a parsimonious framework to synthesize and interpret research
2. What key themes have emerged in MCM research?	2. Lacks a snapshot of the research literature to help interested early researchers and practitioners		2. The research themes emerged from our review include: a. Customer cost efficiency b. Customer experience across channels c. Firm efficiency d. Firm strategy	2. Provides a non-technical snapshot of the research literature
3. How have research themes evolved?			3. Our analyses of keywords, citations and topic categorization supports the thematic evolution of MCM research	3. Captures both static and dynamic views of the research trajectory
4. What research opportunities exist?			4. A number of research opportunities exist with ongoing transformation of channels ecosystem	

Ch 3

Research questions	Knowledge Gaps	Data Collection	Key Findings	Key Contributions
1. Why do firms engage in omnichannel integration?	1. Lack of comprehensive theory about the effectiveness of omni channel integration	1. Financial and accounting data from various sources	1. Omnichannel integration can offer value to firm; however, boundary conditions exist	1. Offers a theory of how runaway consumer expectations and steeply rising coordination costs present important boundary conditions to the efficacy of retailer's channel integration efforts
2. When does channel integration create value?	2. Fewer studies about coordination costs associated with channel integration	2. Textual data mined for channel integration from firms' public records (e.g., annual reports, investor presentations, press releases).	2. Customers see value beyond a degree of channel integration; Advertising widens the gap between consumer expectations and retail delivery	2. Addresses a long-standing concern about effectiveness of channel integration
3. What is the relationship between channel integration and firm profitability?	3. Few empirical studies about 'performance-integration' relationship		3. On average, channel integration negatively impacts profitability	3. Contributes to the nascent coordination costs literature
4. What factors moderate 'performance-integration' relationship?	4. Lacks comprehensive assessment of moderating factors that impact 'performance-integration' relation		4. Size of store network aggravates the 'performance-integration' relationship; Industry turbulence dampens the negative 'performance-integration' relationship	4. Theory driven and empirically supported research based on most contemporary data

Ch 4

Research questions	Knowledge Gaps	Data Collection	Key Findings	Key Contributions
1. Does the speed of channel integration impact firm performance? 2. What factors moderate the speed-firm performance relation?	1. No comprehensive theory about performance-speed relation in omnichannel context 2. Lacks comprehensive assessment of firm and industry level factors that affect performance-speed relationship.	1. Financial and accounting data from various sources 2. Textual data mined for integration speed from firms' public records (e.g., annual reports, investor presentations, press releases).	1. Speed of integration offers strategic value; however, coordination costs are endogenous to speed of implementation. 2. While the size of store network and advertising negatively impact the 'performance-speed' relationship, a firm's brick & mortar experience, market share and industry channel integration positively moderate the relationship.	1. First study (theory and empirical support) of speed-performance in omnichannel context 2. Results suggest that speed can be seen as an efficiency tool 3. Methodologically, this research builds on the prior measures of speed construct

The popularity of omnichannel retailing is reflected in the eclectic academic literature that has emerged to capture the developments at consumer and firm level. A large body of literature has emerged to capture the developments including the changing role of channels, the nature of exchange and environment where retailers, channel partners and customers are increasingly intertwined (Cui et al. 2020; Neslin 2022). Several descriptive studies (e.g., Neslin et al., 2006; Zhang et al., 2010; Verhoef, Kannan, & Inman, 2015) have examined the state of omnichannel scholarship and advanced understanding of the field. However, the literature lacks an organizing framework to interpret the significant heterogeneity across studies. This gap not only impedes new researchers from navigating this eclectic body of work but also creates barriers for practitioners seeking actionable insights. My first paper (chapter two) attempts to address this issue with a systematic review paper that synthesizes 181 multichannel marketing research papers (1995–2021); uses keyword analysis, topic categorization and citation analyses and citation analysis to capture thematic evolution; and identifies key insights and directions for future research by developing a multidimensional framework.

The second (chapter three) and third (chapter four) papers are a deep dive into retail decisions. *Chapter three* aims to examine the levels of omnichannel integration required to meet heightened consumer expectations and the associated advantages and disadvantages of varying levels of integration. Furthermore, it identifies key boundary conditions that influence the relationship between the degree of integration and firm performance.

In a competitive retail environment where omnichannel initiatives are highly visible and publicized, incumbent multichannel retailers have an incentive to adopt omnichannel retailing early to meet runaway consumer expectations. Adopting omnichannel integration early can offer

strategic benefits, such as accelerated learning and securing a dominant market position. However, it also presents significant coordination challenges, both internally within the retail firm and externally with suppliers and vendors (Gulati et al., 2012). Without sufficient coordination to address internal operational and organizational complexities, as well as external inter-firm dependencies, the transition to omnichannel integration may lead to increased ex-post coordination costs (Elhelaly & Ray, 2024; Ghazimatin et al., 2023).

While research on "speed-performance outcomes" exists in contexts such as new product development (Scherer 1967), response to competitive actions (Smith et al. 1991), decision-making processes (Baum & Wally 2003, Eisenhardt 1989), this relationship remains understudied in omnichannel context. Prior research has largely emphasized the pioneering effects linked to the first mover advantage. However, omnichannel integration presents a unique context where the acceleration effects associated with speed of implementation could play an important role in impacting firm performance.

These need addressing, as lack of comprehensive assessment limits the inferences one can draw. With the growing importance of omnichannel integration and consumer preferences to move across channels, these are important questions for both practitioners and academia. So, my thesis seeks to answer the following key questions:

1) When does channel integration create consumer value, and how significant are coordination costs? What is the relationship between channel integration and firm profitability? (Chapter three).
2) How does the speed of channel integration impact firm performances? What factors moderate the speed-firm performance relation? (Chapter four).

Research context and data. I use the U.S. retail industry for empirical investigation, as it provides a suitable setting in which firms have been investing on channel integration, heterogeneity exists across firms' degree and speed of channel integration, data is publicly available, and finally the period from 2008 to 2019 provides suitable period to examine steady state of evolution of channel integration efforts.

My curated dataset consists of quantitative and qualitative data. I consulted the annual financial reports, Compustat, Mergent online, LexisNexis, and Factiva for quantitative financial and accounting data. For qualitative data about the degree of channel integration, I mined the relevant text from firms' public records (e.g., annual reports, investor presentations, press releases). To ensure a high level of reliability and validity of our measurement approach, I checked our results against the industry reports on the top omnichannel retailers (NRF 2019).

Analytical approach. Channel integration initiatives are resource intensive and time-consuming, and these are often a series of strategic initiatives. The pace and level of channel integration investments depend upon various firm-level factors. So, it is not feasible to obtain a random sample of firms that are comparable across time dimensions to assess the relationship between channel integration and firm profitability. However, I have access to longitudinal data. That allowed me to employ panel data methods to account for time-varying dynamics. Besides this, I employ Gaussian copula method to control for potential endogeneity concerns and run various robustness tests to confirm the validity of our results.

Key conclusions. This thesis advances the multichannel marketing literature by addressing firm-level strategic issues in omnichannel integration. It provides actionable insights for practitioners and contributes to academic debates on coordination costs, integration effectiveness, and the role of speed in firm performance.

Chapter 2 offers both a rear and front view of the eclectic multichannel marketing literature, serving as a valuable resource for scholars and practitioners.

Chapter 3 offers a theory and empirical support about how runaway consumer expectations and steeply rising coordination costs present important boundary conditions to the efficacy of retailer's channel integration efforts; It shows how certain characteristics of coordination costs can hamper the strategic benefits of channel integration and add critical boundary conditions to an existing literature that discusses how omnichannel retailing enhances consumer experience.

Specifically, our findings indicate that, on average, channel integration negatively impacts firm profitability. Moreover, a large store network aggravates the negative "profitability-integration" relation whereas industry turbulence mitigates it. For example, Walmart's extensive store network may impede the performance-integration link, while turbulence in the retail grocery sector could help Walmart better prepare for the uncertainties associated with channel integration.

Chapter 4 shows that the speed of omnichannel implementation can provide strategic dividends. However, speed for strategic dividends is endogenous to coordination costs associated with intra- and inter-organizational coordination. Our study uncovers that balancing this trade-off between strategic dividends and coordination costs, retailers use channel integration speed as a governance mechanism to economize on coordination costs and maximize on strategic dividends. We identify important boundary conditions to the efficacy of speedy channel integration speed. Specifically, our results indicate that speed can improve a firm's financial performance. Additionally, it shows that while large store network and high

advertising negatively impact the "performance-speed" relationship, extensive brick-and-mortar experience, market share and high industry-level integration positively moderate it.

We also identify critical boundary conditions that affect the efficacy of rapid omnichannel integration. Specifically, our findings indicate that speed can improve a firm's financial performance. Moreover, while large store networks and high advertising intensity negatively impact the "performance–speed" relationship, extensive brick-and-mortar experience, market share, and elevated industry-level channel integration positively moderate it. For instance, Walmart's profitability appears to benefit from rapid omnichannel integration, aided by its long-standing retail expertise, substantial market share, and extensive channel integration in the grocery sector. Nevertheless, its large store network and significant advertising expenditure may exert negative effects on the relationship.

Chapter 3 and 4 paint a picture of the retail sector in which coordination cost is like an iceberg that can sink the omnichannel titanic. Together, these studies provide a robust foundation for understanding the strategic implications of omnichannel integration in the evolving retail landscape.

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2 A THEMATIC EXPLORATION OF THE EVOLUTION OF RESEARCH IN MULTICHANNEL MARKETING

ABSTRACT

The significant technological changes that spurred the growth of the Internet affected how marketing channels changed over the period. While the launch of e-commerce in the 90-s gave a significant boost to research in multichannel marketing, the scope and nature of the inquiries have continued to evolve. To document this evolution of multichannel research, we conduct an in-depth review of 181 marketing papers in the domain, published between 1995 and 2021. We observe a shift in research topics, which we organize into three distinct eras: 1995-2004, 2005-2014, and a still evolving 2015-2021. We then use a multi-dimensional framework to identify how these topics have evolved over the eras. We extract a set of twelve key takeaways across customer and firm-focused research themes and identify the dominant research trends from this thematic exploration. We conclude by identifying areas that are conspicuous in their potential to advance our understanding and aid practice.

Keywords: Cross-channel, Multichannel, Omnichannel, Marketing, E-Commerce, Literature Review

2.1 INTRODUCTION

In this paper we synthesize research on multichannel marketing published in key marketing journals, over a span of a quarter century (1995-2021). We trace the relevant research findings of the time and their evolution leading to a set of twelve key takeaways from the vast and heterogenous literature, which is still growing. Our framework captures both static and dynamic views of the multichannel marketing research trajectory. In a static view, the customer and the firm provide stable vantage points to examine the evolution of multichannel marketing research. A dynamic view captures the transformational change that has shaped the multichannel marketing literature over time.

Commercialization of the internet in the 1990s significantly boosted research dealing with both online and offline channels[1]. Publications in the multichannel marketing domain increased from three articles in a year in the 1990s to seventy-eight articles during 2015-2021. As a part of the Marketing Science Institute (MSI) priorities, special issues have been devoted to multichannel and omnichannel marketing to leverage this interest and encourage further scholarship (Rangaswamy and Van Bruggen 2005; Shankar and Yadav 2010; Verhoef, Kannan and Inman 2015; Cui et al. 2020). These initiatives brought disparate research groups, perspectives, and methodologies together. Significant heterogeneity characterizes this literature, covering a wide range of substantive focus across both consumer as well as firm focused studies. Further, the significant and fast-paced technological changes that spurred the growth and maturing of the internet, inevitably affected how marketing channels changed as well. As part of these changes, channels' key roles expanded from being intermediaries facilitating distribution of

[1] We refer channel as a medium of firm-customer interaction (Neslin et al. 2006); online channels include e-commerce website, mobile site, and mobile apps; and offline channels include physical stores, direct selling, call center, catalogs, and direct mail.

products from manufactures to end-users, to also include being intermediaries helping inform buyers about "the availability and features of the products or services," as well as facilitating "economic exchange between buyers and sellers" (Peterson, Balasubramanian, and Bronnenberg 1997, p. 334). Not surprisingly, research in the multichannel marketing domain also evolved as it grappled with the emerging questions of the day, introducing further heterogeneity in the already complex domain. Interpreting this heterogeneity is a key research endeavour in the discipline. Notable efforts in this area include Neslin et al. (2006), Neslin and Shankar (2009), Zhang et al. (2010), and Vinhas et al. (2010). Nevertheless, the literature is still thin in terms of offering parsimonious organizing frameworks to interpret the research spectrum. The limitation has two important negative effects.

First, it is a barrier to new researchers as they attempt to navigate this eclectic stream of research. Second, practitioners who may be interested in easily accessing research results may have limited options. Not only do these limit translation of research to practice but they could also lead to lost opportunities for academia-practice collaborations. So, in an effort to address this gap, we build on earlier efforts in the literature, by tracing the research trajectory of the multichannel marketing domain, reviewing 181 articles in key marketing journals, published between 1995 and 2021.

We expect our efforts to: (1) help new researchers understand the thematic evolution of multichannel marketing research and interpret the context of the results as they build their own research programs; (2) provide a secular historical narrative that industry leaders in retailing and technology can use as a framework to draw upon the lessons of the past while designing new business frontiers of multichannel retailing; and (3) encourage researchers to investigate the potentially important future research directions we identify.

With our in-depth review, we see the following customer and firm-focused themes: The customer-focused research shows that internet's low search cost, increased interactivity, personalization, and customers' channel choices, have shifted the balance of power in a customer-firm relationship. Moreover, the influence of the customer's social network on firm performance has grown over the years. The firm-focused research points to the opportunities for firms to leverage the complementary effects of online and offline channels to drive sales and long-term brand equity. Integrating a firm's online and offline channels has considerable influence in improving firm revenue, whereas, strictly favoring an online only strategy may negatively affect firm profitability. We extract a total of twelve key takeaways from our review.

In the rest of the paper, we first offer a summary of our findings followed by a detailed description of our methodology. We discuss the customer and firm-focused research themes of the literature over time and indicate research trends from a citation analysis of research topics. We build on these to point out four key future research opportunities and conclude.

2.2 A SUMMARY OF THE EVOLUTION OF MULTICHANNEL MARKETING RESEARCH

One of the challenges in understanding twenty-five years of research in a fast-changing practice and academic landscape, is to grasp how the literature has evolved over time and how its results relate to each other. Our careful readings and analyses suggest a distinct shift in taxonomy and research focus over time. We let these shifts influence our sensemaking in two phases.

First, we organize the shifts into three eras. Our organization under the three eras is similar to that of Lamberton and Stephen (2016) and in line with observations by earlier research in the domain. For example, in a special issue of the Journal of Interactive Marketing, Shankar and Winer state "Interactive Marketing Goes Multichannel" (2005, p2). Verhoef, Kannan and Inman

(Journal of Retailing special issue 2015, p. 174) assert that "whereas multichannel was in vogue in the last decade in retailing, we now observe a move to so-called Omnichannel retailing." Second, we conduct a thorough thematic exploration of the papers with their published keywords, research topic categorization and content, using the eras as an organizing framework to extract substantive themes. Below we present a summary of these distinct eras.

2.2.1 Era 1: 1995 – 2004

Era 1 characterizes a period when most store-based incumbent firms added an online channel. The dominant considerations were on understanding the implications of internet's lower search cost, defining the online channel's role (i.e., for communication and/or transaction) and configuring channel governance structures. Not surprisingly, research during this era primarily focused on information search cost and implications of online channel addition on firm performance.

The foundational academic research includes informational efficiency gains with internet's lower search cost (Bakos 1991), opportunities for cross-selling and personalization with electronic commerce (Alba and Lynch 1997; Peterson, Balasubramanian, and Bronnenberg 1997), disintermediation, wherein manufacturers use a direct to consumer channel (Geyskens, Gielens & Dekimpe 2002), channel conflict (Gulati and Garino 2000; Chiang, Chhajed and Hess 2003), and cross-channel pricing management (Pan, Ratchford and Shankar 2002). Low search cost and interactive nature of online channel impacted the customers and provided an impetus for marketing research. Research that examined issues such as customer online channel adoption (Alba and Lynch 1997, Verhoef and Langerak 2001) and lower search cost (Brynjolfsson and Smith 2000, Lynch and Ariely 2000) laid the groundwork for subsequent research.

Reflecting the potential of online channel - Mahajan, Srinivasan and Wind (2002) show that the stock market rewarded those retailers that used online channel effectively to augment existing offline channels. However, the dot com bust in 2000 shows limitations with the online channel's promise of perfect information and a frictionless shopping, indicating heterogeneity and complexity of the consumer markets in which online channel is just another channel of distribution, transaction, and communication (Brynjolfsson and Smith 2000; Peterson and Balasubramanian 2002).

2.2.2 Era 2: 2005-2014

Era 2 saw firms make a transition from questioning the marginal impact of online channel additions, to considering the portfolio of different channel outlets as a resource. Firms such as Barnes & Noble, Office Depot, Dell, and Circuit City established highly visible multichannel marketing programs and focused on maximizing performance of each channel for customer acquisition, development, and retention across online and offline channels.

Accordingly, research priorities during this period focused on driving firm efficiency including management of marketing communication across channels (Thomas and Sullivan 2005; Kwon and Lennon 2009; Dinner, Van Heerde and Neslin 2014), the drivers and performance of multichannel customer behavior (Kumar and Venkatesan 2005; Venkatesan, Kumar and Ravishanker 2007), and resource allocation and performance evaluation across channels (Neslin and Shankar 2009; Zhang et al. 2010). Moreover, the research expanded to include multichannel design, coordination, and performance issues for the business-to-business environment (Vinhas et al. 2010).

2.2.3 Era 3: 2015-2021 (Evolving)

Era 3, which is still evolving, is witnessing a distinct shift in focus from operational efficiency to a decidedly customer-centric approach. Providing a consistent customer experience

across channels has emerged as a central theme of channel coordination efforts. The changes in customer behavior resulting from the COVID-19 pandemic has further forced firms to reimagine their channel offerings (Grewal et al. 2021).

Research during this period focused on cross-channel integration (Gallino and Moreno 2014; Cao and Li 2015), and customer experience in an integrated omnichannel setting (de Haan et al. 2018; Cui et al. 2020). The growing use of mobile devices, increasing influence of consumer's social network, privacy concerns, as well as increasing focus on cross-channel integration are key features of the still evolving era 3.

2.3 METHODOLOGY

2.3.1 Identification of Relevant Articles

To search for published research papers that deal with both online and offline channels, we began our search with keywords such as *multichannel, omnichannel,* and *crosschannel* in combination with *marketing, retailing, management*, and *strategy*. After identifying relevant papers and reviewing article keywords and their synonyms, we expanded our set of keywords. With our initial screening of the studies and using a snowball sampling method, we examined references of the identified articles. We focus on the substantively oriented papers and exclude papers that are primarily methodologically oriented ones[2]. Commercial use of the internet began in the 1990s and understandably, no multichannel marketing research that focus on online and offline channels exists prior to 1995 (Lee and Grewal 2004). Therefore, the 1995 to 2021 period encompasses most marketing studies for our review.

[2] We refer the interested readers to Watson et al. (2015) for a comprehensive review of distribution channels research and Krafft et al. (2015) for a review of methodologies employed in the channels research.

We first searched the following journals, which are considered leading outlets for marketing scholarship based on FT 50 ranking: *Journal of Marketing, Journal of Marketing Research, Journal of Consumer Research, Journal of the Academy of Marketing Science, Marketing Science* and *Management Science*. We then included specialized journals such as the *Journal of Retailing, Journal of Interactive Marketing, International Journal of Research in Marketing, Industrial Marketing Management, and* the *Journal of Business Research* that publish marketing channels research.

2.3.2 Keyword Analysis

An article's keywords afford a sense of research topic and concept of the article. Moreover, frequency count of keywords can identify the factors that reflect the intellectual structure, historical evolution, and research potential in the domain (Mela, Roos & Deng 2013). Accordingly, we took the following steps for a keyword analysis.

We entered the first five published keywords from all the research articles into an Excel database. Since our interest lies in identifying a thematic evolution of substantive research topics, we excluded models and methodologies focused keywords. This approach resulted into a total of 751 keywords, 442 of which are used once. The long tail of single keywords reflects the wide variety of ways in which researchers have described their multichannel marketing research.

One challenge in analyzing keyword data is the presence of keywords that have a similar meaning. For example, "e-retailer", "online retailers", and "Pure-play online retailer" have the same meaning but are spelt differently. We merge such synonym keywords. Thus, keywords like "multi-channel", "multiple channels", "off-line and online channel" are collapsed under "multichannel". We provide a list of synonym keywords and frequency count of top twenty keywords in the Web-Appendix (Tables 2.6 and 2.7).

Our results generate several insights based on the popularity of keywords across each era (Table 2.1). Most frequent keywords during era 1 point to consumer information search cost and emergence of online channel, which underpins much of the focus for scholarly research during this time. Keywords relating to management of consumer behavior in a multichannel environment dominates era 2. In contrast, the keywords in era 3 suggest a greater focus on channel integration in an omnichannel environment. Thus, the popularity of keywords suggests a distinct shift in the research priorities across the eras that is consistent with our observations of the shifts across time.

Table 2. 1 Research focus based on the top keywords across each era

Keywords (frequency count)	Research focus
Era 1: 1995-2004	
(1) Search cost (11) (2) Internet (8) (3) e-commerce (7) (4) Internet markets (7) (5) Competition (6)	*Information search cost and emergence of online channel*
Era 2: 2005-2014	
(1) Multichannel (19) (2) Customer relationship management (9) (3) Multichannel retailing (9) (4) Multichannel marketing (8) (5) Consumer behavior (8)	*Operational and consumer management in a multichannel environment*
Era 3: 2015-2021 (Evolving)	
(1) Multichannel retailing (25) (2) channel integration (11) (3) e-commerce (10) (4) pricing (9) (5) Omnichannel retailing (8)	*Increasing focus on channel integration* (In a multichannel/omnichannel environment)

2.3.3 Classification of Articles

We conduct an in-depth review of each article to capture the focal research ideas and context. Subsequently, we categorize each article under a research topic based on its substantive contribution. For example, we group articles about customer purchase, customer experience, customer loyalty, and customer satisfaction in a multichannel environment under a research topic "consumer behavior and attitude across channels".

To draw key themes from our topic categorization, we further collapse research topics under customer-focused and firm-focused categories. This approach resulted in classifying all 181 articles under the following five categories (Table 2.1).

Table 2. 2 Representative studies, research topics and associated categories

Category	Research topic	Author(s), Year
Customer cost efficiency	Information search cost	Bakos 1997; Lynch and Ariely 2000
	Channel choice and adoption	Valentini et al. 2011
	Research shopping	Verhoef et al. 2007
Customer experience	Customer behavior and attitude across channels	Danaher et al. 2003; Li et al. 2015
	Cross-channel effects	Wang and Goldfarb 2017
Firm strategy	Channel addition / disintermediation	Geyskens et al. 2002; Chiang et al. 2003
	Channel structure	Kabadayi et al. 2007
Firm efficiency	Pricing	Ancarani and Shankar 2004; Zhuang et al. 2018
	Marketing communication & distribution management	Thomas and Sullivan 2005; Ansari et al. 2008
	Cross-channel integration	Gallino and Moreno 2014; Cao and Li 2015
Definitional	Definitional & review papers	Beck and Rygl 2015

2.3.4 Identifying Research Trajectories

To identify patterns in the research trajectory, we track share of articles for each research category across the three eras. We find thirty-four articles in era 1, sixty-nine articles in era 2

and seventy-eight articles in era 3. In Figure 2.1 below we represent the share of articles across the eras.

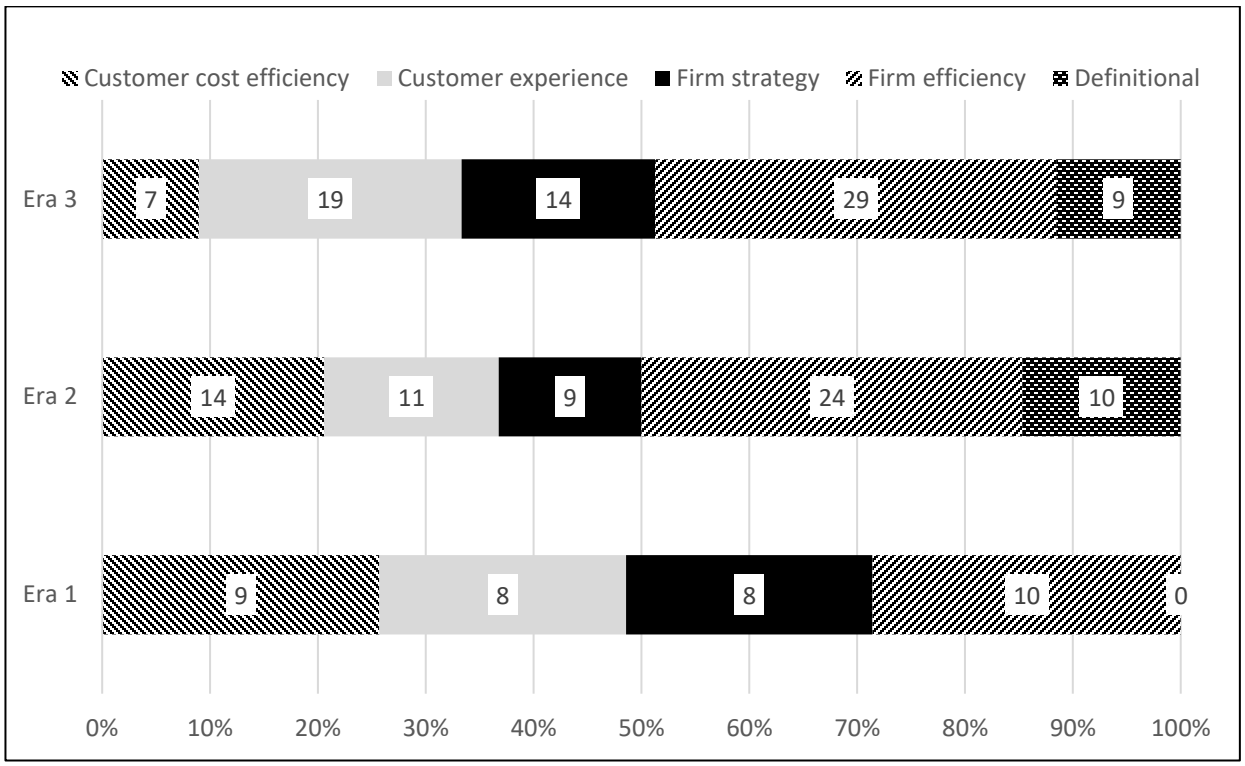

Figure 2. 1 Share of articles for each research category across eras

Observe the progressive increase in firm strategy and efficiency related research from eras 1 to 3. This increase in emphases seems to be accompanied by an increase in definitional topics and balances out the more customer-oriented topics that were dominant in era 1.

The customer cost efficiency category, which consists of the three topics: information search cost, research shopping and customer's channel choices, declined as a share of total publications from era 1 through era 3. Papers about buyer's information search cost declined during eras 2 and 3 whereas research shopping (i.e., customers searching information in one channel but purchasing in another) increased in eras 2 and 3. Papers on customer's drivers of channel choice primarily appeared during the first two eras. While customer experience was a significant focus

in era 3, possibly due to the growing importance of omnichannel marketing, papers on customer behavior and attitude were sustained across eras. However, publications about the cross-channel effects of advertising and promotions on customer purchase and attitude increased in eras 2 and 3.

Though the overall share of total articles under the firm strategy fell, the total number of articles grew, reflecting the growing importance of firm strategy issues in a multichannel environment. Research on pricing issues garnered consistent attention, however, research about channel addition increased in era 3. Research publications about channel structuring, channel governance, and entry timing remained low.

Firm efficiency focused research increased significantly over the eras. Two factors contributed to this: (a) increased marketing communications and distribution management research in era 2 and (b) growth in channel integration articles in eras 2 and 3. Finally, papers about the key definitional issues in the online and multichannel environment appeared in era 2.[3]

The results of the keyword analyses and the research topics categorization broadly converge. For example, both the search cost in era 1 and consumer behavior and relationship management in era 2 are the most popular research topic across both analyses. Similarly, firm efficiency in multichannel environment is popular across both research category and keyword analysis. Taking this convergence as supportive evidence of the evolution across the three eras as specified, we undertake a closer examination of the articles to extract research themes as they evolved, in the next section.

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[3] An outcome of heterogenous multichannel marketing literature is varied definitions used to describe cross-, multi- and omni-channel. We include a summary of such articles in the Web Appendix under title “definitional issues”.

2.3.5 Citation Analyses

Citations reflect the "nature and growth rate of a field" (McFadyen and Cannella 2004). Using the Web of Science Social Sciences Citation Index, we then conduct a detailed analyses of the research topics identified earlier and establish the dominant themes of contemporary research.

2.4 RESEARCH THEMES

We organize our discussion of research themes broadly under customer and firm-focused research topics across the eras. Of course, extracting such research topics over time may not illustrate the ongoing impact or current relevance of the topics. Indeed, topics covered in early years serve as the building block of future research, with some topics having a bigger impact on the evolution of research than others. Technological, environmental, and market externalities may also sort between the steepness of such impact across different topics. To get a sense of these, we follow up the thematic discussions with a detailed analysis of the relevant citation counts.

2.4.1 Customer-focused Research Themes

Based on our in-depth reading of the literature, we identify two key topics under customer-focused research: (1) customer cost efficiency (2) customer experience across channels. While the first topic examines customer transaction costs and drivers of multichannel adoption, the second focuses on understanding attitudinal and behavioural differences between single-channel and multichannel customers. We now discuss each of these topics and their research trajectory across each era, summarizing the topics in Table 2.3 (panel a).

Table 2.3 Research Themes

	Era 1	Era 2	Era 3
	(a) Customer-Focused Research Themes		
Customer cost efficiency	1. Search cost reduction and channel adoption	1. Channel choice factors	1. Social contagion influences channels choice

	2. Internet's low search cost impacts pricing 3. Importance of signals in the online channels	2. Customer preference for the online and offline channels 3. Role of marketing factors in influencing customer channel choices	2. Growth in the mobile channels affects customer channels usage
Customer experience	1. Customer behavior differs across the online and offline channels 2. Factors influencing customer attitude and behavior across the channels	1. Multichannel versus single-channel customers 2. Factors that help explain multichannel behavior	1. Cross-channel effects on the customer attitude and behavior 2. Data and privacy risks with channel integration
(b) Firm-Focused Research Themes			
Firm efficiency	1. Increased focus on the firm's pricing strategy	1. Integrated marketing for efficiency gains	1. Marketing to influence the customers' channel usage
Firm Strategy	1. Disintermediation and channel management	1. Channel expansion and the firm value 2. Multichannel structure, firm strategy, and external environment 3. Entry timing to multichannel adoption and firm performance	1. Channel integration and the firm performance 2. Online to offline expansion 3. Role of delivery in the omnichannel marketing strategy

2.4.1.1 Customer cost efficiency

Research papers in this category focused on understanding the impact of the internet's low search cost on customer utility and channel adoption considering both utilitarian (e.g., reducing search cost, risk minimization) and hedonic (e.g., seeking fun and exploration) factors. The *research shopper* phenomena[4], which refers to customer searching in one channel and purchasing in another, was an important topic of research (Verhoef, Neslin and Vroomen 2007). Subsequent research explored how a customer's preference for channels grows over time and the influence of the customer's social network, on her channel choices.

[4] The research shopper phenomenon includes webrooming that refers to customer searching online and purchasing offline, and showrooming that refers to customer searching offline and purchasing online.

Customer cost efficiency themes in Era 1: 1995 – 2004

Customer cost efficiency research during this time can further be grouped under three topics: (1) Search cost reduction and channel adoption, (2) Impact of internet's low search cost on pricing, and (3) Importance of signals in the online channels.

1. *Search cost reduction and channel adoption***:** Though convenience, entertainment and safety influence a shopper's utility, internet's low search cost and its implications for market efficiency, competition, and customer welfare, attracted attention from marketing researchers and led to further examination of consumer behavior in the multichannel context (Bakos 1991, Alba and Lynch 1997, Brynjolfsson and Smith 2000). Traditional information economics ideas that consumers search until the perceived marginal benefit is equal to the perceived marginal cost (Stigler 1961) came under the spotlight. The results show, the internet's low search cost did not lead to a decrease in overall search time, though it increased the number and types of sources searched by a customer (Klein and Ford 2003). An important limiting factor in customers' adoption of online channels, identified in multiple studies was accurately assessing *quality* of product and services – fodder for future research.

2. *Impact of internet's low search cost on pricing*: Consistent with Bakos' (1997) prediction that low search cost will increase price-based competition with the growth of e-commerce, Brynjolfsson and Smith (2000) found prices cheaper by 9-16% in online retail channel. The authors also found frequent pricing adjustments in an online channel, reflecting operational efficiency possibly due to lower menu cost (cf. Dutta, Bergen and Ray 2017). The low search cost affected customer's price sensitivity. For example, lowering information search cost increases customer price sensitivity for undifferentiated products whereas the effect is opposite for unique and differentiated products (Lynch and Ariely 2000). This suggests profit

opportunities for the sellers that can meet buyers' heterogeneous preferences by providing differentiated products. However, the effect of low search cost did not reduce price dispersion (price range and standard deviation of an item across sellers, as a measure of customer' search and purchase behavior) in an online environment as compared to an offline environment (Pan, Ratchford and Shankar 2004). Researchers attribute at least two features for the higher price dispersion in an online channel. One, firms can personalize customer interaction at a low cost. Two, firms can use premium-based and version-based pricing (Biswas 2004).

3. *Importance of signals in the online channels*: When a shopper cannot access complete information, signals play an important role to help relieve a shopper's risk perceptions. This assumes significance in an online environment. Brand reputation, perceived advertising expenses and warranty were found to matter more in reducing perceived risks in online channels than in offline channels (Biswas and Biswas 2004). This is especially important for products with high non-digital attributes, such as apparels, for which cues about product quality are limited in online environments (Degeratu, Rangaswamy and Wu 2000; Lal and Sarvary 1999). Danaher, Wilson and Davis (2003) show that consumers in online environment display greater than expected loyalty to a well-known brand (i.e., high market share brand) than for a little-known brand (i.e., low market share brand).

It is fair to say that the early multichannel marketing research were driven by the potential impact of low search cost on consumer welfare, pricing, and firm signals. Despite early claims of efficiency gains from the growth in online channel, the promise of *frictionless commerce* did not hold (Brynjolfsson and Smith 2000).

<u>Customer cost efficiency themes in Era 2: 2005 – 2014</u>

This period saw growth in customers' use of internet as a source of information and social interaction. Popularity of user generated content (e.g., online reviews) and social media marketing increasingly influenced research in customer channel choices (Lamberton and Stephen 2016). The growing *research shopper* phenomena prompted a deeper look at attributing investments to channels, managing channel conflicts and optimizing marketing efforts. These reflect in the customer channel choice research that we organize under the following headings: (1) Channel choice factors, (2) Choosing between online and offline, and (3) Marketing factors.

1. *Channel choice factors*: Several factors affect a customer's channel choices. Environmental factors such as individual (e.g., demographics), situational (e.g., product type, weather, temporal issues) and social attributes (e.g., beliefs, social norms) are important influences (Neslin et al. 2006). Channel attributes such as information availability, search cost, customer service, and perceived risk are also important as they influence the utility customers assign to a channel (Gensler, Verhoef and Böhm 2012; Verhoef, Neslin and Vroomen 2007). The purchasing process and the purchased product are also important. For example, the immersive and hedonic aspect of online channel influences customer adoption of online channel (Childers et al. 2001, Brunner and Kumar 2005). Likewise, quest for self-affirmation (e.g., the process of inspecting and buying affirms customer's expertise in product evaluation), symbolic meaning (e.g., shopping efforts required when shopping for gifts) and the social and experiential influences of the shopping environment are sources of utility and affect customers' channel choice (Balasubramanian, Raghunathan and Mahajan 2005).

2. *Customer preference for the online and offline channels:* How customers construct and deal with trade-offs in choosing between online and offline is intuitively important. Chintagunta, Chu, and Cebollada (2012) estimate that customer's costs of transaction such as transportation

cost, in-store shopping time, and inconvenience cost can be sizable. Forman, Ghose, and Goldfarb (2009) show that customers shift away from online purchasing to a newly open local physical store, suggesting substantial disutility costs of purchasing online and the importance of offline transportation costs. A customer's channel experience also affects subsequent channel choices and purchasing behavior (Montoya-Weiss, Voss and Grewal 2003, Gensler, Verhoef and Böhm 2012). For example, a customer with positive in-store experience is less price sensitive when shopping in a firm's online channel (Shankar, Rangaswami and Pusateri 2001), such effects being more pronounced for repeat purchases (Dholakia, Zhao and Dholakia 2005). These findings emphasize the importance of channel attributes (e.g., perceived convenience or risk in using a channel) as well as customer's channel experience, to manage the trade-offs customers make in choosing between online and offline channels.

3. *Role of marketing factors in influencing customer channel choices*: Despite progress in understanding customer channel choice, another research impetus came from limited knowledge about effectiveness of multichannel marketing implementations (Weinberg, Parise and Guinan 2007; Noble, Shenkan and Shi 2009). Valentini, Montaguti and Neslin (2011) estimate that a significant share of new customers (between 22 and 35%) migrate to a new channel for subsequent purchasing. However, customer channel choices evolve over time – customers who are new to a channel or company are likely to respond more to marketing efforts. With the customer *switching* between online and offline channels during their search, purchase, and post-purchase phases of buying behavior – this line of research helped establish the spillover effects of positive channel experience. However, only a few papers examine spillover effects of negative channel experience (Ofek, Katona and Sarvary 2011).

<u>Customer cost efficiency themes in Era 3: 2015 - 2021</u>

Two key customer-focused *research* themes dominate this area: (1) How social contagion influences customer channel choices and (2) Impact of mobile channels on customer channel usage.

1. *Social contagion influences customer channel choices*: Social contagion works by providing information and relative advantages to a customer by her social network and is more pronounced for adoption of new online or mobile channels. Bilgicer et al. (2015) find that a customer's social network of peers and influencers (i.e., social contagion) have significant impact on channel choices. Longer tenured customers are more familiar and face less risk in trying new channels, reflecting lesser influence of social contagion. With the growing importance of social networks and consumer communities, we expect future researchers to examine the role of social networks and consumer communities in consumers' multichannel choices (Lamberton and Stephen 2016). A customer's new channel experience can also influence loyal offline customers switching to a competitor's new channel. Melis et al. (2015) show that integrating product assortment across online and offline helps in retaining loyal offline customers who may shop in the online channel of their preferred supermarket chain.

2. *Growth in the mobile channel affects customer channel usage*: With the growing penetration of mobile devices such as smartphones, mobile tablets, and laptops affecting customer's online shopping behavior–a study by de Hann et al. (2018) examines the effect of switching between a more mobile device (e.g., smartphones or laptops) and less mobile device (e.g., desktop) on customer purchasing behavior. The authors find a higher search to purchase conversion when customers switch from more mobile to less mobile device. Additionally, they find that search to purchase conversion increases when a customer uses less mobile device such

as desktop for high-risk products and when online shopping experience with the retailer is low. Their findings reflect the perceived risks associated with mobile devices for online purchasing.

We see three key takeaways to summarize the customer channel choice research across the three eras: First, *the role of branding and other signals to convey quality play an important role in a multichannel environment when price-based competition from the online retailer has increased.* Second, *customer channel choices, which are a function of customer factors (e.g., individual, situational, and social) and channel attributes, develop over time and can be influenced by a well-designed marketing campaign*. Third, *a customer' social network affects the customer's channel choices*.

2.4.1.2 Customer experience

Do customers exhibit different attitude and behaviour when using online or offline channels? Are single-channel customers different from multi-channel ones? What impact integrated channel offerings have on customers? Marketing researchers examined several such intriguing issues about customers' attitude and behavior when shopping across channels.

Customer Experience themes in Era 1: 1995 – 2004

The dominant lines of research during this era were about: (1) Customer behavior across online and offline channels and (2) Factors influencing customer attitude and behavior across the channels.

1. *Customer behavior* differs *across the* online *and offline channels*: Findings from three articles suggest customers behave differently when shopping online than offline. Burke et al. (1992) and Alba et al. (1997) find that price and non-price attribute information relevant for choice decisions are not easily comparable across channels and partly drive different customer responses. The effects of branding vary across online and offline channels, contributing to

differences in customer behavior. Andrews and Currim (2004) show the consumers that largely shop online have higher opportunity costs – possibly because of higher income and education levels, and prefer larger product sizes, do more screening based on brand names, and display less price sensitivity than that of offline consumers. While intuitive, these findings provide evidence-based guidance for the emerging digital channels such as mobile apps, voice-activated technology and third-party delivery apps.

2. *Factors influencing customer* attitude *and behavior across the channels*: Researchers examined various factors that help explain differences in customer attitude and behavior across channels. Whereas factors such as storefront appearance and service levels impact customer loyalty in a physical store, the effects of customization, interactivity, and targeted offers are more in online channels (Srinivasan, Anderson and Ponnavolu 2002). Like atmospherics and customer service in a store environment, the degree of stimulation and pleasure through the website designs can influence customer satisfaction (Menon and Kahn 2002). Examining customer attitude in a multichannel banking context, Montoya-Weiss, Voss and Grewal (2003) show that both online and offline channel quality complement each other in impacting customer satisfaction; however, a branch's service quality acts as a reference point and has a competitive effect on the bank's online channel.

Researchers examined the effects of channels on customer satisfaction and loyalty when a customer chooses a service through an online or offline channel. Examining the effect on customer satisfaction and customer loyalty when a customer makes room booking on the hotel's website or in-person, Shankar, Smith and Rangaswamy (2003) show that customer satisfaction is not channel dependent, but customer loyalty is. Customer loyalty increases if the customer chooses the online service over in-person. The authors attribute this to the ease of search and

retrieval of information that helps customer return to the service provider. These countervailing effects suggest a careful management of cross-channel synergies and tension to influence customer attitude.

Customer Experience themes in Era 2: 2005 – 2014

In era 2, research seems to build on the earlier work on attitudes and behavior, by focusing on (1) Differences between a multichannel and a single-channel shopper and (2) Factors that can help explain such differences.

1. *Multichannel versus single-channel customers:* Customer management based on channel usage–that is, when customers predominantly use one channel or multiple channels–is important to marketing strategy. Results from business press (Clearly 2000, Steadman 2010) and academic research suggest that multichannel customers purchase more, have deeper relationships and are more profitable than single-channel customers (Kumar and Venkatesan 2005; Venkatesan, Kumar and Ravishanker 2007). Though the prevailing view is to influence customers to use multiple channels and positively affect firm performance, there are boundary conditions in which multichannel shoppers may not benefit the firms. Several studies explored the factors to better understand a customer's multichannel behavior, which we discuss below.

2. *Factors that help explain multichannel behavior:* High switching cost, self-selection, and marketing communication help in understanding a customer's preference for using multiple channels (Blattberg, Kim and Neslin 2008; Neslin and Shankar 2009). Multichannel customers often combine channel benefits to derive more value, have higher switching costs and higher loyalty. The self-selection justification suggests that high-volume customers have more purchasing occasions and channel contacts, though such self-selected multichannel customers don't drive sales. On the other hand, multichannel customers receive more marketing messages

and are more exposed to different channel offerings (Ansari, Meal and Neslin 2008). Providing a more nuanced understanding of multichannel shoppers and profitability relationship, Kushwaha and Shankar (2013) show that multichannel shopping enhances profitability for hedonic and high-risk products. For utilitarian and low-risk products, single-channel customers are often more profitable. In the services context (e.g., banking), customers that use all channels are not the most profitable (Cambra-Fierro et al. 2016). Firms may benefit by inducing select customers to use low-cost online channels (Hitt and Frei 2002).

Customer Experience themes in Era 3: 2015 - 2021

Reflecting growing consumer preference to move across channels during search, purchase, and post-purchase phases of buying behavior, research in this era predominantly focused on two topics: (1) Cross-channel effects on the consumers and (2) Data and privacy risks with channel integration

1. *Cross-channel effects on the customer attitude and behavior*: Consistent with prior research that show a positive impact on customer satisfaction and spending when a firm provides consistent communication, integrated product assortment and prices across channels (Neslin and Shankar 2009; Zhang et al. 2010; Berry et al.2010), research in recent years show a positive impact of channel integration on customer's favorable attitudes toward retailers (Pantano and Viassone 2015), on customer satisfaction (Herhausen et al.2015) and on customer engagement, positive word-of-mouth and repurchase intention (Lee et al.2019). Furthermore, the impact of channel integration applies to customers of high-involvement (e.g., Apple) and low-involvement products (e.g., Kroger). Examining if adoption of firm's new online channel affect customer's purchase volume, Li et al. (2015) find that adoption of new online channel doesn't affect heavy shoppers, but rather increase purchase volume for the light shopper segment.

However, the growing *webrooming* and *showrooming* phenomenon hampers customer engagement and retention efforts and negatively impact profitability. Jing (2018) and Mehra, Kumar & Raju (2018) show that price matching in the short term, and exclusive product offerings – as a long-term strategy, can be effective tools to counter customer free-riding by "showrooming". Offering exclusive varieties could be through creating store brands or by arranging for exclusivity of known brands (e.g., Tommy Hilfiger provides exclusive product offering for Macy's). Webrooming is more frequent than showrooming as it provides better use of each channel such as searching online and using physical store for physical inspection and immediate possession (Flavián, Gurrea and Orús 2019). Examining the customer retention issue, Chang and Zhang (2016) suggest that since a retail store provides more immersive experience, it may be used as an "educational" channel to migrate inactive customers to active customers. Moreover, an online channel may be used as a "retention" channel for keeping existing customers active as it offers more convenience and access to information. Understanding the effect of channel experience on customer retention is of immense help to practitioners, especially in a non-contractual retail setting.

2. *Data and privacy risks with channel integration:* An integrated view of the customer touch points across channels allows firms to personalize offers and services in an omnichannel environment. However, with increasing customer expectations of consistent and coordinated experience across channels, there is a tradeoff between personalization and privacy concerns. Assessing the impact of data breach announcement on customer spending and channel migration behavior – Janakiraman, Lim and Rashika (2018) found that "While customer spending substantially decreased, significant customer migration to the unaffected channels also occurred simultaneously" (p.102), reflecting that a multichannel strategy can help absorb some of the negative effects of data breach event. Cui et al. (2020) posits that growth in machine learning

and blockchain offer promising solutions to address data challenges and help protect customer privacy concerns.

Concluding our discussion on the customer attitude and behavior research theme, we provide the following three key takeaways: First, *customer behavior varies across channels and related insights can help in better customer segmentation and targeting*. Second, *multichannel customers are more profitable than single-channel customers; however, multichannel customer and profitability relationship depends on the product type (hedonic versus utilitarian products) and requires a careful consideration in a relational services sector (e.g., banking).* Third, *integrated channel offerings positively affect customer attitude and behavior; however, they pose increasing data and privacy risks.*

2.4.2 Firm-focused Research Themes

We identify two distinct firm-focused research themes. The first is about firm efficiency focused on managing marketing mix elements such as pricing, product assortment, and promotion across online and offline channels. The second deals with channel structure and channel integration issues. In the following subsections we discuss each of these themes and their research trajectory across each era, summarizing the topics in Table 3 (panel b).

2.4.2.1 Firm Efficiency

We observe a stream of research that deals with firm-level issues in effectively managing the marketing mix elements. Early research studies were focused on pricing management across channels. The research focus in subsequent eras shifted to examining the role of marketing campaigns in influencing customer's channel usage and driving operational efficiency.

<u>Firm Efficiency themes in Era 1: 1995 – 2004</u>

The dominant focus of research on marketing mix in this era was on pricing.

1. *Increased focus on the pricing strategy***:** As the competitive landscape changed from a predominantly offline to one including online channels, customer access to price and non-price information increased. From a firm's perspective, management of pricing across channels became important for its implications on firm profitability (Parasuraman and Zinkhan 2002; Varadarajan and Yadav 2002). Recall that internet's low search cost meant a downward pressure on average prices for the products with digital attributes – attributes that can be communicated through internet such as product features and prices (Lal and Sarvary 1999). Despite lower prices, higher price dispersion exists in online channels compared to offline channels. To explain if higher price dispersion can be attributed to differences in service quality provided by the online retailers - Pan, Ratchford and Shankar (2004) show that price dispersion is persistent despite controlling for heterogeneity among the online retailers. Online markets are not especially competitive from a pricing perspective.

Examining prices *across* channels (e.g., between pure online and multichannel retailers) and *within* channel (e.g., among online retailers), Ancarani and Shankar (2004) found smaller variability in prices (i.e., lower standard deviation) among online retailers but higher variability in prices *across* pure online and multichannel retailers. The authors justify such price variability on the benefits (e.g., search, physical inspection, pickup, and return of merchandise) multichannel retailers provide. These findings suggest higher opportunities for differentiation in multichannel environment by offering unique merchandising (e.g., Private label, bundled offerings) and differentiated offerings.

<u>Firm Efficiency themes in Era 2: 2005 – 2014</u>

Marketing-mix oriented studies in the multichannel era took a broader view of marketing mix deployment, focusing on (1) integrated marketing for efficiency gains and (2) channel integration and the firm performance.

1. *Integrated marketing for efficiency gains:* Increasing data availability across channels provided opportunities to predict customer channel choices and examined effects of marketing investments in one channel on the shopping outcomes in another channel. Researchers used a variety of data and methodological approaches to study cross-channel effects of marketing. Using enterprise level customer data, Thomas and Sullivan (2005) develop a model for estimating segment-level channel choices to effectively target and communicate with customers. In a separate study, Naik and Peters (2009) provide a normative model to balance marketing investment across online and offline channels. The authors show that online (e.g., banner and search ads) advertising amplifies effectiveness of offline advertising (e.g., television, radio, print) by increasing the consumer visits. Researchers explore the impact of integrated marketing on a firm's branding and show that strong offline brand image exerts a significant impact on a firm's online brand image (Kwon and Lennon 2009). Moreover, there are direct and indirect effects of channel and marketing communication on brand equity (Keller 2010). Not only does customer experience with sales channel have a direct effect on brand equity, but customer perceptions of brand association with sales channel and communication medium indirectly affect brand equity. Thus, an appropriate combination of sales channel and communication medium is important for driving sales and brand equity.

With the launch of the internet, several incumbent firms added websites mainly for informational purposes. With more customers searching online and purchasing offline and the high costs of setting up a transactional website, it became important for practitioners to decide if

the online channel will offer transactional functionality. Pauwels et al. (2011) show that impact of an informational website on offline purchase critically depends on the product category (e.g., important for sensory products) and customer segment (e.g., that are geographically distant from the store). The online channel allows for increased interactivity and personalization and makes it an ideal channel to offer customized promotions. Many brick-and-mortar retailers implement customized promotions (e.g., price discounts, coupons, bundled offers) through their loyalty programs. Customized promotions offered at selected households, customers and customer-segment levels are more effective and difficult for competitors to observe. Given the growing importance of customized promotions, Zhang and Wedel (2009) examined cross-channel promotional effectiveness across online and offline channels. The authors suggest using customized promotions for online and undifferentiated promotions for offline channels. Growth in online advertising spending accompanied this popularity of online purchase channels. This created a challenge for firms to balance competing advertising across traditional media (e.g., television, print) and online advertising (e.g., banner ads, paid search). Dinner, Heerde and Neslin (2014) examine effects of online display, paid search, and traditional offline advertising on sales across online and offline channels. Their results show online advertising is more effective than traditional advertising, and notably, traditional advertising reduces paid search click-through rates. Understanding such cross-channel effects is important for multichannel marketers.

Cross channel advertising effects have implications for the advertising regulations and policy issues. Reflecting the power of online advertising to circumvent offline advertising restrictions, Goldfarb and Tucker (2011) show that online advertising can substitute offline advertising. Their results show that intention to purchase an alcoholic beverage is 8% less in

states with alcohol advertising ban than the states that do not have such ban. However, this gap reduces to 3% when consumers are exposed to online advertising.

Besides the importance of cross-channel effects on firm performance, growth in showrooming (searching in store and buying online) continues to affect firm sales. A study by Google on the use of mobile devices for in-store research (Google Shopper Marketing Agency Council 2013) reported that over six in ten smartphones owners use their phones in-store for price comparison across all product categories. Several national retailers reported (e.g., Best Buy, Walmart, Bed Bath & Beyond, Toys "R" us, and Pet Smart) growing trend of shoppers using physical stores for product inspection and price comparison but ordering from a competitive online retailer (Bustillo and Zimmerman 2010). Retailers such as Best Buy provided price-matching policy, revamped product return policy and offered free Wi-Fi in the stores to reduce customer's showrooming behavior. Verhoef, Neslin and Vroomen (2007) show that improving attributes of online channel (e.g., improving service and privacy), increasing lock-in for the online channel (e.g., improving search and purchase attributes) and reducing the cross-channel synergies could help reduce showrooming and webrooming behavior.

2. *Channel integration and the firm performance:* Integrating channels are cost-intensive and require considerable adaptation. Several researchers examined the impact of integrating channels on operational efficiency and customer value creation. With channel integration, firms have opportunities to spread marketing, logistics and data management costs (Neslin and Shankar 2009) and leverage cross-channel customer information to better understand customers (Zhang et al. 2010). However, channel integrations pose challenges that could negatively affect firm performance. Separate warehousing and distribution systems may be required as online orders are individually packed and sent to the consumers, whereas goods are sent on pallets and

in bulk to the physical stores (Zhang et al. 2010). Different operational skills and processes are required to manage online and offline channels. Further, channel conflicts (e.g., due to inappropriate compensation system or channel free riding) hamper firm performance (Wallace, Johnson and Umesh 2009).

Firm Efficiency themes in Era 3: 2015 - 2021

Era 3 ushered in several studies on firms' deployment of the marketing mix, focusing on influencing channel usage by customers. Channel integration research intensified in the omnichannel era with several studies exploring boundary conditions of effective channel integrations.

1. *Marketing to* influence *the customers' channel usage:* With the growing importance of multichannel shoppers, can a marketing campaign induce multichannel shopping behavior? Montaguti, Neslin and Valentini (2016) show that a properly designed marketing campaign that focuses on informing channel attributes (e.g., convenience) and communicating customer control on channel choices can encourage multichannel shopping behavior that, in turn, can improve firm profitability. Since customers resist marketing activities that explicitly attempt to influence their behavior (Trampe, Konus and Verhoef 2014), the authors suggest financial considerations (e.g., coupons) would be less effective in communicating with a multichannel message. Furthermore, examining the relative impact of multiple touch points such as instore, online and brand advertising – Baxendale, Macdonald and Wilson (2015) show that positive impact of in-store communication is more than other forms of communication including brand advertising.

An increasing number of platforms (e.g., direct marketing, online advertising, and social media) allow marketers to target individual customers and collect customer-level exposure data. However, linking customer's advertising exposures to purchase behavior has been challenging.

Zantedeschi, Feit and Bradlow (2016) created a unique dataset by pooling customer advertising exposure and purchase data from a series of catalogs and email marketing campaigns over a two-year period, with different randomly selected control groups from each campaign. Using hierarchical modeling they show catalogs elicit better and substantially longer-lasting impact than target emails. Analyzing if catalogs still have a place in the marketing communication mix despite the industry trends to replace catalogs with digital marketing, Mark et al. (2019) show that catalog has a more positive effect on the frequency of purchases in offline channels than email communications.

Customers' use of online channels has increased in business-to-business (B2B) markets. B2B firms must reconsider their strategic investments in costly salesforce by first evaluating cross-channel effects on customer sales and profit returns from channel investments. In the B2B context – Lawrence et al. (2019) suggest that seller's online channel complements salesperson contact by improving customer-seller communication, which helps salesperson to better anticipate customer needs and reduce customer's perceived risk.

Cross-channel effects are important in the service industries such as auto insurance and financial services. Shankar and Kushwaha (2020) show the importance of a channel's richness, which refers to ease of interactivity (e.g., in-person agents channel provides more interactivity than a call center channel) and channel's primary influencing role (e.g., informative versus persuading) on customer's cross-channel effects. Analyzing cross-channel effects across sales agents, call center and the web for an auto insurance firm, the authors show complementary cross-channel effects (among exclusive agents, call center and the web); however, the magnitudes of cross-channel effects are asymmetric. In another study-Lobschat, Osinga and Reinartz (2017) examine cross-channel effects of online banner advertising on online and offline

sales and suggest that the online banner advertising is most suitable to drive awareness for firms predominantly using offline channels.

2. *Research on channel integration and firm performance accelerates*: While earlier studies provided a largely optimistic assessment of channel integration, newer studies questioned whether this was inevitable. Proponents of channel integration suggest that: (a) Channel integration helps stimulate sales by improving customer trust, providing more cross-sell opportunities, and increasing conversion rate (Cao and Li 2015), (b) Integrating offline channel information such as store locator and product availability with online channel improves perceived service quality, customer search, and purchase in online channel (Herhausen et al. 2015), (c) Despite incremental costs associated with channel integration and need for human resources with different skills to manage online and offline channels, channel integration helps firms to be cost efficient through economies of scope (Tagashira and Minami 2019), and (d) "Buy-online and pickup in-store", a popular omnichannel offering, helps in attracting new customers to the firm and facilitates cross-selling by encouraging online customers to also use offline channels (Gallino and Moreno 2014).

However, opponents of channel integration argue that: (a) Channel integration may decrease profit margins because of higher cost to serve customers in the physical stores than in the online channels (Gao and Su 2016), (b) Conflicts among channel partners are associated with integration of channels, mostly because of inappropriate compensation system and free-riding issues – and robust evidence that such conflicts significantly downgrade firm and channel performance (Eshghi and Ray 2021), (c) Channel integration is linked to increase in costly product returns (Ofek, Katona & Sarvary 2011), risk of privacy and data breach issues (Zhang et

al. 2010; Janakiraman, Lim & Rishika 2018), and potential for cannibalizing impact on the purchase with cross-channel price promotions (Breugelmans and Campo 2016).

The degree of integration (e.g., partial or full integration) and the retailer type also affect the channel integration-firm performance relationship. Integration of product assortment across channels, an important and cost-intensive channel integration activity, doesn't benefit many retailers. For general merchandisers like Target that have a wide variety of product assortment, partial integration is better than full integration as it mitigates "*the burden of limited expertise" (*Emrich, Paul and Rudolph 2015, p339). However, partial integration is detrimental to specialized retailers like Ace Hardware as it undermines customer expectation of expertise and deep-assortment from a limited-line, specialized retailer. Thus, strictly favoring cross-channel integration falls short in sufficiently accounting for the complexity associated with customer and retailer heterogeneity.

Given the significant investment in upgrading legacy systems and processes to implement channel integration, it is not surprising to see low uptake of channel integration among retailers – only 8% of the leading retailers report implementing an omnichannel strategy (Brightpearl and Multichannel Merchant Survey 2017). With the growing consumer expectations for a seamless move across channels, disentangling the performance enhancing and destroying effects of channel integration is fertile area for further research.

The following three broad research takeaways *summarize* the discussions of the firm-focused research theme of marketing mix management. First, *despite price-based competition from the online retailers, omnichannel retailers have the opportunity to better serve customers and justify higher prices*. Second, *with integrated marketing management and cross-channel*

effects–the firms can drive operational efficiency. Third, *a well-designed marketing campaign can help influence multichannel shopping behavior and firm performance*.

2.4.2.2 Firm strategy

The growth of e-commerce has added an additional layer of complexity and significance in devising and implementing marketing channel strategy. The importance of a firm's channel strategy decisions (e.g., channel organization, expansion, and coordination issues) and its effect on the firm performance reflects in the multichannel marketing literature across each era. We now discuss the marketing channel strategy related research published in each of the three eras.

Firm Strategy themes in Era 1: 1995 – 2004

Marketing strategy research in the first *era* tackled one key issue – disintermediation.

1. *Disintermediation and channel management*: Disintermediation, wherein manufacturers market directly to customers, pose challenges in the governance and management of channels. Since the commercialization of internet, the manufacturers' growing use of the direct-to-consumer channel has reshaped channel structure in several industries, including travel, insurance, and financial services. The degree of disintermediation often depends on the product category and channel partners' services that are difficult to replace economically (Alba and Lynch 1997). Given the compelling advantages that online channel provides over resellers, including lower cost structure, greater flexibility, and faster transactions-managers may ''widely assume that the Internet is cannibalistic [and] will replace all conventional ways of doing business'' (Porter 2001, p. 73). However, the research findings are not as clear.

Investigating the impact of disintermediation on profitability, Chiang, Chhajed and Hess (2003) show that a manufacturer's direct channel, which even though inefficient on its own, may not always be detrimental to the resellers and could improve overall profitability by reducing

inefficient double marginalization. Deleersnyder et al. (2002) examined the impact of internet channel addition on newspaper circulation and advertising revenues, to find channel cannibalization fears are overstated, and online channel addition need not be disruptive. Firms face channel addition decisions as new online channels such as mobile phones, mobile apps have proliferated. Analyzing the impact of new mobile news apps – Xu et al. (2014) observe a significant increase in consumer traffic to a news website when a mobile news app is added.

Firm Strategy themes in Era 2: 2005 – 2014

Marketing strategy *studies* in era 2 mainly dealt with the impact of channel expansion and aligning the multichannel structure with the firm strategy and external environment.

1. *Channel expansion and the firm value*: A critical part of channel strategy involves channel expansion decisions that have a long-term impact on firm performance, require considerable costs, and are irreversible (Chu, Chintagunta and Vilcassim 2007). Geyskens et al. (2002) show that, on average, the capital market reacts positively to the announcement of internet channel addition. The net effect is moderated by firm characteristics (e.g., bigger firms with few direct channels and early followers gain more benefits; more publicity about the internet channel amplifies the benefits). However, the measure of abnormal stock returns may suffer from the short-term view inherent in event studies. Addressing this gap, Cheng et al. (2007) add two alternative measures: *Economic Value Added* that refers to the difference between a firm's return on capital and cost of capital and *Market Value Added* that reflects the difference between a firm's total market value and capital invested. Consistent with earlier research, the authors show a positive and long-term impact of online channel addition on firm performance. Two common approaches to channel expansion include increasing distribution intensity, which refers to adding the number of channel entities (e.g., wholesalers or retailers; Bucklin, Siddarth and Silva-Risso

2008) and/or setting up a new channel to the firm's existing channel structure. Both approaches to channel expansion affect firm value. Homburg, Vollmayr and Hahn (2014) study the impact of major channel expansion announcements on firm value. Their results show that ceteris paribus, a new channel addition affects firm value positively; however, increased distribution intensity doesn't always help, and the outcome is contingent on firm, market, and channel strategies. For example, increased distribution intensity reduces value for firms operating in turbulent or competitive markets.

2. *Multichannel structure, firm strategy, and external environment*: With the proliferation of channels, the strategic role of multiple channels becomes even more important. National retailers such as JC Penny integrated its catalog, store, and internet channels and supported with a single channel organizational structure. Despite the growing role of multiple channels in the firm's competitive strategy, understanding about the fit among multichannel structure, business strategy and environmental conditions was limited. Examining the impact of channel integration and type of organization structure on firm performance – Kabadayi, Eyuboglu and Thomas (2007) show that channel organizational structure (i.e., bureaucratic or organic) that aligns to firm's business strategy (i.e., differentiation or cost leadership) and external environment drives firm sales and profitability. Viewing external environment across three dimensions: dynamism (refers to volatility and frequency of change), complexity (number and diversity of stakeholders), and munificence (resource availability and accessibility), the authors suggest a decentralized and informal channel structure for the firms pursuing a differentiated strategy and operating in a highly uncertain and munificent environment. They propose a bureaucratic channel structure for firms pursuing a cost leadership strategy and operating in a less uncertain, less munificent environment.

3. *Entry timing to multichannel adoption and firm performance:* With the growing importance of digital channels, incumbent store-based businesses faced a strategic choice to adopt online channels with the aim of gaining early mover advantage from technology and consumer preferences. Limited empirical research shows mixed results, and it is not clear if early mover advantage exists in the multichannel marketing context. Pentina, Pelton and Hasty (2009) show that early adoption of online sales channel, in general, *negatively* impacts long-term market share and net income. The firm's resource endowments such as physical store experience, catalog experience and firm size differently affect the entry timing-firm performance relationship. However, Lee and Grewal (2004) show that early mover advantage exists. Examining impact of the firm's speed of internet adoption or alliances formation (e.g., Best Buy partnered with Microsoft to launch its e-commerce operations) on firm performance, their results suggest that both adoption of internet as a communication channel and formation of e-alliances *positively* affect the retailer's stock value measured with Tobin's q. However, faster adoption of internet as sales channels, positively influences those retailers that have catalog operations. Comparing online retailers with multichannel retailers, Min and Wolfinbarger (2005) show that multichannel retailers benefit more than online retailers with higher market share and marketing efficiency (sales to marketing expense ratio), however, profit margins are lower for multichannel retailers' online sales than that of online retailers.

Notwithstanding the research focus on cross-channel effects to devise a multichannel strategy, adopting a multichannel strategy may not always be profitable and factors such as product type, retailer's cost, and competitor strategies affect profitability for a multichannel strategy (Zhang 2009). Yet, for many firms, multichannel strategy is fast becoming a competitive necessity.

Firm Strategy themes in Era 3: 2015 - 2021

In a role reversal of sorts, the focus in this era shifted from investigating the impact of the marginal online store, to that of the marginal offline store. Researchers focused on the marketing-operations interface as a key component of marketing strategy by studying last mile order fulfilment, particularly delivery services.

1. O*nline to offline expansion*: Reflecting the importance of multichannel offerings to better serve customers and enhance firm profitability, several online retailers such as Warby Parker eyewear, Harry's Razors and Casper mattresses have added physical stores (Binnie 2018). Research investigating the effects of adding a physical store to an established online retailer shows complementary cross-channel effects. For a firm with an established catalogue and online channel, a physical store opening cannibalizes catalogue sales in the short-term but improves overall sales in the long-term (Avery et al. 2012). Likewise, Pauwels and Neslin (2015) show that physical store addition cannibalizes revenue from the catalogue channel more than revenue from the internet, but total revenue increases with an increase in purchase frequency. For online retailers, adding a physical store improves overall demand as the store addition helps improve sales conversion and decrease product returns (Bell, Gallino and Moreno 2018). Moreover, Wang and Goldfarb (2017) show that an offline store opening stimulates online sales in the areas with no brand presence prior to store opening, suggesting that store opening has a "straight billboard" effect and provides informative advertising about the brand.

2. *Role of delivery in omnichannel marketing strategy*: In recent years, influencing customer demand with free and faster delivery has become an important measure of service quality. Leading retailers such as Home Depot reports that their investment in additional distribution centers to reduce delivery time has increased sales (Fisher, Gaur, and Kleinberger 2017).

However, the economic impact of faster delivery across both online and offline stores lacks generalizable results. Using a quasi-experiment involving a U.S. apparel retailer – Fisher, Gallino and Xu (2019) show that online sales increase by 1.45% when delivery time is reduced by one day. Faster delivery has a positive spillover effect on offline channels only in the locations that have a prior strong brand presence. Given the customer-centric focus in omnichannel retailing, other dimensions of service quality such as free shipping, returns, order tracking, ease of payments could be examined. The popularity of web-based delivery applications such as Just Eat, Uber, and Instacart that use 'an online-to-offline service platform, have implications for firm profitability. Using data from a fast-food company in China – Zhang, Pauwels and Peng (2019) show that addition of delivery apps hurt offline and total profits in the short-run (one week) but improves in the long run, suggesting a complementary effect and attractiveness of emerging sales channels.

We attempt to summarize the considerable progress made under the marketing strategy research theme, in the following three key takeaways. First, *impact of disintermediation on channel governance and management continues to be a topic of interest to both academia and practice.* Second, *online and mobile channel expansion complements offline channel and helps improve firm performance.* Third, *the entry timing to multichannel expansion requires careful assessment given the cost-intensive multichannel initiatives and complexity associated with customer heterogeneity.* Table 2.4 summarizes our key takeaways from the review - a total of twelve across the themes.

Table 2. 4 Key Takeaways from Customer and Firm-focused Research

Customer-Focused Research	**Firm-Focused Research**
Customer cost efficiency	Firm efficiency
(1) The role of branding and other signals to convey quality play an important role in a multichannel	(1) Despite price-based competition from the online retailers, omnichannel retailers can better serve customers and justify higher prices.

environment when price-based competition from the online retailer has increased. (2) Customer channel choices, which are a function of customer factors (e.g., individual, situational, and social) and channel attributes, develop over time and can be influenced by a well-designed marketing campaign. (3) A customer' social network affects customer's channel choices.	(2) With integrated marketing management and cross-channel effects–the firms can drive operational efficiency. (3) A well-designed marketing campaign can help influence multichannel shopping behavior and firm performance.
Customer experience across channels	Firm strategy
(1) Customer behavior varies across channels and related insights can help in better customer segmentation and targeting. (2) Multichannel customers are more profitable than single-channel customers; however, multichannel customer and profitability relationship depends on the product type (hedonic versus utilitarian products) and requires a careful consideration in a relational services sector (e.g., banking). (3) Integrated channel offerings positively affect customer attitude and behavior; however, they pose increasing data and privacy risks.	(1) Impact of disintermediation on channel governance and management continues to be a topic of interest to both academia and practice. (2) Online and mobile channel expansion complements offline channels and helps improve firm performance. (3) The short-term and long-term impact of channel integration on firm performance require careful assessment given the cost-intensive channel integration initiatives and complexity associated with the customer heterogeneity.

2.5 DOMINANT THEMES OF CONTEMPORARY RESEARCH, FROM CITATION ANALYSES

We use the Web of Science Social Sciences Citation Index to collect citation counts by the topics identified in the earlier two subsections. Since these include citations only for published works, and not unpublished ones, the numbers can be taken as a conservative estimate of impact. Table 2.5 summarizes the publication and citation counts for each research topic.

Table 2. 5 Articles and citation counts by research topic

Research category	Research topic	Number of articles	Total citations	Average citations/article
Customer cost efficiency	Information search cost	6	1740	290
	Customer channel choice	16	3419	214
	Research shopping	6	826	138
Customer experience	Cons behavior across channels	21	2816	134
	Cross-channel effects	13	887	68

Firm strategy	Channel addition	11	1216	111
Firm efficiency	Pricing	16	924	58
	Channel integration	14	1404	100
	Marcomm & distribution management	29	2121	73
Definitional issues	Definitional issues	4	1105	276

Notice from the "Total Citations" that the consumer factors have been cited a greater number of times compared to the firm factors even if firm factor related articles outnumber the consumer ones. A quick comparison of the citations per article will also reveal that on average articles with consumer topics get cited almost twice that of articles with firm topics. Clearly, the level of research interest in consumer topics is significantly greater than for firm topics. Customer cost efficiency topics and Consumer Behavior across Channels jump out as having driven a lot of research efforts based on the average citation counts. This is matched only by citation counts for definitional issues. Among firm topics, Channel Addition and Channel Integration seem to stand out in terms of average citations while Marketing Communications and Distribution Management had more articles and citations. Citations counts, average citations and the difference between them may not serve as a sharp metric of current relevance since the numbers above are cumulative and do not take into account how these measures of relevance have grown over time. So, to get a better sense of the currency of impact, in Figure 2.2, we compare the yearly citations counts by topics over time.

In terms of the top five contemporary topics, in order, we have Channel Integration, Marketing Communication & Distribution Management, Customer Channel Choice, Definitional Issues and Consumer Behavior across Channels. Of these, Channel Integration and Definitional Issues seem to have made the steepest gains in recent times, after being relatively less significant sources of citations in the late 2000s. They are followed by Marketing Communications & Distribution Management. Channel Addition, Cross-Channel Effects and Research Shopping are

the next rung of growth topics emerging mainly, from Era 2. While Customer Channel Choice and Consumer Behavior across Channels have remained a popular source of citations across the eras, it is interesting to note how Information Search Cost citations peaked around 2010 before steadily declining - largely matched in pattern by Pricing citations. This is not surprising given the close association made between consumer switching costs and retailer pricing power. The other interesting observation is the sharp uptick in citations coinciding with Era 3. On one hand, this is not surprising. As more researchers are drawn to the fold, following a critical threshold, citations may steadily increase. On the other hand, a fast-evolving channel ecosystem presents ever newer and more interesting problems in the domain.

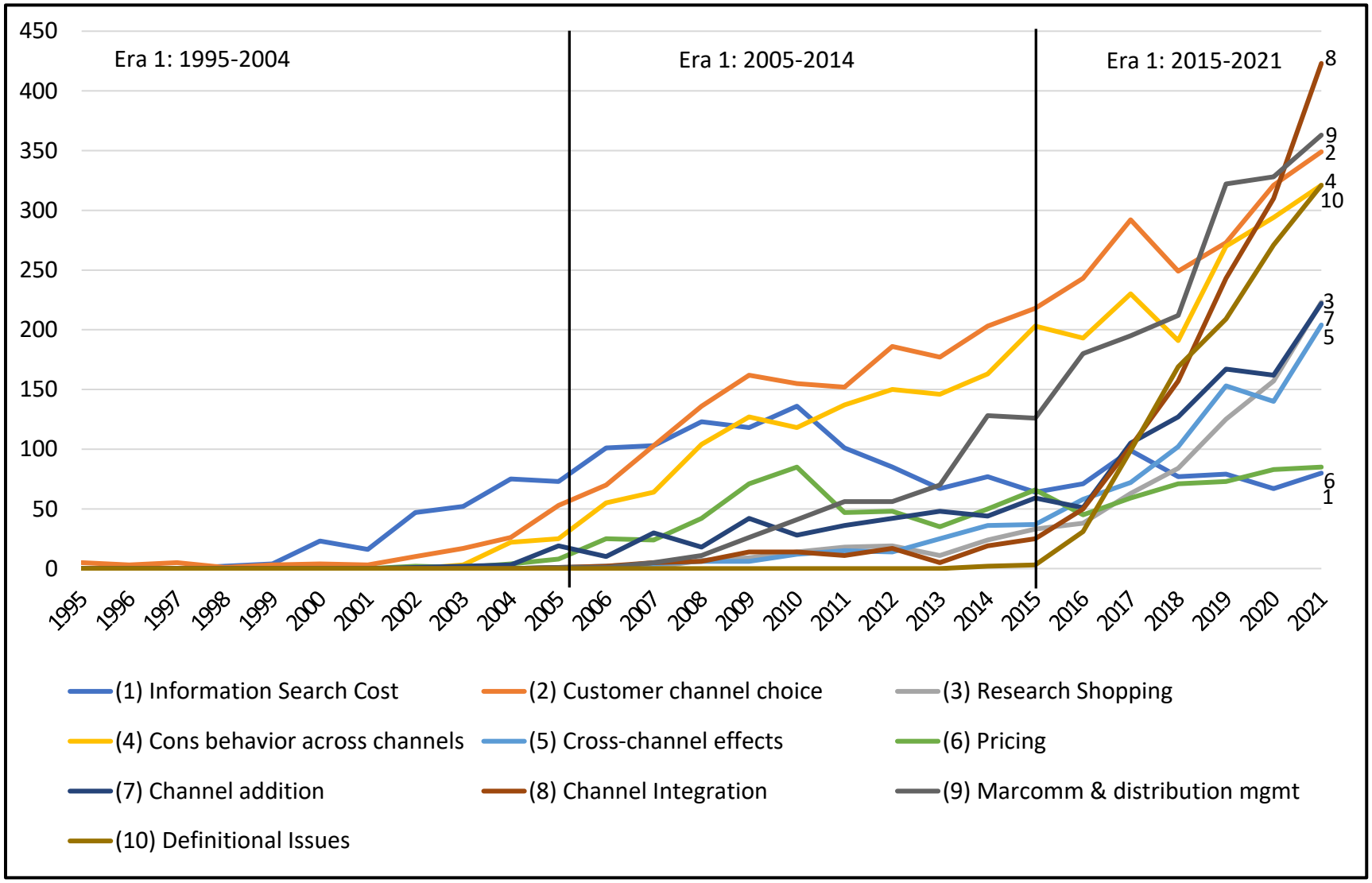

Figure 2. 2 Annual citation counts by research topic

Considering the trends in the citations, we see the following three dominant themes of the contemporary research efforts: (1) the antecedents and consequences of *consumer migration* across channels are acquiring increasing research attention and interest; (2) there is renewed interest in the *design and effectiveness of marketing activities* across channels; and (3) there are urgent and increasing efforts to *devise and sharpen the language* to deal with myriad complexities of emerging multichannel systems.

We now build on our earlier analyses and leverage the momentum evidenced in these themes, to offer some thoughts on potentially impactful future research opportunities.

2.6 FUTURE RESEARCH OPPORTUNITIES

Not surprisingly, the contemporary research themes reflect the emerging ecosystem. Emerging channels and enabling technologies like Augmented and Virtual Reality, Wearables, 3-D Mirrors and IOT are blurring the offline-online divide. These raise new questions about how multichannel firms engage with consumer communities, as well as consumer's channel migration, including whether it is becoming more irrelevant. These also challenge long held dogmas about marketing's role, and effectiveness, as companies grapple with the complexities of digital transformations. The complexities of the myriad new channels and related technologies are also challenging the language we bring to bear on our sensemaking. Is it even useful to talk about cross and multichannel management when the focus of much managerial energy is on integration? How do we calibrate degrees of integration – across consumer experiences, sales processes, inventory visibility, after sales service and warranty? How do we reconcile different communication channels with demand generation and order fulfillment across multiple consumer touchpoints? Are the usual metrics of performance appropriate in the age of influencer marketing, tweets, blockchains and non-fungible tokens? How do we identify and interpret

industry-level differences as they relate to multichannel research results given the published work largely reflects retailing-focused research[5]? While each of these would be appropriate research endeavors with potential to enhance our understanding of the emerging multichannel ecosystem, we point to the following four as key areas of future studies with a potential to advance theory as well as aid practice.

Harnessing Value from Consumer Communities: It is well recognized that social networks and evolving technologies empower consumers and ease the process by which firms engage with their customers (Lamberton and Stephen 2016). In a multichannel context with multiple consumer touchpoints, this presents new opportunities for firms to engage with consumer communities for co-creation of value, reputation building, crises management, capability building etc. However, these aspects are relatively under-researched in the multichannel marketing context. We believe these are significant issues and call for more research on these topics.[6]

Customer Migration and Privacy: Consumers' channel migration behaviors evolve as retailers make increasing commitment to omnichannel management. This will place increasing premium on tracking the digital footprint of the customer (Cui et al. 2020). However, how such digital "stalking" set up privacy concerns and consumer goodwill against the need for business efficiency and competitiveness, will continue to be critical considerations for the discipline. We feel this is a significant area of research for marketers, as newer business practices emerge.

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[5] We thank an anonymous reviewer for indicating industry-level differences as they relate to the research insights.

[6] We thank an anonymous reviewer for flagging the gap in research on harnessing the value from consumer communities.

Marketing's role in digital transformations: The fast pace of change in the technology ecosystem calls for revisiting marketing's role as companies undergo digital transformations. It is no secret that much of this transformation will require seamless collaboration between different functions including, but not limited to marketing, sales, operations, information systems and finance. However, given the central role of consumer experience, should the digital journey be explicitly led and curated by marketing? While some companies like Unilever seems to have taken that route (Tesseras, 2021), much distance still need to be covered to understand exactly how marketing's role is evolving in this cross-functional integration context (Moorman and Day 2016).

Entry, Exit and Governance: If anything, the last few decades since the advent of the internet has shown how technology can be harnessed by entrepreneurial creativity to completely reimagine existing marketing channels. This poses challenges for companies who must now decide whether to get on the bandwagon; and if so, when, and how? The scant empirical research on entry timing is ambivalent about early mover advantage (Min and Wolfinbarger 2005; Pentina, Pelton and Hasty 2009). There is also very little on exits. However, the Covid-19 pandemic has raised many questions on whether exiting 'offline completely' should be a key option for some companies. With operational integration being driving criteria, such entry and exit decisions are also interwoven with decisions on governance. The familiar trade-offs of cost efficiency versus strategic advantages are likely to play out as companies decide to make or buy the different portfolios of integration tasks. We believe this is an under-researched domain in our multichannel context, and one, which will inform both theory and practice significantly as newer business models emerge in the domain.

2.7 CONCLUSIONS

The growth of e-commerce has been a truly remarkable business phenomena in recent times. From 5.6% of retail sales in US in 2007 to 21.3% in 2020 (Ali 2021), this growth has significantly boosted research interest in multichannel marketing. We organize and review this disparate and growing literature in marketing over the span of a quarter century (1995-2021). We offer a dynamic perspective by tracing the relevant research findings of the time and their evolution across both customer and firm oriented research questions. Our efforts extract a set of twelve key takeaways. We also identify the trends in published work pointing to the dominating themes of contemporary research. Evolving consumer preferences coupled with increasing connectivity, digitization, and technological advances such as virtual reality, machine learning, and block chain are likely to accelerate adoption of omnichannel marketing. We hope our review will offer a useful tool to new researchers in the domain to understand this evolution. We expect this will help them interpret the context of the research results as they build their own research programs. We also hope the paper will help interested practitioners get a non-technical snapshot of the research literature as they explore strategic decisions or even consider collaborative efforts with academics. In particular, we hope our paper will be seen as a secular narrative that industry leaders in retailing and technology can use as a framework to build on the lessons of the past while making forward looking decisions. To this end, we have built this review around managerially oriented themes and questions, as well as summarize our key points in easy to access charts and figures. Last but not the least, we hope to encourage researchers to investigate the potentially important future research directions we identify.

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2.9 APPENDIX

Appendix 1 A Thematic Exploration of the Evolution of Research in Multichannel Marketing

Table 2. 6 Substituting similar keywords

Substitution	Keywords
Pricing	Price, price dispersion, Equilibrium price dispersion, price differentiation, price sensitivity, Price promotions, Price advertising, price self-matching, price competition, Online and offline price dispersion, price discrimination, multi-channel pricing, menu costs
Retailing	Retail trade, retail, retailer
Search cost	Buyer search costs, search, information seeking, information search, external search, consumer search, search costs, Information economic, Information economics
Online retailer	e-retailer, E-Tailing, online retailers, online retailing, Pure-play online retailer
Channel integration	Cross-channel integration, channel integration, channel integration quality, assortment integration, channel data integration, content integration, multichannel integration, channel coordination
Research shopping	Showrooming, webrooming
e-commerce	Electronic commerce, E-commerce, m-commerce, mobile commerce, online retail, online shopping
Customer relationship management	Customer Relationship, Customer relationship management (CRM), Customer-firm relationship, CRM
Internet markets	electronic marketplaces, electronic markets
Online marketing	digital marketing
Internet	Internet channel, online, online channel
Multichannel	Multi-channel, multiple channels, off-line and online, online/offline, on-line vs. off-line
Multichannel marketing	Multi-channel marketing
Consumer behavior	consumer behaviour, Shopper behavior, Consumer Decision-Making, Behavior, Multi-channel behavior, Strategic Customer Behavior, Shopping behavior
Omnichannel	Omni-channel
Omnichannel retailing	Omni-channel retailing
Multichannel retailing	Multi-channel retailing, multi-channel retailer, Multichannel marketing Retailing, Multichannel shopping, Multiple channel retailing
customer profitability	Customer lifetime value
cross-channel	cross-channel effects, Cross-channel promotion effects, cross-campaign effects, cross-effects

Table 2. 7 Frequency count of top twenty keywords

Rank	Keywords	Total	Era 1	Era 2	Era 3
1	Multichannel	58	2	(24)	⟨32⟩
2	Online channel	33	(17)	(12)	4
3	e-commerce	23	7	6	⟨10⟩
4	Pricing	20	4	7	⟨9⟩
5	Multichannel marketing	21	5	(10)	6
6	Customer relationship management	18	1	(10)	7
7	Retailing	18	2	(9)	7
8	Search cost	17	(11)	4	2
9	Channel integration	16	1	4	⟨11⟩
10	Consumer behavior	14	4	(8)	2
11	Competition	9	6	3	0
12	Omnichannel retailing	8	0	0	⟨8⟩
13	Channel of Distribution	7	1	3	3
14	customer profitability	6	1	2	3
15	Research shopping	6	0	0	6
16	Channel addition & Cannibalization	5	2	0	3
17	Cross-channel	5	0	1	4
18	Mobile	5	0	1	4
19	Choice	4	4	0	0
20	Customer experience	2	0	0	2

Note: For parsimony, we collapsed the following keywords: multichannel and multichannel retailing into multichannel; internet markets and online channel into online channel; internet marketing and multichannel marketing into multichannel marketing. Encircled keywords are most cited keywords for each respective era.

2.9.1 Definitional Issues

A considerable debate exists about the taxonomy and different definition of multichannel and omnichannel marketing. For example, multichannel marketing focuses on effective customer acquisition, retention, and development through management of multiple channels (Neslin et al. 2006; Zhang et al. 2010). In contrast, omnichannel marketing focuses on optimizing customer

experience through "*the synergetic management of the numerous available channels and customer touch points"* (Verhoef, Kannan and Inman 2015 p 176). However, there is variation in the way omnichannel has been defined and the following three articles reflect the various ways in which scholars have defined multichannel and omnichannel marketing. First, Beck and Rygl (2015) categorize crosschannel, multichannel and omnichannel retailing based on an increasing degree of channel interaction and integration. Second, Ailawadi and Farris (2017, p. 120) expanded the scope of omnichannel marketing to suggest that it "often encompasses not just the channels of distribution through which a supplier's products reach the consumer but also the channels of communication—owned, paid, and earned." Third, Cui et al. (2020), further expanded the scope of omnichannel marketing to include both customer and firm view. They define it as "the synergistic management of all customer touchpoints and channels both internal and external to the firm to ensure that the customer experience across channels as well as firm-side marketing activity, including marketing-mix and marketing communication (owned, paid, and earned), is optimized for both firms and their customers" (Cui et al. 2020, p 2). These variations notwithstanding, the importance of omnichannel to facilitate distribution, transactions, and communication between buyers and sellers is drawing attention from both academia and practice (Petersons, Balasubramanian & Bronnenberg 1998, Cui et al. 2020).

2.9.2 References for the 'Definitional Issues'

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Table 2. 8 List of multichannel marketing articles

	Article Title	Publication	Year
1	Comparing dynamic consumer choice in real and computer-simulated environments	Journal of consumer research	1992
2	Interactive home shopping: consumer, retailer, and manufacturer incentives to participate in electronic marketplaces	Journal of Marketing	1997
3	Reducing buyer search costs: Implications for electronic marketplaces	Marketing Science	1997
4	Frictionless commerce? A comparison of Internet and conventional retailers.	Marketing Science	2000
5	Wine online: Search costs and competition on price, quality, and distribution	Marketing Science	2000
6	Consumer choice behavior in online and traditional supermarkets: The effects of brand name, price, and other search attributes	International Journal of Research in Marketing	2000
7	Expanding to the Internet: Pricing and Communications Strategies When Firms Compete on Multiple Channels.	Journal of Marketing Research	2000
8	Will the growth of multi-channel retailing diminish the pricing efficiency of the web?	Journal of Retailing	2001
9	The market valuation of internet channel additions	Journal of Marketing	2002
10	How cannibalistic is the Internet channel? A study of the newspaper industry in the United Kingdom and The Netherlands	International Journal of Research in Marketing	2002
11	"Do better customers utilize electronic distribution channels? The case of PC banking".	Management Science	2002
12	The effect of dynamic retail experiences on experiential perceptions of value: an internet and catalog comparison	Journal of Retailing	2002
13	Multichannel customer management: The benefits and challenges	Journal of Database Marketing & Customer Strategy Management	2002
14	What Attracts Customers to Online Stores, and What Keeps Them Coming Back?	Journal of the Academy of Marketing Science	2002
15	Multi-channel shopping: understanding what drives channel choice	Journal of Consumer Marketing	2002
16	Determinants of online channel use and overall satisfaction with a relational, multichannel service provider	Journal of the Academy of Marketing Science	2003
17	Customer satisfaction and loyalty in online and offline environments	International Journal of Research in Marketing	2003

18	Direct Marketing, Indirect Profits: A Strategic Analysis of Dual-Channel Supply-Chain Design	Management Science	2003
19	A comparison of Online and offline consumer brand loyalty	Management Science	2003
20	Clicks and Mortar: The Effect of On-line Activities on Off-line Sales	Marketing Letters	2003
21	Consumer search for information in the digital age: An empirical study of prepurchase search for automobiles	Journal of Interactive Marketing	2003
22	On the efficiency of Internet markets for consumer goods	Journal of Public Policy & Marketing	2003
23	Determinants of online channel use and overall satisfaction with a relational, multichannel service provider	Journal of the Academy of Marketing Science	2003
24	The Impact of the Internet on Information Search for Automobiles	Journal of Marketing Research	2003
25	Price levels and price dispersion within and across multiple retailer types: Further evidence and extension	Journal of the Academy of Marketing Science	2004
26	Behavioural differences between consumers attracted to shopping online versus traditional supermarkets: implications for enterprise design and marketing strategy	Int. J. Internet Marketing and Advertising	2004
27	Customer retailer loyalty in the context of multiple channel strategies	Journal of Retailing	2004
28	Temporal price dispersion: Evidence from an online consumer electronics market	Journal of Interactive Marketing	2004
29	The role of multichannel integration in customer relationship management	Industrial Marketing Management	2004
30	E-tailers versus retailers: Which factors determine consumer preferences	Journal of Business Research	2004
31	Internet retailing: enablers, limiters and market consequences	Journal of Business Research	2004
32	Price dispersion on the internet: A review and directions for future research	Journal of Interactive Marketing	2004
33	Signaling the trustworthiness of small online retailers	Journal of Interactive Marketing	2004
34	Managing Marketing Communications with Multichannel Customers	Journal of Marketing	2005
35	Explaining consumer acceptance of handheld Internet devices	Journal of Business Research	2005
36	Consumers in a multichannel environment: Product utility, process utility, and channel choice	Journal of Interactive Marketing	2005
37	Online/In-Store Integration and Customer Retention	Journal of service research	2005
38	Who are the multichannel shoppers and how do they perform?: Correlates of multichannel shopping behavior	Journal of Interactive Marketing	2005
39	Opportunities and challenges in multichannel marketing: An introduction to the special issue	Journal of Interactive Marketing	2005

40	Market share, profit margin, and marketing efficiency of early movers, bricks and clicks, and specialists in e-commerce	Journal of Business Research	2005
41	Multi-channel service retailing: The effects of channel performance satisfaction on behavioral intentions	Journal of Retailing	2006
42	Challenges and Opportunities in Multichannel Customer Management	Journal of Service Research	2006
43	A comparison of time-varying online price and price dispersion between multichannel and dotcom DVD retailers	Journal of Interactive Marketing	2006
44	How the Internet lowers prices: Evidence from matched survey and automobile transaction data	Journal of Marketing Research	2006
45	Multichannel customer management: Understanding the research-shopper phenomenon	International Journal of Research in Marketing	2007
46	From catalog to Web: B2B multi-channel marketing strategy	Industrial Marketing Management	2007
47	Identifying Cross-Channel Dissynergies for Multichannel Service Providers	Journal of Service Research	2007
48	Multichannel Shopping: Causes and Consequences	Journal of Marketing	2007
49	The performance implications of designing multiple channels to fit with strategy and environment	Journal of Marketing	2007
50	Service Quality in Multichannel Services Employing Virtual Channels	Journal of Service Research	2007
51	Assessing the Economic Value of Distribution Channels: An Application to the Personal Computer Industry	Journal of Marketing Research	2007
52	The impact of the Internet on consumers' use of information sources for automobiles	Journal of Consumer Research	2007
53	Effects of online communication practices on consumer perceptions of performance uncertainty for search and experience goods	Journal of Retailing	2007
54	Multi-channel strategy in business-to-business markets: Prospects and problems	Industrial Marketing Management	2007
55	Multichannel Shopper Segments and Their Covariates	Journal of Retailing	2008
56	Customer Channel Migration	Journal of Marketing Research	2008
57	A comparison of within-household price sensitivity across online and offline channels.	Marketing Science	2008
58	Key Issues in Multichannel Customer Management: Current Knowledge and Future Directions	Journal of Interactive Marketing	2009
59	Reciprocal Effects Between Multichannel Retailers' Offline and Online Brand Images	Journal of Retailing	2009

60	Structure, people and process challenges of multichannel marketing: Insights from marketers.	Journal of Database Marketing & Customer Strategy Management	2009
61	What induces online loyalty? Online versus offline brand images	Journal of Business Research	2009
62	Online Pricing: Review and Directions for Research	Journal of Interactive Marketing	2009
63	Electronic and Physical Market Channels: A Multiyear Investigation in a Market for Products of Uncertain Quality	Management Science	2009
64	Competition Between Local and Electronic Markets: How the Benefit of Buying Online Depends on Where You Live	Management Science	2009
65	Retailers' Multichannel and Price Advertising Strategies	Marketing Science	2009
66	Battle of the Retail Channels: How Product Selection and Geography Drive Cross-Channel Competition	Management Science	2009
67	A Hierarchical Marketing Communications Model of Online and Offline Media Synergies	Journal of Interactive Marketing	2009
68	Emerging Issues in Retailing Research	Journal of Retailing	2009
69	Performance Implications of Online Entry Timing by Store-Based Retailers: A Longitudinal Investigation	Journal of Retailing	2009
70	The effectiveness of customized promotions in online and offline stores	Journal of marketing research	2009
71	Marketing's Profit Impact: Quantifying Online and Off-line Funnel Progression	Marketing Science	2010
72	Managing Marketing Channel Multiplicity	Journal of Service Research	2010
73	"Spatiotemporal analysis of imitation behavior across new buyers at an online grocery retailer"	Journal of marketing research	2010
74	Channel design, coordination, and performance: Future research directions	Marketing Letters	2010
75	Consumer Behavior in a Multichannel, Multimedia Retailing Environment	Journal of Interactive Marketing	2010
76	Strategic Online and Offline Retail Pricing: A Review and Research Agenda	Journal of Interactive Marketing	2010
77	Emerging Perspectives on Marketing in a Multichannel and Multimedia Retailing Environment	Journal of Interactive Marketing	2010
78	Brand Equity Management in a Multichannel, Multimedia Retail Environment	Journal of Interactive Marketing	2010
79	Understanding multi-channel banking customers	Journal of Business Research	2010
80	Crafting Integrated Multichannel Retailing Strategies	Journal of Interactive Marketing	2010

81	An Empirical Analysis of Shopping Behavior Across Online and Offline Channels for Grocery Products: The Moderating Effects of Household and Product Characteristics	Journal of Interactive Marketing	2010
82	Multichannel Price Differentiation: An Empirical Investigation of Existence and Causes	International Journal of Research in Marketing	2010
83	A customer lifetime value-based approach to marketing in the multichannel, multimedia retailing environment.	Journal of Interactive Marketing	2010
84	Innovations in Shopper Marketing: Current Insights and Future Research Issues	Journal of Retailing	2011
85	``Bricks and Clicks": The Impact of Product Returns on the Strategies of Multichannel Retailers	Marketing Science	2011
86	Does Online Information Drive Offline Revenues? Only for Specific Products and Consumer Segments!	Journal of Retailing	2011
87	Decision Process Evolution in Customer Channel Choice	Journal of Marketing	2011
88	Advertising bans and the substitutability of online and offline advertising.	Journal of Marketing Research	2011
89	Quantifying Transaction Costs in Online/Off-line Grocery Channel Choice	Marketing Science	2012
90	Adding Bricks to Clicks: Predicting the Patterns of Cross-Channel Elasticities Over Time	Journal of Marketing	2012
91	Transference and congruence effects on purchase intentions in online stores of multi-channel retailers: initial evidence from the U.S. and South Korea	Journal of the Academy of Marketing Science	2012
92	Information Search and Purchase Patterns in a Multichannel Service Industry	Services Marketing Quarterly	2012
93	Understanding consumers' multichannel choices across the different stages of the buying process	Marketing Letters	2012
94	Are Multichannel Customers Really More Valuable? The Moderating Role of Product Category Characteristics	Journal of Marketing	2013
95	Cross-channel free-riding consumer behavior in a multichannel environment: An investigation of shopping motives, sociodemographic and product categories	Journal of Retailing and Consumer Services	2013
96	Effects of Multi-Channel Marketing on Consumers' Online Search Behavior: The Power of Multiple Points of Connection	Journal of Advertising Research	2013
97	Integration of Online and Offline Channels in Retail: The Impact of Sharing Reliable Inventory Availability Information	Management Science	2014
98	"Firm value creation through major channel expansions: Evidence from an event study in the United States, Germany, and China".	Journal of Marketing	2014

99	"Managing revenue across retail channels: The interplay of service performance and direct marketing"	Journal of Marketing	2014
100	News Media Channels: Complements or Substitutes? Evidence from Mobile Phone Usage	Journal of Marketing	2014
101	"Driving Online and Offline Sales: The Cross-channel Effects of Traditional, Online Display, and Paid Search Advertising,"	Journal of Marketing Research	2014
102	From multi-channel retailing to omni-channel retailing: Introduction to the special issue on multi-channel retailing	Journal of Retailing	2015
103	Categorization of multiple channel retailing in Multi-, Cross-, and Omni-Channel Retailing for retailers and retailing	Journal of Retailing and Consumer Services	2015
104	Social Contagion and Customer Adoption of New Sales Channels	Journal of Retailing	2015
105	The Evolution of Marketing Channel Research Domains and Methodologies: An Integrative Review and Future Directions	Journal of Retailing	2015
106	The impact of a homogenous versus a prototypical Web design on online retail patronage for multichannel providers	International Journal of Research in Marketing	2015
107	Integrating Bricks with Clicks: Retailer-Level and Channel-Level Outcomes of Online–Offline Channel Integration	Journal of Retailing	2015
108	Leveraging Distribution to Maximize Firm Performance in Emerging Markets	Journal of Retailing	2015
109	The Impact of Different Touchpoints on Brand Consideration	Journal of Retailing	2015
110	Shopping Benefits of Multichannel Assortment Integration and the Moderating Role of Retailer Type	Journal of Retailing	2015
111	The Impact of the Multi-channel Retail Mix on Online Store Choice: Does Online Experience Matter?	Journal of Retailing	2015
112	The Impact of Cross-Channel Integration on Retailers' Sales Growth	Journal of Retailing	2015
113	Building With Bricks and Mortar: The Revenue Impact of Opening Physical Stores in a Multichannel Environment	Journal of Retailing	2015
114	The Hare and the Tortoise: Do Earlier Adopters of Online Channels Purchase More?	Journal of Retailing	2015
115	Engaging consumers on new integrated multichannel retail settings: Challenges for retailers	Journal of Retailing and Consumer Services	2015
116	Multichannel customer segmentation: does the after-sales channel matter? A replication and extension.	International Journal of Research in Marketing	2015
117	Distributing Through Multiple Channels in Industrial Wholesaling: How Many and How Much?	Journal of the Academy of Marketing Science	2015

118	Can Marketing Campaigns Induce Multichannel Buying and More Profitable Customers? A Field Experiment	Management Science	2015
119	Agency Selling or Reselling? Channel Structures in Electronic Retailing	Management Science	2016
120	The effectiveness of different forms of online advertising for purchase conversion in a multiple-channel attribution framework.	International journal of research in marketing	2016
121	Feeling Close from Afar: The Role of Psychological Distance in Offsetting Distrust in Unfamiliar Online Retailers	Journal of Retailing	2016
122	Roles of retailer tactics and customer-specific factors in shopper marketing: Substantive, methodological, and conceptual issues (Editorial)	Journal of Business Research	2016
123	Does Greater Online Assortment Pay? An Empirical Study Using Matched Online and Catalog Shoppers.	Journal of Retailing	2016
124	A Bigger Slice of the Multichannel Grocery Pie: When Does Consumers' Online Channel Use Expand Retailers' Share of Wallet?	Journal of Retailing	2016
125	Segmenting multichannel consumers across search, purchase and after-sales	Journal of Retailing and Consumer Services	2016
126	Internet or store? An ethnographic study of consumers' internet and store-based grocery shopping practices	Journal of Retailing and Consumer Services	2016
127	Can Marketing Campaigns Induce Multichannel Buying and More Profitable Customers? A Field Experiment	Management Science	2016
128	Cross-Channel Effects of Price Promotions: An Empirical Analysis of the Multi-Channel Grocery Retail Sector	Journal of Retailing	2016
129	The path to purchase and attribution modeling: Introduction to special section	International Journal of Research in Marketing	2016
130	"Does the nature of the interaction matter? Understanding customer channel choice for purchases and communications"	Journal of Service Research	2016
131	Consumers' Cross-Channel Use in Online and Offline Purchases: An Analysis of Cross-Media and Cross-Channel Behaviors between Products	Journal of Advertising Research	2016
132	Are multichannel customers really more valuable? An analysis of banking services"	International Journal of Research in Marketing	2016
133	The Effects of Channel Experiences and Direct Marketing on Customer Retention in Multichannel Settings	Journal of Interactive Marketing	2016
134	How omni-channel can be the future of retailing	Decision	2016
135	When Do Online Consumers Shop in an Offline Store: The Moderating Effects of Product Characteristics.	Journal of Marketing Channels	2016

136	Helping Firms Reduce Complexity in Multichannel Online Data: A New Taxonomy-Based Approach for Customer Journeys	Journal of Retailing	2016
137	How Does Adoption of the Outlet Channel Impact Customers' Spending in the Retail Stores: Conflict or Synergy?	Management Science	2016
138	Omnichannel Retail Operations with Buy-Online-and-Pick-up-in-Store (check lit review section for set of papers on OC)	Management Science	2016
139	Measuring Multichannel Advertising Response	Management Science	2016
140	Organizational Multichannel Differentiation: An Analysis of Its Impact on Channel Relationships and Company Sales Success	Journal of Marketing	2017
141	Can Offline Stores Drive Online Sales?	Journal of Marketing Research	2017
142	Managing Multi- and Omni-Channel Distribution: Metrics and Research Directions	Journal of Retailing	2017
143	"What happens online stays offline? Segment-specific online and offline effects of banner advertisements"	Journal of Marketing Research	2017
144	Omnichannel-based promotions' effects on purchase behavior and brand image	Journal Of Retailing and Consumer Services	2017
145	Consumer willingness to pay across retail channels	Journal Of Retailing and Consumer Services	2017
146	Do channel integration efforts pay-off in terms of online and offline customer loyalty?	International Journal of Retail & Distribution Management	2017
147	Understanding loyalty in multichannel retailing: the role of brand trust and brand attachment	International Journal of Retail & Distribution Management	2017
148	The Showrooming Phenomenon: It's More than Just About Price	Journal of Interactive Marketing	2017
149	Match Your Own Price? Self-Matching as a Retailer's Multichannel Pricing Strategy	Management Science	2017
150	Toward a three-dimensional framework for omni-channel	Journal of Business Research	2017
151	Retailing in today's world: Multiple channels and other strategic decisions affecting firm performance	Journal Of Retailing and Consumer Services	2017
152	Does Offline TV Advertising Affect Online Chatter? Quasi-Experimental Analysis Using Synthetic Control	Marketing Science	2017
153	Impact of customers' assessment of website attributes on e-relationship in the securities brokerage industry: A multichannel perspective	Journal of Retailing and Consumer Services	2017
154	Offline Showrooms in Omnichannel Retail: Demand and Operational Benefits	Management Science	2018

155	Device Switching in Online Purchasing: Examining the Strategic Contingencies	Journal of Marketing	2018
156	Planning and implementing an effective omnichannel marketing program	International Journal of Retail & Distribution Management	2018
157	The Effects of Search-Related and Purchase-Related Mobile App Additions on Retailers' Shareholder Wealth: The Roles of Firm Size, Product Category, and Customer Segment	Journal of Retailing	2018
158	Omnichannel Service Operations with Online and Offline Self-Order Technologies	Management Science	2018
159	The Effect of House Ads on Multichannel Sales	Journal of Interactive Marketing	2018
160	Investigating the effectiveness of retailers' mobile applications in determining customer satisfaction and patronage intentions?	Journal of Retailing and Consumer Services	2018
161	Online Auctions and Multichannel Retailing	Management Science	2018
162	Understanding the Omnichannel Customer Journey: Determinants of Interaction Choice	Journal of Interactive Marketing	2018
163	Determinants of Retailers' Cross-channel Integration: An Innovation Diffusion Perspective on Omni-channel Retailing	Journal of Interactive Marketing	2018
164	The Effect of a Data Breach Announcement on Customer Behavior: Evidence from a Multichannel Retailer	Journal of Marketing	2018
165	Showrooming and Webrooming: Information Externalities Between Online and Offline Sellers	Marketing Science	2018
166	Online Auctions and Multichannel Retailing	Management Science	2018
167	Competitive Strategies for Brick-and-Mortar Stores to Counter "Showrooming"	Management Science	2018
168	Why is Price Dispersion Higher Online than Offline? The Impact of Retailer Type and Shopping Risk on Price Dispersion	Journal of Retailing	2018
169	Online Category Pricing at a Multichannel Grocery Retailer	Journal of Interactive Marketing	2019
170	The Value of Rapid Delivery in Omnichannel Retailing	Journal of Marketing Research	2019
171	Feeling Confident and Smart with Webrooming: Understanding the Consumer's Path to Satisfaction	Journal of Interactive Marketing	2019
172	Customer engagement through omnichannel retailing: The effects of channel integration quality	Industrial Marketing Management	2019
173	The Effect of Cross-Channel Integration on Cost Efficiency	Journal of Interactive Marketing	2019

174	The Impact of Adding Online-to-Offline Service Platform Channels on Firms' Offline and Total Sales and Profits	Journal of Interactive Marketing	2019
175	Reconceptualizing Integration Quality Dynamics for Omnichannel Marketing	Industrial Marketing Management	2020
176	The role of the store in managing post purchase complaints for omnichannel shoppers.	Journal of Business Research	2020
177	Identifying omnichannel deal prone segments, their antecedents, and their consequences	Journal of Retailing	2020
178	Informational Challenges in Omnichannel Marketing: Remedies and Future Research	Journal of Marketing	2020
179	Omnichannel marketing: Are cross-channel effects symmetric?	International Journal of Research in Marketing	2020
180	Crafting the customer experience in omnichannel contexts: The role of channel integration.	Journal of Business Research	2021
181	Omnichannel battle between Amazon and Walmart: Is the focus on delivery the best strategy?	Journal of Business Research	2021

3 THE EFFECTIVENESS OF OMNICHANNEL INTEGRATION: THEORY AND EVIDENCE

3.1 ABSTRACT

Omnichannel strategy is increasingly seen as crucial for a retailer to evolve with the times and offer differentiating value to their customers. Channel integration is a key element of this strategy, referring to the degree to which a retailer coordinates functions across its different off- and online distribution channels. This coordination provides significant value to consumers, enabling seamless transitions in their journey across different channels. We offer a theory to suggest that this value notwithstanding, consumer expectations and coordination costs impose significant boundary conditions determining retail business outcomes. As adoption of omnichannel grows, the emerging capabilities in the industry inevitably drive runaway consumer expectations, which the retailer is unable to fulfill without a high degree of channel integration. However, such high levels of integration require synchronizing myriad operational interfaces that come at high coordination costs. Using data of 81 publicly traded U.S. chain retailers for 2008-2019, we find while channel integration can deliver on their value proposition, runaway consumer expectations can dent these outcomes and that, surprisingly, advertising can exacerbate this effect. Our theory reveal how certain characteristics of coordination costs can derail the strategic dividends from such channel integration. Retailers with greater potential for coordination efficiencies tend to benefit more from channel integration.

Keywords: Channel Integration, Omnichannel Retailing, Coordination Costs, Runaway Consumer Expectations, Strategic Dividend, Text Mining, Panel Data

3.2 INTRODUCTION

Channel integration is a key element of retailers' omnichannel strategy. Here, channel integration refers to the degree to which a retailer coordinates the strategy, management and implementation of its marketing mix, operational systems, and organizational structures across its different off- and online distribution channels in anticipation of an enhanced consumer experience. As consumers in our ever more connected world migrate between on- and off-line channels, curating a seamless migration is increasingly seen as an important contributor to a superior buying experience. Consider the following excerpt from Repko (2022) referring to a statement by Tom Ward, chief e-commerce officer for Walmart U.S.:

> *"We don't want to show any friction. We don't want to show any plumbing," … "We want to solve all the magic behind the scenes and make it seamless so they can buy a filet steak and a bag of apples and a T-shirt and a microwave and they can get it fulfilled anywhere that they want to get it fulfilled."*

Amidst the ongoing digital transformations of our business ecosystems, it is little surprise that such channel integration has become almost *de rigueur* in strategy discussions, with the scale and scope of integrations being key elements of the retailers' omnichannel strategy to evolve with the times and offer differentiating value to their customers. In an industry survey a few years back, upwards of 53% of the leading retailers planned to invest in significant channel integration (Brightpearl and Multichannel Merchant Survey 2017). Complementing this, as much as 20% (and increasing) of the marketing budget of firms already go to related initiatives to enhance customer experience (Moorman 2020). Yet, the complexity of these endeavors in a fast-paced environment can be significant. The sheer magnitude of the tasks can be compounded by runaway consumer expectations and together, derail the retailer's desired outcomes. In this

paper we study how the level of channel integration impacts the retailer's business outcomes. In the parlance of omnichannel retailing, the spectrum of integration ranges from little coordination, the antithesis of omnichannel, to where a retailer achieves full functional integration of all its channels (Neslin 2022, p. 112). There are several motivating factors for our study.

At a basic level, channel integrations harmonize point-of-sale systems to offer consistent prices and product assortments to customers across different channels. However, there is much more to it. It requires synchronizing different business processes, people, vendors, and technology (Gallino and Moreno 2014; Cao and Li 2015; Wiener, Hobbach & Saunders 2018). This synchronization needs cooperation from different functional entities, some internal and others external. But that is not enough, even in the context of retailers that are mostly vertically integrated, where cooperation can be taken as given, there are looming costs of operations; mistakes leave little time for adjustments, making learning and adaptations costly; interfaces between different functions (e.g., logistics, inventory, information systems and marketing) present unforeseen problems – some related to technology, others deriving from human loci – incentives, shirking and error; unforeseen changes in the business environment disrupt plans and force reprioritizations, and much more. So, crucially, it is important to look at synchronization through the lens of coordination, which involves effective division of labor, allocation of resources, and the requisite monitoring and control to achieve joint and individual tasks (Gulati, Wohlgezogen, and Zhelyazkov, 2012). All of these invoke significant coordination costs for any firm attempting a high degree of channel integration, and such coordination has been shown to be important considerations for both organization design (Dessein, Lo, and Minami, 2022) and firm outcomes (Ghazimatin, Mooi, and Heide, 2023). These concerns are illustrated from a retail practice perspective, in the following excerpts from Guy (2015):

"Retailers have rolled out the "shop anywhere, anytime" strategies that customers want, but they are grappling with how to handle the resulting inventory and financial challenges…"

"Competing with pure-play e-commerce retailers and accommodating the multitude of new fulfillment options requires a significant increase in supply chain flexibility and better integration between the physical store and e-commerce network,"

The coordination challenges notwithstanding, retailers face significant emergent supply side pressures to integrate their channel functions. For many chain retailers, channel integration efforts seriously commenced only in the early 2000s, mostly limited to giving customers a choice to shop on or offline for similar products (Aberdeen Group 2012; Herhausen et al. 2015; Vaishnav and Ray 2023). As more retailers got on board, getting on the bandwagon of the emerging industry evolution was important for many retailers to not be left behind. This likely dominated concerns with uncertain future payoffs or operational challenges at that time. Emerging technology in the later part of the decade such as augmented and virtual reality, automated service resolutions, along with real time order, shipment and inventory tracking, allowed retailers to promise an enhanced omnichannel buying experience to their customers. As some retailers adopted these, it further piled on pressure on the others to adopt them in order not to lose their market position. Yet, getting on the bandwagon does not guarantee creating and delivering the purported value.

The emerging capabilities in the industry inevitably drive consumer expectations which are compounded by retail claims of value through their channel integration efforts. To deliver on

these expectations, the retailer would necessarily require a high level of functional integration. Without that, coordination gaps between functions (e.g. procurement, inventory, marketing, sales) may lead to internal administration costs such as inter-department conflicts, cannibalization etc., which may then manifest in customer side shortcomings such as stockouts, mismatched channel offerings and promotions, customer service breakdowns etc. So, below some threshold level of channel integration, consumer expectations may outstrip retailer abilities to deliver on the promises.

Not surprisingly, the recognition of these tensions over time has also been accompanied by increasing calls to account for the financial returns on channel integration efforts (van Baal 2014; Cao and Li 2015). For example, although a substantial 74% of retailers acknowledge the importance of omnichannel strategies for their business outcomes (Smart Insights 2018), less than 17% express satisfaction with their implementation efforts (Statista 2021). Some have explicitly warned that firms risk spreading themselves too thin in their pursuit of a seamless cross-channel customer experience relative to the value that they can extract (Tode 2017; Dennis 2018). Nevertheless, despite a growing literature (e.g. Zhang et al. 2010; Herhausen et al. 2015; Cao and Li 2015; Ailawadi and Farris 2017; Neslin 2022), comprehensive empirical evidence of how channel integrations and firm's financial performance are related is quite limited (cf. Oh, Teo & Sambamurthy 2012; Gallino & Moreno 2014; Cao & Li 2015; Tagashira & Minami 2019). This limitation has important implications.

First, without a better evidence-based understanding of how channel integration and financial performance are related, questions around the business case of investing in emerging new technologies (e.g. sensors and advanced data analytics) will linger (van Baal 2014).

Second, availability of data over a sufficiently long timeframe to study these relations have been a constraint earlier (e.g. Oh, Teo & Sambamurthy 2012; Gallino & Moreno 2014; Cao & Li 2015; Tagashira & Minami 2019). Studies with shorter time frame, especially in early-stage adoptions, are often inadequate to study these relations, given the high-entropy of initial learning and adjustments with firms navigating through the implementations. With more than a decade since the start of serious integration efforts, we are at a stage where it is reasonable to expect a more steady-state estimate of the impact of functional integration of channels.

Third, early investigations of channel integration were often limited to the key technology of the times such as the introduction of "Buy online and pick-up in-store," BOPIS (Gallino & Moreno 2014), and cross-channel information integration (Herhausen et al. 2015). However, newer technologies and a maturing industry have enabled much greater scope of channel integration, enabling greater value creation, but which may also have invited significant coordination challenges to undermine any presumed value addition. These have rarely been accounted for in earlier studies (cf. Cao & Li 2015), thereby greatly limiting the inferences one can draw from the results.

To address these, we pose three research questions: (a) Is there evidence that channel integration creates consumer value? When does channel integration create value? (b) How significant are the coordination costs faced by firms? (c) How is channel integration related to a firm's financial performance?

Our study examines data of 81 publicly traded U.S. chain retailers over a period from 2008 to 2019. Building on prior studies, we distinguish among four generic levels of channel

integration: low integration, medium integration, high integration, and very high integration.[7] In support of the value-adding role, we find retail revenue is positively related to the level of channel integration. However, consistent with the idea that consumers' expectations outstrip retail ability to deliver value below a threshold level of integration, this result is only true at high levels of channel integration. At lower levels of channel integration an increasing gap between consumer expectations and retailer's ability to deliver on their promises can present increasing barriers to the value generating proposition. Consistent with this, we observe revenue is *negatively* related to the level of channel integration at lower levels. We also observe that the retailer's advertising expenses, that drive up consumer expectations and presumably increase the gap, predictably worsen the revenue – integration relation at lower levels. Significant coordination costs of integration can undermine the net benefits retailers can derive. Predictably, we find retailers' return on assets (ROA) is *negatively* related to channel integration in the aggregate. Importantly, we find evidence that factors that exacerbate the coordination challenges amplify this negative relation. In particular, the extent of the retailer's store presence negatively moderates the ROA – integration relation; larger number of bricks and mortar stores presumably amplifying the coordination challenges. On the other hand, factors that enabled retailers to learn about efficient coordination dampens the negative ROA – integration relation. We find evidence of this learning-by-doing factor in the positive interaction effect of past industry turbulence. Our results establish that while there are clear merits to a high degree of channel integration there are important boundary conditions. Runaway consumer expectations and ballooning coordination costs can be significant enough to undermine the payoff for the firm. To the best of our

[7] We discuss our measurement approach in later section.

knowledge, we are the first to document this and ours is the most comprehensive study to date of how channel integration and the firm's financial performance are related.

In subsequent sections, we delve into the related literature, lay the conceptual groundwork, and describe the research context. This is followed by an outline of our empirical estimation, a discussion of the results, conclusions, and potential avenues for future research.

3.3 BACKGROUND LITERATURE

Literature on channel integration falls into two distinct streams. The first examines consumer-centric outcomes like customer satisfaction and loyalty (Wallace, Giese, and Johnson 2004; Bendoly et al. 2005; van Baal 2014; Lee et al. 2019). The second stream, which aligns more closely with our research, investigates channel integration's impact on firm performance. We briefly summarize this latter literature as relevant to our paper.[8]

Integration of business processes and protocols have been shown to drive firm performance (Amit and Zott 2001). Not surprisingly, channel integration has also been argued to drive firm performance. Several early studies in this domain are analytical and descriptive (e.g. Zettelmeyer 2000; Berger, Lee, & Weinberg 2006; Ofek, Katona, and Sarvary 2011). Many of these clarify the emerging context and others provide managerial frameworks interpreting the prospective landscape of multichannel marketing (Neslin et al. 2006; Neslin and Shankar 2009; Shankar and Yadav 2010; Zhang et al. 2010). The dominant themes here relate to the efficiencies, competitive benefits, and customer value associated with channel integration. E.g.,

[8] See Web-Appendix A, Table 3.5 for a summary.

channel integration could allow firms to leverage efficiencies from cross-channel promotions and order fulfillment, increased intra-organizational communication and digitization (Neslin et al. 2006; Zhang et al. 2010). Some challenges are also acknowledged – the large investments and expertise required for effective channel integration act as entry barriers (Neslin et al. 2006).

This literature also indicates several sources of coordination problems that could erode the presumed benefits. This includes reverse supply chain issues made salient by increase in product returns, misaligned incentives of external channel partners, and intense competition at low retailer differentiation (Ofek, Katona, and Sarvary 2011). Consumer related frictions such as growth in research shopping (search in one channel but buy in another) and privacy concerns with e-commerce, are also indicated (Neslin et al. 2006; Zhang et al. 2010).

With an expanding scope of technologies coming into greater focus, some later research studies the impact of specific facets of channel integration, such as introduction of omnichannel services like BOPIS (Gallino & Moreno 2014), and cross-channel information integration (Herhausen et al. 2015). A closely related stream of papers in later years study channel integration's influence on firm sales growth (Cao and Li 2015) and cost efficiencies (Tagashira and Minami 2019). The results show these integrations foster sales growth (Cao and Li 2015), cost efficiency (Tagashira and Minami 2019), and channel synergies (Herhausen et al. 2015). Gallino and Moreno (2014) find BOPIS leads to an increase in in-store sales and customer traffic, but a reduction in online sales.

In assessing the heterogeneity in the relation between channel integration and performance, the literature focused largely on the retailer's economies of scale and scope. Studies of the retailer's coordination costs are rare, and even rarer are studies incorporating

potential consumer level barriers. Very few papers study factors that can be seen as proxies of coordination costs. Cao and Li (2015) and Tagashira and Minami (2019) are among the exceptions; they study how the retailer's size of store networks and e-commerce experience impact the integration – performance relationship. Studies of industry or environmental factors are even more limited (*cf.* Oh, Teo & Sambamurthy 2012). Even in this small set of studies, the results are mixed. Cao and Li (2015) find that the firm's experience with e-commerce and size of physical stores network weaken the positive effect of channel integration on sales growth. Tagashira and Minami (2019) find in-person sales service in retail stores weakens the positive impact of channel integration on cost efficiency. Oh, Teo & Sambamurthy (2012) study environmental dynamism but find no moderating impact. To the best of our knowledge, no study incorporates potential consumer level barriers to effectiveness of channel integration.

As the uptake of channel integration gained more traction in the industry, empirical literature also evolved in terms of the timeframe and sample sizes studied. Empirical papers started appearing mostly in the second decade of the century and were either cross sectional (Oh, Teo & Sambamurthy 2012) or quasi-experimental case studies with limited time series (Gallino & Moreno 2014). Panel data studies that increased the scale and scope of investigations appeared later (Cao and Li 2015; Tagashira & Minami 2019). However, with data timeframes mostly limited to four years between 2008 and 2015, a thorough temporal accounting of the impact of channel integration was not feasible in these studies.

In our paper we attempt a more contemporary accounting of the impact of channel integration through the lens of coordination costs and consumer barriers, using a more comprehensive and a longer data spectrum. Web-Appendix Table 3.5 summarizes this integration-performance literature and marks the relative contribution of our paper.

3.4 CONCEPTUAL FOUNDATIONS AND HYPOTHESES

Our theoretical arguments comprise several key components that drive our testable hypotheses: (1) The value delivered by retailers, RETDEL, is an increasing function of the level of integration, x; however, this value is only significant beyond a threshold of $x > x^*$. (2) Emerging industry practices and retail promises drive consumer expectations of value from the retailer's channel integration, CONSEXP. These expectations increase steeply before settling at a steadier state level. (3) Value realized / extracted by retailers from consumers, VALUE, is the degree to which their delivered value (RETDEL) exceeds consumer expectations (CONSEXP). When consumer expectations outstrip the retailer's delivery of value (CONSEXP>RETDEL), it depresses consumer utility and acts as a barrier to the retailer's ability to realize value from channel integration. (4) The retailer's coordination costs of integration, COORD, increases with channel integration. The general conceptual framework is in Figure 3.1. We now describe the reasoning behind these underlying structures and their implications for the retailer's outcomes.

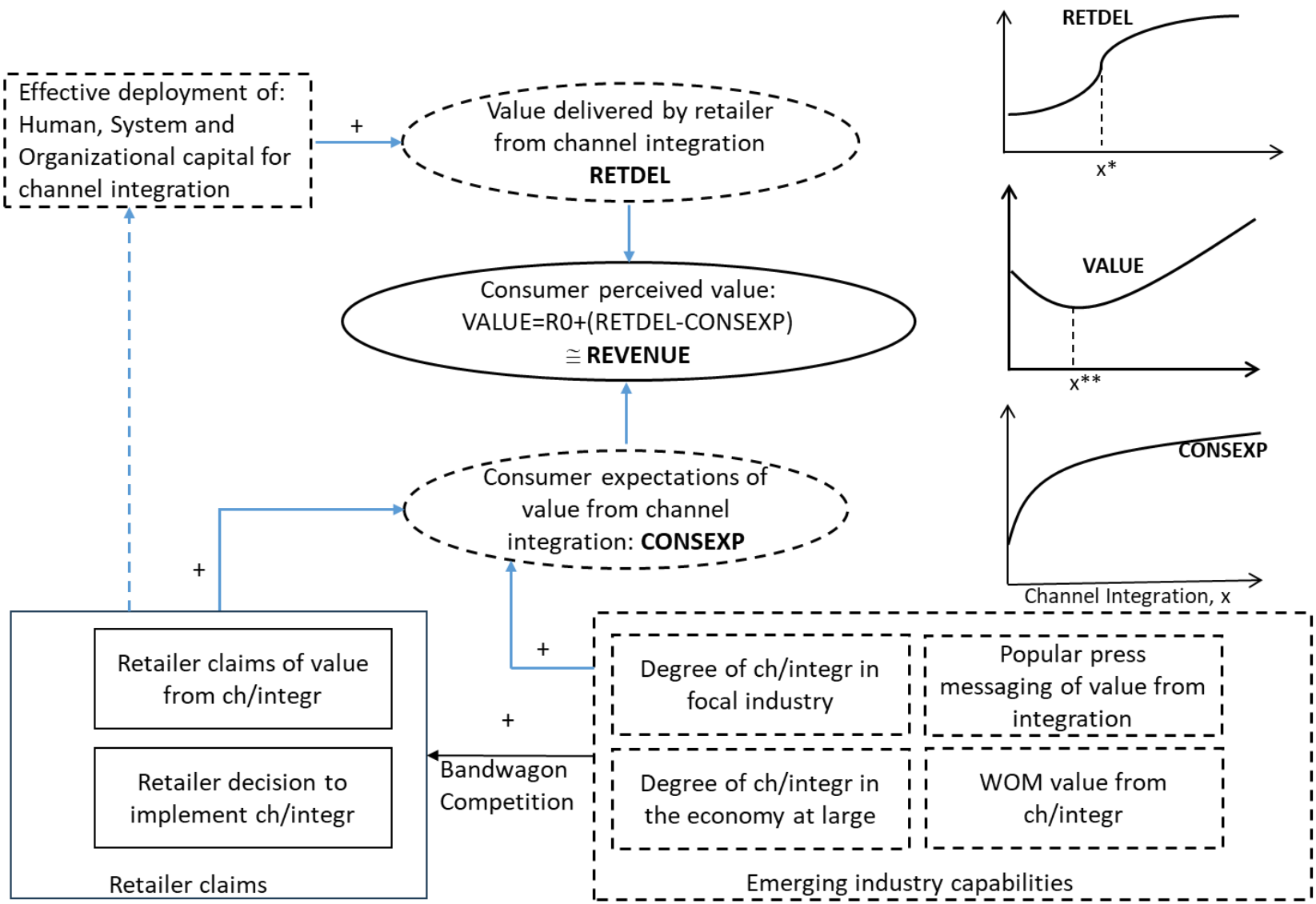

Figure 3. 1 Conceptual framework of customer perceived value from channel integration

(1) Retailer's delivery of value with channel integration, RETDEL

We start by noting that retailers must deploy their human, systems and social capital (Dutta et al. 2002) to deliver value, RETDEL by their channel integration. Channel integration creates consumer value through efficient delivery of superior buying experience, greater consistency in cross-channel engagement, and better positioning of the marketing mix.

Efficient delivery of customer experience: Increasing channel integration comes with greater data and process coordination across the supply chain. With advanced analytics and digital technologies these enable greater cross-channel data utilization, leading to more efficient customer-focused inventory management (Oh et al., 2012). In turn, these foster better customer experience (Neslin and Shankar, 2009; Cui et al., 2020), sometimes through better identification of value-added product-service couplings across online and offline channels. These also facilitate efficient deployment of ancillary channel services such as digital after-sales support for in-store purchases or the option to buy online and return in physical stores — enhancing customer value and potentially increasing cross-selling opportunities (Avery, Deighton & Caravella 2012; Cao and Li 2015). Additionally, retailers can leverage their physical stores to augment online orders, offering services like shipping from stores and curbside pickups.

Cross-channel consistency in customer engagement: Greater coordination of channel functions drives greater ability to maintain consistency in product assortment, marketing communication, and pricing across online and offline channels. This alleviates the burden of information search costs for customers, fostering better customer experience (Herhausen et al., 2015; Wallace, Giese, and Johnson 2004), and leads to higher customer loyalty and engagement (Bendoly et al., 2005; Schramm et al., 2011; Emrich, Paul and Rudolph 2015).

Efficacy of positioning, targeting and promotion: The greater access to cross-channel customer data from integration allows greater cross-channel coordination of positioning, targeting and promotions (O'Brien 2018; Zhang and Wedel 2009). This enhances the effectiveness of the retailer's marketing activities. For example, Naik and Peters (2009) show that appropriate online advertising can amplify the impact of traditional mediums like television and radio. Better integration of online promotions and informational websites are shown to complement offline strategies, driving higher in-store sales (Dinner, Van Heerde & Neslin 2014; Danaher et al. 2020; Goic, Alvarez & Montoya 2018). Similarly, well-coordinated traditional advertising channels have also been shown to drive online sales, with TV advertising boosting website visits and purchases (Liaukonyte et al., 2015; Thomas and Sullivan, 2005).

Our key proposition is that below a threshold level of integration, the retailer will not be able to effectively coordinate its disparate functions. So, while the value retailers can deliver increases with channel integration (∂RETDEL/∂x>0), it increases only marginally at lower levels, the increase being significant only at a high level of integration, at which point consistent with decreasing returns to scale the increase slows down.[9] We represent this characterization of RETDEL(x) in Figure 3.2(a). Table 3.1 summarizes the value creation propositions.

[9] So, around x*, there is a sharp increase in RETDEL. ∂^2RETDEL/∂x^2>0 at x≤x*, but for x>x*, ∂^2RETDEL/∂x^2<0.

Table 3. 1 Channel Integration Levels, Value creation, Barriers, and Coordination

Integration level	Opportunities for value creation	Barriers to value delivery	Coordination challenges
Low: Firm operates online & offline channels but lacks consistency in product assortment, service & branding across channels **Medium:** Consistent branding and marketing across channels **High:** Integration of information and order fulfillment processes to provide cross-channel services (e.g.,BOPIS, Curbside pick-ups, Ship from stores) **Very high:** Centralize systems and operations; transforming firm structure and policies to provide the highest level of cross-channel consumer services	**Efficient delivery of customer experience** • Data driven design & delivery of marketing mix across channels (Neslin & Shankar 2009; Cui et al., 2020) • Cross-channel customer services (Avery et al. 2012) **Cross-channel consistency in customer engagement** • Low consumers' search cost (Herhausen et al., 2015) • Consistency of customer experience across channels (Wallace et al., 2004) • Consumer trust in retail promises and loyalty (Bendoly et al. 2005; Cao & Li 2015) **Efficacy of positioning, targeting and promotion.** • Greater relevance of marketing mix (Dinner et al., 2014; Danaher et al., 2020; Goic et al., 2018) • Efficient promotions across channels (Zhang & Wedel 2009)	**Customer expectations** • Emerging industry capabilities raise consumer expectations (Melis et.al 2015, Lamberton & Stephen 2016) • Retailer claims elevate consumer expectations (Zhang et al. 2010) **Customer dissatisfaction** • Retailers unable to meet increased customer expectations at lower levels of integration (Ofek et al. 2011) • Cross-channel cannibalization (Avery et al. 2012) • Customer confusion **Customer skepticism** • Higher research shopping (Verhoef et al. 2007) • Higher product returns (Ofek et al. 2011) • Customer inertia (Cao & Li 2015) • Privacy risks & data breaches (Janakiraman et al. 2018)	**Operational** • Setting up processes and staff training to provide cross-channel services • Coordinating and monitoring of vendor activities. **Organizational** • Increase in process complexity (Wiener et al. 2018) • Differences in channel priorities, staff skills • Sales attribution and data management issues (Cui et al. 2020) • Inventory management challenges (Gaur et al. 2005) • Organizational inertia (Hanelt et al. 2021 **Inter and Intra-org adaptations** • Monitoring, control and resolution for compliance (Gulati, Wohlgezogen & Zhelyazkov, 2012) • Opportunity costs of interdependency (Ray et al. 2016; Ray et al. 2012) • Channel conflict (Wallace et al. 2009; Eshghi & Ray 2021)

(2) Consumer Expectations from channel integration: CONSEXP

Consumer expectations of value from the retailer's channel integration derive from two sources – emerging industry capabilities and retailer claims.

Emerging industry capabilities: Trends across industries raise consumer expectations of value from channel integration (Cao & Li, 2018). Adoption of channel integration began primarily in service sectors like banking and travel (Neslin et al. 2006). So, the consumer expectations were already set in motion before retailing got on the bandwagon. Even within retail, the pace of this adoption varies by sector, e.g., apparel and home-improvement retailers implemented channel integration strategies earlier than food and drug retailers (Melis et al. 2015). As emerging trends, popular press also highlighted the promise of seamless customer experience in omnichannel retailing, further enhancing customer expectations (Gulati and Garino 2000, McKinsey 2021). Social networks with their word-of-mouth processes compound these expectations (Lamberton & Stephen, 2016). We refer to these in Figure 3.1.

Retailer claims: The retailer's claims of value from their integration efforts are not surprising. The emerging industry practices create incentives for many retailers to join the bandwagon to remain relevant, even if they may not have the capabilities to implement a ramped-up level of integration in the near term (Neslin and Shankar 2009, Zhang et al. 2010). However, increasing investment in the process creates an incentive for the retailers to get the consumers onside with promises of better overall experience as their key differentiating value (see Figure 3.1). These necessarily involve promising the highest level of seamless consumer experience over product availability, order fulfilment, customer services etc. across channels, claims which are often picked up and magnified by social media (e.g., ContactPigeon 2023).

Compounded by the emerging industry level capabilities, these are likely to sharply raise consumer expectations of an enhanced buying experience from the retailer, that can only be possible at higher levels of integration.[10] We represent this characterization of CONSEXP(x) in Figure 3.2(a).

(3) Runaway consumer expectations as a barrier.

The core idea behind consumer expectations acting as a barrier derives from the mismatch between the expectations and the retail delivery of value. Let R0 be the native utility perceived by the consumer from shopping with a retailer.[11] Then, the total utility perceived by the consumer, VALUE, can be expressed as the sum of R0, plus the degree to which the retailer delivered value (RETDEL) is able to meet the consumer expectations (CONSEXP)[12]; i.e.,

$$VALUE = R0 + (RETDEL - CONSEXP) \quad (1)$$

The retailer extracts the consumer perceived utility with their prices. Thus, their sales revenue can be seen as proportional to VALUE (Bendoly et al. 2005; Cao and Li 2015). Clearly, if the retailer can exceed the consumer expectations (RETDEL>CONSEXP), it adds to the utility perceived by the consumer. On the other hand, if the consumer expectations outstrip the retail delivery of value (RETDEL<CONSEXP), it will act as a barrier, taking away from the native utility perceived by the consumer. This can be seen in Figure 3-2(a), where the (RETDEL-

[10] The discussion characterizes: $\partial CONSEXP/\partial x>0$ and $\partial^2 CONSEXP/\partial x^2<0$.

[11] It may be useful to think of R0 as the utility expected by the consumer from an average retailer in the market.

[12] One could think of (RETDEL-CONEXP) as the differentiating value of the retailer.

CONSEXP) curve falls below zero. These barriers manifest not just in dissatisfaction but also as skepticism with the retailer's efforts.

Customer dissatisfaction: Central to the argument of barriers is the idea that retailers can start delivering conspicuous value to meet consumer expectations only at higher levels of integration, not at lower levels. Without greater coordination of product, price, inventory, and overall buying experience, the unmet expectations at lower levels of integration result in dissatisfaction, claims of superior offerings seem hollow, creating customer confusion, noisy brand perceptions and sub-par purchase experience (Ofek, Katona, and Sarvary 2011; Avery et al. 2012).

Customer skepticism: The gap between claims and delivery results in "bad" purchases which not only drives higher product returns (Ofek, Katona, and Sarvary 2011), but also fosters consumer skepticism of retail claims. Without a credible level of consistency in marketing mix and consumer experience across its channels, this skepticism can rise sharply, compounding the dissatisfaction with the retailer. One impact can be on research shopping where consumers search in one retailer channel and purchase in another retailer (Verhoef, Neslin & Vroomen 2007). Consumers skeptical of retail claims of data security, can self-censor their engagement given the looming specter of privacy breaches and data risks (Janakiraman, Lim & Rishika 2018), driving customer inertia (Cao & Li, 2015), a significant barrier for the retailer.

The dissatisfaction and skepticism can only be alleviated at sufficiently higher levels of integrations. The better cross channel data utilization will enable better understanding and curating of consumer experiences, with more robust data driven positioning, better designed

product/service and price assortment, better coordinated messaging, and better prevention or addressing of service failures with appropriate customer service.

With the sharp uptick in consumer expectations, the term (RETDEL-CONSEXP) in Equation (1) is likely <0 at the lower spectrum of channel integration. Conversely, with retail delivery of value increasing significantly at a threshold level of integration x*, we expect the term (RETDEL-CONSEXP) to be >0 at higher levels of channel integration. These suggest VALUE will be U-shaped, first decreasing and then increasing with channel integration.[13] We represent this characterization of the VALUE curve in Figure 3.2(a). Since revenue is proportional to VALUE (Avery et. al 2012; Cao and Li 2015), we have the following hypothesis:

H1*: Revenue exhibits a U-shaped relation to the retailer's channel integration.*

The moderating role of advertising: Advertising may systematically alter consumer expectations as retailers communicate the value of cross-channel offerings in their advertising. In general, we expect advertising to increase consumer expectations, thereby presenting greater barriers to the retailer's ability to extract value.[14] In normal terms this would mean a greater dip in revenue, suggesting a steepening of the revenue-integration U-shaped relationship. We represent this characterization of the moderation impact in Figure 3.2(b).[15]

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[13] A regularizing assumption is R0 is high enough to result in positive value for consumers even with barriers. In a general sense, this suggests some x** such that ∂VALUE/∂x<0 for x< x** and ∂VALUE/∂x>0 for x>x**.

[14] With z as the advertising spend, in a general sense this suggests, ∂CONSEXP(x;z)/∂z>0

[15] Advertising can enhance expectations in ways such that the point where consumer expectations no more outstrip retail delivery of value, may shift. We leave this as an empirical question for our context.

H2*: Advertising steepens the U-shaped revenue-channel integration relation.*

(4) Coordination costs of channel integration.

Channel integration comes with myriad coordination costs, COORD. These include operational costs of running the integrated channel; organizational costs associated with coordinating multiple and disparate processes resulting from the cross-channel integrations; and adaptation costs of coordinating multiple, often independent, business partners and stakeholders in cross-channel integration (Gulati, Wohlgezogen, and Zhelyazkov, 2012). COORD increases with channel integration, which can be seen as greater centralization of operations (Dessein, Lo, and Minami, 2022), ∂COORD/$\partial x>0$. Increasing complexities at high levels of channel integration means COORD increases at an increasing rate.[16] We describe these costs below.

Operational: Operationally, channel integration requires setting up internal processes, protocols and monitoring systems to coordinate myriad cross-channel tasks, such as logistics, marketing, sales, customer service, data management, market research etc. Higher degree of integration brings in an increase in process complexity (Gulati and Garino 2000; Ofek, Katona, and Sarvary 2011). For example, providing cross-channel services such as BOPIS requires closer coordination of online and offline processes, training of staff, and support from backend technology. Risks of service failures, misaligned positioning, even data breaches, pose reputational risks and financial liabilities (Janakiraman, Lim, and Rishika 2018). These

[16] ∂^2COORD/$\partial x^2>0$.

challenges are particularly evident at higher levels of integration when diverse functional units need to work closely (Zhang et al., 2010; Kannan, Reinartz, and Verhoef 2016).

Organizational: Differences in channel-specific competencies, incentive structures, and established routines, potentially increase the internal administration costs of integration, leading to organizational inertia (Hanelt et al. 2021). For example, managers who have been trained in store management (e.g., space management, customer service, inventory management etc.) and have been primarily concerned with their 'physical worlds' (Wiener, Hobbach & Saunders 2018), must now operate under a different mandate. Inventory management (Gallino, Moreno, and Stamatopoulos 2017), sales attribution and data management (Cui et al. 2020) require different competencies for managing online and offline customer journeys. Staff responsible for online operations require proficiency in navigating digital platforms, analyzing online consumer behavior, and leveraging digital marketing techniques to optimize website performance and user experience. To address these issues inherent in channel integration, firms incur coordination costs, which are often large and not evident, but which go up increasingly with integration.

Inter and Intra-organizational adaptations: To implement channel integration initiatives, retailers often need to set up contractual arrangements with suppliers and vendors (e.g., technology, logistics, and advertising agencies). This creates a situation of critical interdependency where the functioning of the total system is dependent on the functioning of each individual component (Ray, Bergen and John 2016; Ray, Wood and Messinger 2012). Almost inevitably, conflict between different channel members, demand resources that can otherwise be deployed to deliver on the buying experience promises (Wallace, Giese & Johnson 2004; Eshghi & Ray, 2021). High levels of integrations create structures to synthesize both back-end and customer facing systems of the retailer across both internal and external agencies.

These need monitoring, control and resolution systems in place to prevent conflicts and address the organizational adaptations needed. Greater interdependency of the functions at higher levels of integration means the opportunity costs of not doing so, go up steeply.

Business performance and coordination costs:

The retailer's business performance, PERF, is the net of value realized, VALUE, material costs, MAT, some fixed costs FX, and coordination costs, COORD:

$$PERF = VALUE - MAT - FX - COORD \quad (2)$$

The material costs, MAT, and fixed cost, FX, (e.g. interest on borrowing, salaries, capital costs etc.), do not depend on the degree of channel integration[17], so:

$$\partial PERF/\partial x = \partial VALUE/\partial x - \partial COORD/\partial x \quad (3)$$

Now, from our characterization, $\partial COORD/\partial x > 0$, and increasing at higher x. From H1, at lower values of x, VALUE is hypothesized to be decreasing, i.e., $\partial VALUE/\partial x < 0$. So, from Equation (3), at lower values of x, $\partial PERF/\partial x < 0$. However, at higher values of x, where $\partial VALUE/\partial x$ is >0, the sign of $\partial PERF/\partial x$ is more complex and depends on the relative magnitude of $\partial COORD/\partial x$. If coordination costs do not increase very steeply with integration (shallow curve), we can have $\partial PERF/\partial x > 0$, i.e. performance can be *positively* impacted by channel integration. However, if coordination costs increase *steeply* with channel integration, we

[17] $\partial FX/\partial x = \partial MAT/\partial x = 0$

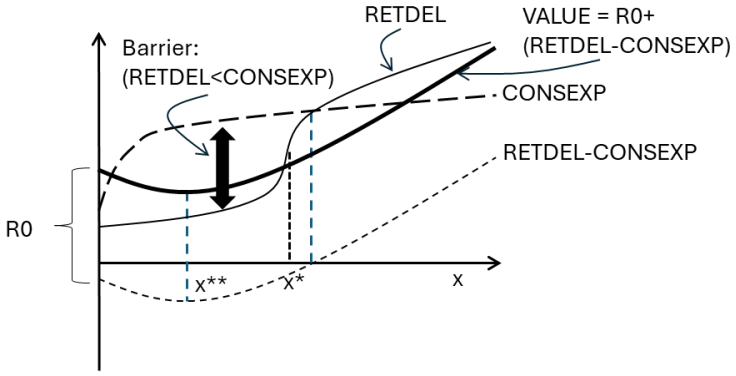
can have $\partial PERF/\partial x < 0$; in other words, performance can be *negatively* impacted by the degree of channel integration (steep curve hypothesis). See Figure 3.2(c).

Return on Assets (ROA), calculated as the ratio of net income (revenue less costs) to total assets, is widely used to track profitability (Zajac, Kraatz, and Bresser 2000; O'Sullivan and Abela 2007; Angulo-Ruiz, Donthu and Prior 2014; Feng and Fay 2020; Saboo, Kumar & Anand 2017). Using ROA as our metric for firm performance, we have the following competing hypotheses, driven by the differences in the COORD curve.

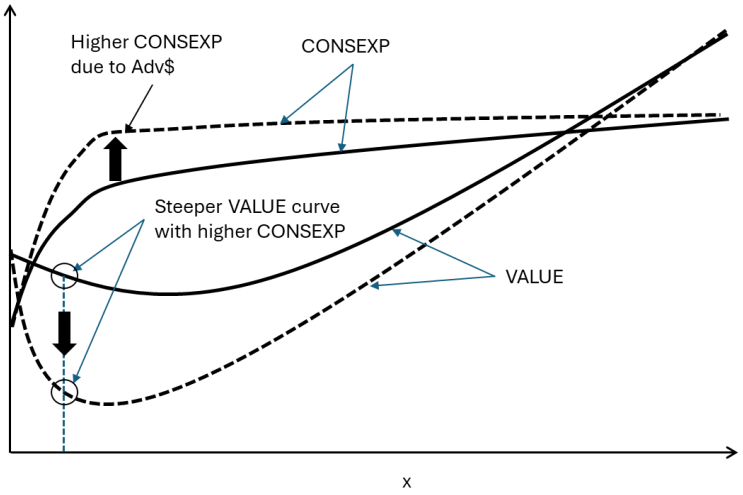
***H3a**: ROA is positively associated with channel integration (Shallow curve hypothesis).*

***H3b**: ROA is negatively associated with channel integration (Steep curve hypothesis).*

(a) Proposed mechanisms driving the U-shaped revenue hypothesis (H1)



(b) Proposed mechanisms for the moderating impact of advertisement on revenue (H2)



(c) Schematic of the drivers of the shallow and steep curve hypotheses (H3a,b)

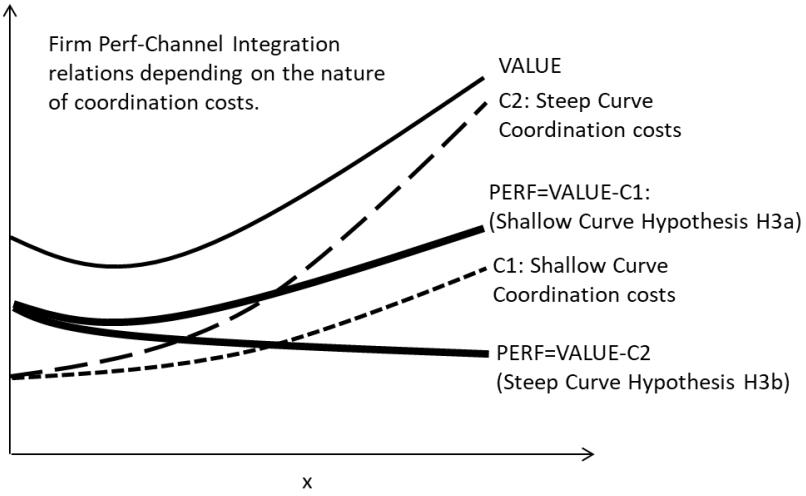


Figure 3. 2 Schematic representation of the proposed mechanisms driving the hypotheses

Note: The figures are only indicative of the underlying mechanisms and are not drawn to scale.

Moderating effects of factors affecting coordination costs: Drawing from prior research and data availability, we examine the roles of the following firm level factors as potential moderators of the integration-performance relation through the lens of their impact on coordination costs: the size of the retailer's physical store network and its experience in managing digital channels (Cao and Li 2015; Tagashira and Minami 2019); its inventory

management efficiency (Gaur, Fisher, and Raman 2005; Gallino, Moreno, and Stamatopoulos 2017); and the industry turbulence it faced in the past.

Store Presence: Store presence, the size of a retailer's store network, reflects its operational competencies (Oh, Teo, and Sambamurthy 2012). A larger store network facilitates improved access to cross-channel customer offerings like BOPIS, turning physical stores into pivotal order fulfillment centers for local deliveries. An extensive store network can also enhance distributional efficiencies (Fisher, Gallino, and Xu 2019), and create more opportunities for positive spillovers of cross-channel marketing (Gallino and Moreno 2014). These coordination benefits will be more compelling at higher levels of channel integration.

Conversely, while cross-channel services such as BOPIS and Ship-from-Stores provide opportunities for enhanced customer experience, they also introduce significant operational and organizational complexities. Dependence on specific physical assets for delivering cross-channel service (e.g., in-store lockers, curbside pickups), increase the transactional hazards of shirking (Tagashira and Minami 2019), escalating the monitoring costs of larger networks (Wallace, Johnson, and Umesh 2009). Data security concerns for extensive store networks compound the challenges, requiring greater efforts to manage the cross-channel processes. Given these opposing considerations, store presence could either magnify or dampen the coordination challenges of channel integration, leading to the competing hypotheses:

H4a*: Store presence positively moderates the ROA-integration relation (Competency).*

H4b*: Store presence negatively moderates the ROA-integration relation (Complexity).*

E-commerce Experience: E-commerce experience, defined as the duration since a firm-initiated e-commerce activities, signifies a firm's expertise in managing digital channels, such as social media marketing and predictive analytics (Wang and Kim 2017; Bradlow et al. 2017). This helps facilitate cross-channel marketing, easing coordination (Dinner, Van Heerde, and Neslin 2014; Goic, Álvarez, and Montoya 2018; Danaher et al. 2020), and positively impacting the performance-integration relation.

However, the benefits of experience are not immutable, since a longer e-commerce history also brings inertia. Established routines in managing digital channels are harder to change. This can make it harder to persuade their long-time online customers who may perceive limited added value from channel integration (Falk et al. 2007). So, despite the benefits of learning from experience, the coordination challenges of adaptation may be significant. In fact, newer firms can learn from best practices and adapt without dealing with such inertia. So, experience can exacerbate the coordination costs, negatively impacting the performance-integration relation. These lead to the competing hypotheses:

***H5a**: E-commerce experience positively moderates the ROA-integration relation (Expertise).*

***H5b**: E-commerce experience negatively moderates the ROA-integration relation (Inertia).*

Inventory Management Efficiency: Inventory constitutes 36% of a retailer's total assets on average, so, inventory management efficiency is critical expertise (Gaur, Fisher, and Raman 2005), and directly impacts a firm's business performance (Patel, Guedes, and Pearce 2017; Cao & Zhao 2004). It is a fungible expertise linked to efficient demand forecasting, buying, tracking of order fulfilment, and coordination with marketing promotions. The complexity of these tasks amplifies in omnichannel contexts. Rising online orders often trigger gaps in order fulfillment

between online and in-store sales (Gallino, Moreno, and Stamatopoulos 2017), as well as increased returns (Ofek, Katona, and Sarvary 2011). A retailer with more efficient inventory management faces *lower* coordination costs in managing inventory in a cross-channel context, which would have a positive impact on the performance-integration relation. Thus,

***H6**: Inventory management efficiency positively moderates the ROA-integration relation.*

Past Industry Turbulence: Periods of turbulence force retailers to adapt as they navigate uncertainties in revenue and business ecosystem – dealing with new competition, declining demand, uncertain vendor relations, and increasing operating costs (Hyde, 2015). As retailers integrate their channel functions, they face an increasing array of uncertainties and unforeseen challenges that may arise from unexpected sources of competition, demand that does not sync with the promised buying experience, vendor coordination complexities, and increased costs of synchronizing diverse functions. It is fair to assume that retailers that have faced turbulent times before are likely better suited to deal with these adaptation challenges, on average, since they would have gained relevant knowledge and learning from their experiences, thereby having a positive impact on the performance-integration relation. Thus,

***H7**: Past industry turbulence positively moderates the ROA-integration relationship.*

3.5 EMPIRICAL CONTEXT AND DATA

Using COMPUSTAT, we collected data from several archival sources. We first identify publicly traded retailers in the U.S., classified under NAICS 2-digit codes 44-45 that operate both online and offline channels from the Standard and Poor's Compustat Retail Industry-Specific Database[18]. The U.S. retail sector is large, contributing 7.7% to the economy and accounts for 6.3% of the U.S. labor force (NRF report 2020). From an initial random pool of 110 firms, we exclude retailers that primarily focus on wholesale operations (e.g., Nike, whose sales to wholesalers constitute about 68% of sales in 2019) or don't disclose channel integration-related information. This yielded a final sample of 81 retailers across apparel, drug, food, home-improvement, broad line, and specialty sectors. Our sample represents over 90% of the top omnichannel retailers as identified in the National Retail Federation report (NRF 2019). We record their financial and accounting data from both COMPUSTAT and their annual reports. We also use other data sources such as company websites, Mergent online, Factiva, and Nexis Uni Academia, to record their channel integration initiatives. We collect this as yearly data between the years 2008-2019, when the U.S. retail industry sales witnessed significant growth from 2.72 to 3.81 trillion dollars (Statista 2021)[19]. Several retailers filed for bankruptcy during the study period, ceasing to report the required information; thus, we have an unbalanced panel data set, comprising a total of 945 firm-year observations.[20]

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[18] We excluded motor vehicle dealers, food services, drinking places, and gasoline stations.

[19] Our choice of 2008 as the starting point is influenced by industry reports that suggest many U.S. retailers began intensifying channel integration efforts in 2008 (Aberdeen Group 2012).

[20] See Web-Appendix B, Figure WB.1 for more details on the data collection, curation and processing.

Variables

Dependent variables: We have two dependent variables: annual revenue, pertinent to hypotheses H1 and H2, and return on assets (ROA), relevant to hypotheses H3-H7. While firms launch channel integration efforts throughout the year, their annual reports only attribute them to the year end. So, in effect, some integration efforts have a more proximal impact on performance than others. To better capture this accumulating impact of channel integration, we follow Feng and Fay (2020) in averaging firm performance between t and t+1. $Revenue_{i,t+1\,(avg)}$ and $ROA_{i,t+1\,(avg)}$ represent the revenue and return on assets, respectively, of firm *i* averaged over years (t and t+1).

Focal Independent Variable, Degree of Channel Integration: We draw upon existing literature (Wallace, Giese, and Johnson 2004; Bendoly et al. 2005; Oh, Teo, and Sambamurthy 2012) and operationalize the degree of channel integration, $ChanInteg_{it}$, following the approach of Cao and Li (2015). First, we conduct a qualitative analysis of firms' public records such as annual reports, investor presentations, and public releases, to gather relevant content about firm's strategic activities and practices related to the integration of channel functions. Then we manually review each retailer's channel integration initiatives for the years 2008 to 2019 based on a 32-item scale. The level of channel integration is the "highest level of strategic activity for the given year" (Cao and Li 2015, p.8), assuming continuity of previous year's integration. We measure the levels of channel integration on a scale of four: 1 – *low* (a firm operates online and offline channels with minimal cross-channel coordination); 2 – *medium,* (consistent branding and marketing communication across channels); 3 – *high* (integration of information and order fulfillment mechanisms across channels); and 4 – *very high* (transforming firm structure and

policies to provide highest level of cross-channel consumer services). More details are in Web-Appendix Table WC2. Lastly, we check the reliability and validity of our coding, in two ways. First, we assign a random sample of 240 firm-year observations (25% of the total 945 firm-year observations) to an independent researcher. The inter-coder reliability coefficient is 0.87, which is high. Second, we confirm that our assessment of channel integration for top omnichannel retailers like Walmart, Home Depot, and Best Buy aligns with industry reports such as National Retail Foundation report (NRF 2019).

Moderating Variables for Consumer Expectations and Coordination Costs: Advertising, xad_{it}, is the natural logarithm of the firm's annual advertising spend. Store presence, $Stores_{it}$, is the natural log of the number of physical stores at the year-end (Cao and Li, 2015). E-commerce experience, $Ecomexp_{it}$, is the number of years since the firm started its e-commerce functionality (Cao and Li 2015; Tagashira and Minami 2019). Inventory management efficiency, $Invmgmt_{it}$, is the natural log of the ratio of cost of goods sold and total inventory – more efficient retailers tend to hold few unsold stocks in their inventory (Gaur, Fisher and Rahman 2005). Past industry turbulence, PIT_{it}, is the standard deviation of sales in the firm's primary industry in the four prior years, divided by the average industry sales for those years (Oh, Teo and Sambamurthy 2012).

Control Variables: We control for firm size and cash holdings to account for size effects (Srinivasan et al. 2013; Cao and Li 2015). We approximate firm size by taking the log of the firm's total employees (Feng and Fay 2020) and measure cash holding as a ratio of cash and short-term investments to total assets (Feng and Fay 2020). We include selling intensity, measured as a retailer's selling, general, and administrative (SGA) expenses less advertising spend, scaled by total sales (Ptok, Jindal, and Reinartz 2018). To control for the firm's growth opportunity, we use the ratio of the firm's market capitalization to the book value of total assets

(Fama and French 1995). To control for the firm's capital intensity which can influence firm revenue, we use the ratio of fixed capital assets (e.g., gross property, plant, and equipment) to total assets (Ellickson and Grieco 2013). Finally, to control for competition in the industry, following Lee, Zhou & Hsu (2015), we use 1 minus the Herfindahl-Hirschman index (HHI for the two-digit SIC codes the firm belongs to). Since factors that influence "revenue-channel integration" relationship, also influence "ROA-channel integration" relationship, we use these as control variables for both. In the second relation, we also control for the firm's revenue growth as percentage of previous year's revenue (Cao and Li 2015). More details are in Table 3.2.

Table 3. 2 Key Variables, Measurement, Sample References and Data Sources

Construct	**Variable**	**Measure**	**Sample Reference**	**Data Source**
1. Revenue	Revenue	Total revenue	Cao and Li (2015)	Compustat
2. Return on Assets	ROA	Net income / Total assets	Feng and Fay (2020)	Compustat
3. Channel integration	ChanInteg	Degree of channel integration	Cao and Li (2015)	Mergent, EBSCO
4. Advertising spend	(LN) Xad	Log of annual advertising expenses	Srinivasan et al. (2013)	Compustat
5. Store network	(LN) Stores	Log of physical stores at the year-end	Tagashira & Minami (2019)	Annual reports
6. E-comm experience	Ecomexp	Number of years of e-commerce experience	Cao & Li (2015)	LexisNexis
7. Inv. mgmt efficiency	(LN) Invtmgmt	Log of (cost of goods sold/total inventory)	Gaur et al. (2005)	Compustat
8. Past industry turbulence	PIT	The SD of sales in firm's primary industry in prior four years/ The mean value of industry sales for those years	Oh et al. (2012)	Compustat
9. Firm size	(LN) Firm size	Logarithm of a firm's total employees	Srinivasan et al. (2013)	Compustat
10. Cash holdings	Cashholding	Cash and short-term investments to total assets	Feng & Fay (2020)	Compustat
11. Selling intensity	SellIntens	Selling, general and administrative cost less advertising spend / Total sales	Ptok, Jindal, & Reinartz (2018)	Compustat
12. Growth Opportunity	GrowthOpp	Market-to-book value	Fang, Palmatier & Steenkamp (2008)	Compustat
13. Capital intensity	CapIntens	Total of gross property, plant and equipment divided by total assets	Bonsall, Holzman, & Miller (2017)	Compustat
14. Competition	Competition	1 - Herfindahl index of firm's primary industry sales	Fang, Palmatier & Steenkamp (2008)	Compustat
15. Revenue growth	Revgrowth	$\text{Revenue}_{(t)}$ - $\text{Revenue}_{(t-1)}$ / $\text{Revenue}_{(t-1)}$	Cao and Li (2015)	Compustat

Sample Characteristics

Our sample consists of fairly large retail chains, with an average annual revenue of $21B, and an average of 1974 stores with almost 96 thousand employees (see Table 3.3). There is a large variation in e-commerce experience with mean and standard deviation of eight and six years. Along with an yearly average of $269M advertising spend, ROA of 7%, and inventory turnover of about five times, the sample represents a growing sophisticated spectrum of retailers. This is further seen when we consider the degree of channel integration over the study period (see Figure 3.3) which shows an increasing trend in channel integrations from 2008 to 2019. Notice the significant increase in higher level integrations (medium and higher) from 2013, when it went up to 43% from 30% in 2012, reaching 74% in 2019. While only suggestive, this period also witnessed a huge growth in the reach and sophistication of mobile apps and social media marketing (Verhoef, Kannan and Inman 2015). Table 3.3 reports the correlations among the variables. A Variance Inflation Factor (VIF) below ten, indicates multicollinearity is not a significant factor (Chatterjee and Hadi 2006).

Table 3. 3 Sample Descriptive Statistics and Correlation Matrix

Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**	**(13)**	**(14)**	**(15)**
(1) Revenue	1.00														
(2) ROA	.02	1.00													
(3) ChanInteg	.26*	-.19*	1.00												
(4) (LN) Xad	.45*	.01	.28*	1.00											
(5) (LN) Stores	.37*	.11*	.14*	.45*	1.00										
(6) Ecomexp	.23*	-.09*	.55*	.41*	.23*	1.00									
(7) (LN) Invtmgmt	.36*	-.02	.02	.15*	.19*	.11*	1.00								
(8) PIT	.10*	-.06	-.21*	.06	.11*	-.14*	.07*	1.00							
(9) Firm size	.59*	.12*	.25*	.75*	.75*	.35*	.37*	.07*	1.00						
(10) Cashholding	-.19*	.23*	-.19*	-.32*	-.19*	-.06	.17*	-.18*	-.28*	1.00					
(11) SellIntens	-.27*	-.26*	.02	-.29*	-.20*	-.03	-.45*	-.13*	-.36*	.01	1.00				
(12) GrowthOpp	.03	.11*	-.03	.04	.05	.01	.04	.03	.05	.01	-.03	1.00			
(13) CapIntens	.05	-.08*	.11*	-.02	-.09*	.16*	.24*	-.22*	.12*	-.01	.08*	-.01	1.00		
(14) Competition	-.27*	.15*	-.16*	-.31*	.04	-.18*	.14*	-.20*	-.16*	.32*	.11*	.00	.09*	1.00	
(15) Revgrowth	.00	.33*	-.14*	-.15*	-.11*	-.20*	-.05	.02	-.13*	.09*	-.05	.10*	-.30*	-.01	1.00
No. of obs.	921	921	921	893	920	921	908	919	912	908	892	882	907	921	893
Mean	21042.32	.07	1.72	268.93	1974	8.12	4.48	.06	95.8	.13	.26	.98	.72	.82	.05
SD	58781.74	.08	1.20	437.37	2591.33	6.31	2.39	.043	259.90	.11	.09	.14	.29	.13	.10
Min	76.34	-.33	0	0	4	0	.57	0	.44	0	-.02	.06	.06	.49	-.34
Max	521426	.33	4	3700	15370	25	15.03	.27	2300	.63	.67	1.84	1.55	.95	.80

Notes: Revenue and Xad are in $ MM, Firm size is number of employees in thousands, Ecomexp is in years, and rest are in ratios.
**Significant at 95%*

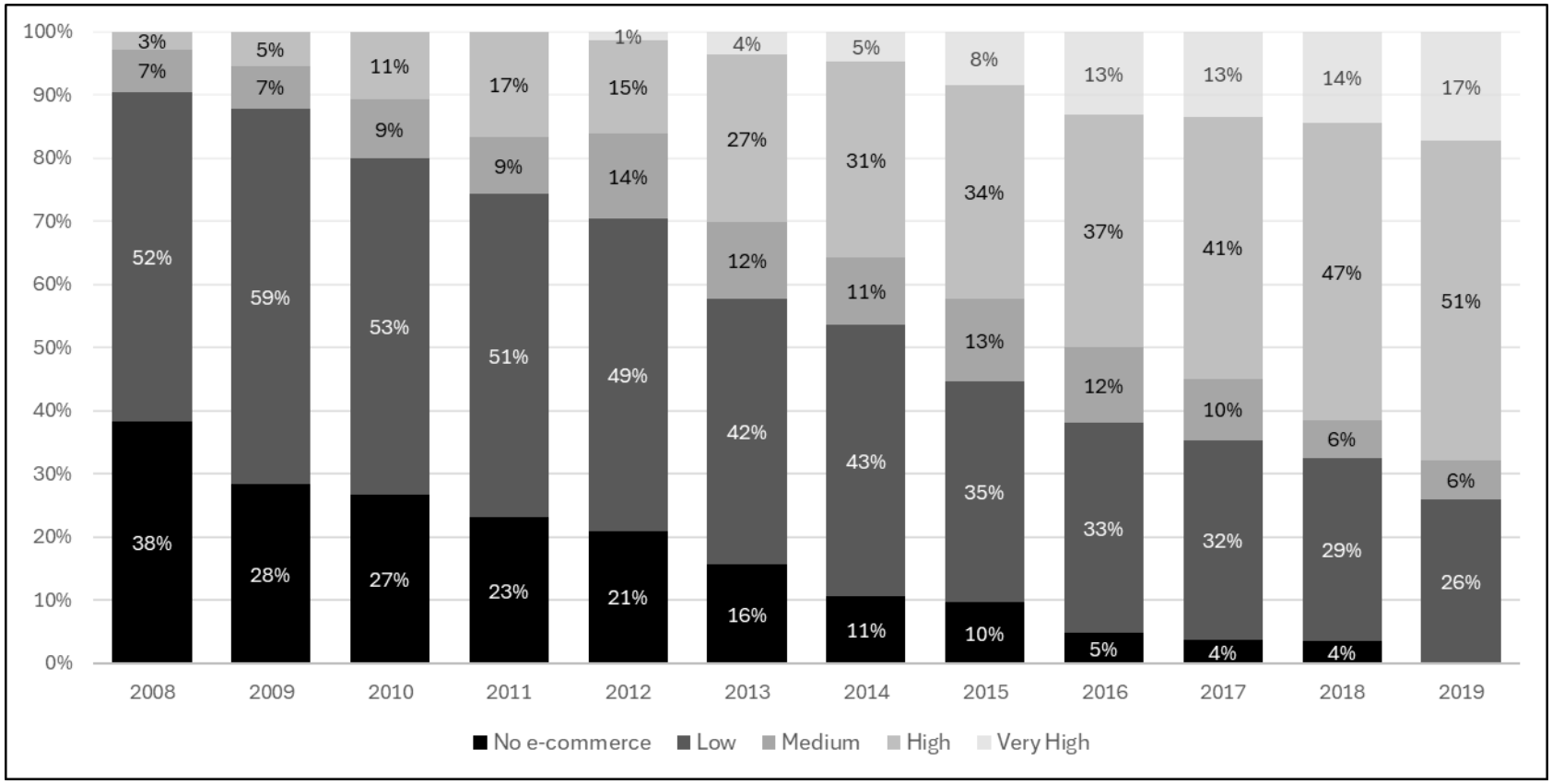


Figure 3. 3 Annual Trend Towards Channel Integration

3.6 EMPIRICAL MODELS

We run two sets of analyses – one for hypotheses H1-H2, and another for H3-H7. To test the U-shaped relation between revenue and channel integration (H1) and the moderating effect of advertising (H2), we estimate equations 1 and 2 below. We expect a significant and positive β_2 coefficient in equation 1 to support the hypothesized U-shaped relationship and a significant and positive β_4 coefficient in equation 2 to confirm the steepening effect of advertising on this relationship. Because a significant β_2 coefficient is a necessary but not sufficient condition, we conducted additional tests to assess the U-shaped relationship (Haans et al. 2016). To test the relationship between ROA and channel integration (H3), as well as the and the hypothesized moderation effects (H4-H7), we estimate equation 3.

$$Revenue_{i,t+1(avg)} = \beta_0 + \beta_1 ChanInteg_{it} + \beta_2 (ChanInteg_{it})^2 + \beta_3 Stores_{it} + \beta_4 Ecomexp_{it} + \beta_5 Invmgmt_{it} + \beta_6 PIT_{it} + B_k Controls_{kit} + c_i + \epsilon_{it} \quad (1)$$

$$Revenue_{i,t+1\,(avg)} = \beta_0 + \beta_1 ChanInteg_{it} + \beta_2 (ChanInteg_{it})^2 + \beta_3 ChanInteg_{it} \times Lnxad_{it} + \beta_4 (ChanInteg_{it})^2 \times Lnxad_{it} + \beta_5 Lnxad_{it} + \beta_6 Stores_{it} + \beta_7 Ecomexp_{it} + \beta_8 Invmgmt_{it} + \beta_9 PIT_{it} + B_k Controls_{kit} + c_i + \epsilon_{it} \quad (2)$$

$$ROA_{i,t+1\,(avg)} = \beta_0 + \beta_1 ChanInteg_{it} + \beta_2 Stores_{it} + \beta_3 Ecomexp_{it} + \beta_4 Invmgmt_{it} + \beta_5 PIT_{it} + \beta_6 ChanInteg_{it} \times Stores_{it} + \beta_7 ChanInteg_{it} \times Ecomexp_{it} + \beta_8 ChanInteg_{it} \times Invmgmt_{it} + \beta_9 ChanInteg_{it} \times PIT_{it} + B_k Controls_{kit} + c_i + \epsilon_{it} \quad (3)$$

Where, c_i is the firm specific fixed effects[21] and ϵ_{it} is the random error term, normally distributed. To save space we do not list all the control variables ($Controls_{kit}$) here.

Endogeneity

The dependent variables are temporally separated from channel intergration to account for reverse causality. However, unobserved variables that influence a firm's decision to invest in channel integration could also influence firm performance, e.g., brand and strategy. This would imply that channel integration is endogenous and the error term in the equations would be correlated with the dependent variables, thus, resulting in inconsistent estimates. So, we estimate our models with Gaussian Copulas (Park and Gupta, 2012). As it turns out, our copula terms for channel integration are largely not significant across the models, suggesting endogeneity is likely not a big factor in our data.[22] This comports with our arguments that exogenous factors like the rise of online channels and resulting bandwagon effects, are likely the dominant influences of a firm's channel integration decisions in the data we have. So, we report the regressions without the copula terms in the main paper and base our hypotheses tests on those estimates.

3.7 RESULTS

We report our main results in Table 3.4. Model 1 is a baseline model to estimate the "revenue-integration U-shape" relation (H1) and Model 2 estimates the corresponding

[21] Several unobserved factors such as senior leadership, managerial talent, and firm culture could impact the firm outcomes, which would be captured in a fixed effect model. A significant Hausman specification test also suggests that a fixed effect model is more appropriate over a random-effects model.

[22] See Web-Appendix H. We run different models. Only one of the seven estimated copulas is significant.

moderating effects of advertising (H2). The integration-ROA relationship (H3) is estimated in Model 3. Model 4 estimates the corresponding moderating effects (H4-H7).

Table 3. 4 Results from regression model analysis

	DV: Revenue		DV: ROA	
Variables	Model 1	Model 2	Model 3	Model 4
ChanInteg	-3,015**	5,536	-0.00722***	0.0112
	(1,418)	(3,623)	(0.00243)	(0.0123)
ChanInteg^2	872.0**	-3,294***		
	(343.3)	(964.6)		
ChanInteg x (LN) Xad		-1,359*		
		(718.4)		
ChanInteg^2 x (LN) Xad		714.6***		
		(180.2)		
(LN) Xad	-1,263	-312.8	-0.0212***	-0.0185***
	(1,203)	(1,241)	(0.00604)	(0.00608)
(LN) Stores	8,648***	7,725***	-0.0238*	-0.0183
	(2,584)	(2,515)	(0.0130)	(0.0130)
Ecomexp	-343.3	-233.4	-0.00421***	-0.00289
	(351.7)	(347.8)	(0.00158)	(0.00199)
(LN) Invtmgmt	15,045***	14,865***	-0.0192	-0.0282*
	(3,116)	(3,022)	(0.0156)	(0.0171)
PIT	-16,292	-15,549	-0.0732	-0.250***
	(9,937)	(9,647)	(0.0499)	(0.0744)
ChanInteg x (LN) stores				-0.00401**
				(0.00165)
ChanInteg x Ecomexp				0.000225
				(0.000290)
ChanInteg x (LN) invtmgmt				0.00171
				(0.00330)
ChanInteg x PIT				0.121***
				(0.0410)
Firm size	1,552	3,813	0.0199	0.0182
	(2,787)	(2,725)	(0.0140)	(0.0142)
Cashholding	-1,113	-875.2	0.161***	0.168***
	(5,806)	(5,656)	(0.0292)	(0.0292)
SellIntens	-27,696*	-33,688**	-0.678***	-0.684***
	(15,201)	(14,771)	(0.0764)	(0.0763)
GrowthOpp	1,604	1,151	0.00324	0.00343
	(2,223)	(2,160)	(0.0112)	(0.0112)
Caplintens	-11,498***	-8,713**	0.0400**	0.0345*
	(3,432)	(3,380)	(0.0172)	(0.0177)
Competition	-52,145***	-48,455***	-0.0163	0.0127
	(12,569)	(12,247)	(0.0626)	(0.0644)
Revgrowth	6,069	3,452	0.110***	0.105***

	(4,015)	(3,916)	(0.0202)	(0.0201)
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Constant	-1.676e+06**	-1.235e+06*	-7.791**	-4.750
	(687,331)	(682,026)	(3.248)	(3.473)
Observations	747	747	747	747
R-squared	0.268	0.314	0.264	0.279
Number of firms	81	81	81	81

*Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1*

To test H1 (U-shaped revenue-channel integration), the necessary condition is β2>0 in Equation1. Indeed, we find that the coefficient for ChanInteg_{it} is significant and positive ($\beta_2 = 872, p < .01$). However, since this is not a sufficient condition, we conduct additional tests to estimate that the turning point is located well within the data range, at 1.4 suggesting that the benefits of channel integration is reaped only closer to medium level of integration. Additionally, the slopes change signs as expected, negative (-1948.92, *p<0.1*) below the turning point, and positive (3615.84, *p<0.01*) above, confirming the U-shaped relationship between revenue and channel integration (Lind & Mehlum 2010, Haans et al. 2016).[23] We plot the marginal effects of channel integration on revenue (estimated at the means of other variables) in Figure 3-4(a). Notice the distinct U shape. So, we find support for H1.

Our second estimation about the steepening effects of advertising, $\text{Ln}xad_{it}$ on the revenue-integration U-shaped relationship depends upon β_4. As explained in Haans et al (2016) the U-shape steepens if the coefficient for $(\text{ChanInteg}_{it})^2 \times \text{Lnxad}_{it}$ is positive and significant. With a significant β_4 in model 2 ($\beta_4 = 714.60, p < .01$) we find support for H2.[24]

[23] Web-Appendix D, Table WD1 has more details.

[24] Note that, advertising, xad_{it}, can also shift the turning point of the *value* curve left or right. Following Haans et al. (2016 p1195) results from a formal test using Stata command *nlcom* show the shift in turning point is not significant at the various values of advertising, xad_{it}. For details of these moderation tests, see Web-Appendix E.

We conducted further analysis to understand the moderating role of advertising on the U-shaped relationship between revenue and integration. In Equation 2, the U shape relationship requires:

$\frac{\partial^2 Revenue_{i,t+1(avg)}}{\partial ChanInteg_{it}{}^2} = (2\beta_2 + 2\beta_4 Lnxad_{it}) > 0$.

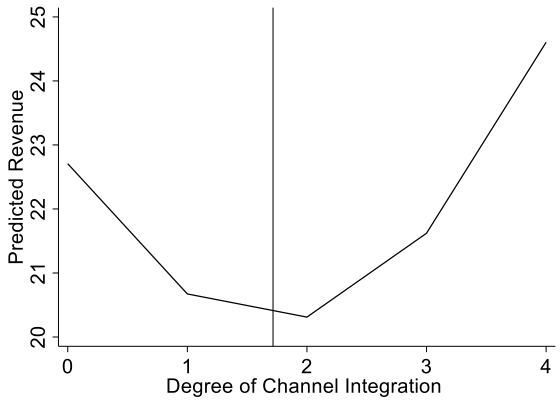
Given our estimates, β2 = -3,293.8***, and β4 = 714.6*** the term on the right-hand side is: 2(-3,293.8) +2(714.6) $Lnxad_{it}$. This expression is >0, for values of $Lnxad_{it} > 4.61$. At values less than 4.61 this expression is <0 and would appear to run counter to our hypothesized relation. So, we assess the statistical significance of this expression at different values of $Lnxad_{it}$, specifically at lower quartile (3.82), median (4.55) and upper quartile (5.70). The estimated values along with their estimated standard error and significance in parentheses, are as follows. For lower quartile of $Lnxad_{it}$: -1128.11 (829, n.s.); for median: -84.78 (667, n.s.); and for the upper quartile: 1558 (750, p<.05).

Notably, the estimated second derivative is not significant at the 25th and 50th percentiles but becomes significant at the 75th percentile. Additionally, the threshold value of 4.61 exceeds the median value of 4.55, suggesting that the hypothesized relation is observed beyond a threshold of $Lnxad_{it} = 4.61$. Thus, the hypothesized relation appears to hold true only at higher levels of advertisement spending. This qualified support indicates that while our hypothesized U-shaped relationship holds on average, advertising expenses is a critical variable – the U shape is prominent only at high levels, but not at low levels of advertising expenses. This empirical observation directly supports our steepening hypothesis and bolsters our central argument that runaway consumer expectations dampen the value of low levels of channel integration. Indeed, in hindsight, one can speculate that our results possibly capture the non-linear impact of advertising. At low levels, advertising helps build awareness, but at high levels, it raises explicit

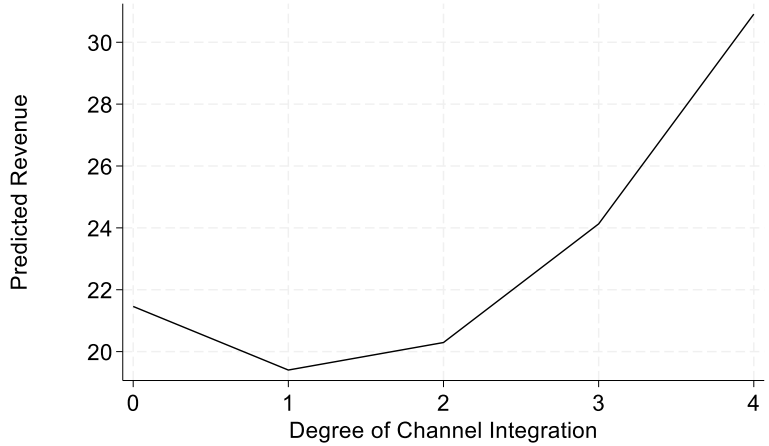
consumer expectations of value from the brand (Sethuraman, Tellis and Briesch 2011; Batra and Keller 2016). It is the latter effect that is the key driver for our hypotheses. We plot the significant marginal effects at the 75th percentile of $Lnxad_{it}$ on revenue (estimated at the means of other variables) in Figure 3-4(b), which shows the distinct U shape.

To further explore differences between firms with high and low levels of advertising, we compared firms at the 25th percentile with those at the 75th percentile. Firms at 75th percentile have twice the e-commerce experience, three times as many physical stores, larger firm size, and significantly higher revenue than firms at the 25th percentile of *Lnxad.* These observations suggest that the hypothesized results are more pronounced for firms with a more prominent presence in the multichannel ecosystem, which aligns with our central thesis, as such firms are likely more susceptible to heightened consumer expectations than those with a less prominent market presence.

(a) Revenue-Integration relationship, aggregate



(b) Revenue-Integration relationship, 75th percentile of advertising ($Lnxad_{it}$ = 5.70)



(c) ROA-Integration relationship, aggregate

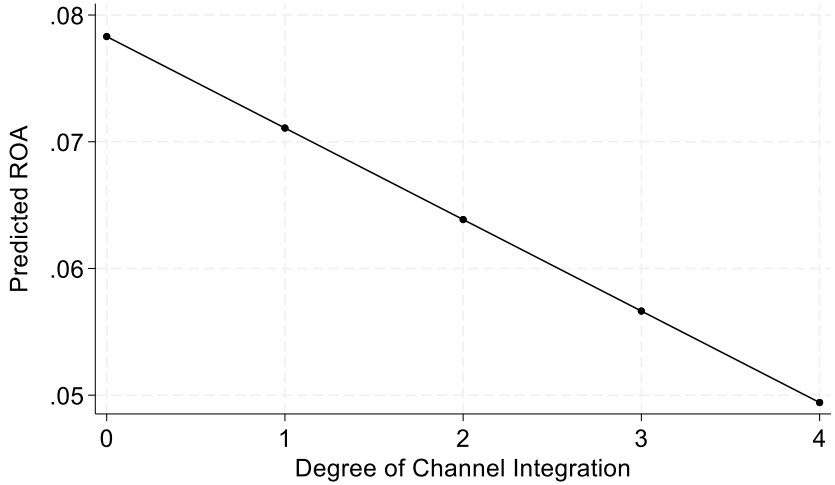


Figure 3. 4 Marginal plots for Revenue and ROA

In Model 3, the significant and negative coefficient for $ChanInteg_{it}$ (Model 3: $\beta_1 = -.0072, p < .05$) shows that, on average, channel integration is negatively associated with ROA.[25] This supports the steep curve hypothesis H3b over the shallow curve hypothesis H3a.

Model 4, which includes the interaction terms between moderators and channel integration, shows that the coefficient for interaction of $ChanInteg_{it}$ and $Stores_{it}$ is negative and significant (Model 4: $\beta_6 = -.004, p < .05$). This suggests that a larger store network exacerbates the negative ROA-integration relationship supporting our complexity hypothesis, H4b over the competency hypothesis, H4a. In line with H6, the coefficient for interaction of $ChanInteg_{it}$ and PIT_{it} is positive and significant (Model 4: $\beta_9 = .12, p < .01$), confirming that past industry turbulence positively moderates the ROA-integration relationship. The coefficients for interaction of $ChanInteg_{it}$ and $Ecomexp_{it}$ (H5) and $Invmgmt_{it}$ (H7) are not significant, thus, no evidence of their moderating impact on the ROA-integration relationship.

Figure 3.4 (c) is the marginal plot of ROA against channel integration (calculated at the means of other variables) illustrating the estimated negative relation.

To check the robustness of our results, we undertake a series of additional analyses. As an alternative metric to ROA, for the firm's financial performance, we run our analyses using Tobin's Q (Srivastava, Shervani, and Fahey 1998; Fang, Palmatier, and Steenkamp 2008). Our results align with those obtained in our main analysis. We also ran our estimation using pooled OLS and random-effects models. Results from these analyses are consistent with those from the

[25] We test but find no significant nonlinear relation between channel integration and ROA (see Web-appendix F).

main model. Notably, the impact of channel integration on firm profitability remains consistent in terms of both the direction and statistical significance across all three models. We also estimated the models after dropping data for the years 2008 and 2009, years significantly impacted by the financial crisis (e.g., a 3.6 percent drop in retail sales from 2008 to 2009). Similarly, we estimated the models after removing the last two years of data (2018 and 2019). Our core findings remain unchanged across all these estimations, underlining the robustness of our results.[26]

3.8 DISCUSSION

Many leading retailers, such as Walmart, Home Depot and Target have integrated their marketing channels with an eye to enhancing their customers' buying experiences and retaining competitive advantage (Gao and Su 2016). With many other retailers joining the bandwagon, these omnichannel practices are emerging across the spectrum and are a significant part of the ongoing digital transformation of our retail ecosystem. Based on theory and estimated with publicly available data, our results provide some novel and timely insights. The dominant takeaway from our results is that, while such channel integration can enable retailers to create and claim value in their consumer interactions, there are clear limits. First, the value is not monotonically related to the level of integration. In fact, retailers must integrate their channel functions at sufficient levels, to meet baseline expectations of consumers. Below that threshold, consumer expectations outstrip the value the retailer can provide, and thereby retailers incur something like a "credibility penalty" as a barrier to their value claiming. Second, channel

[26] Details of these robustness tests are in Web-Appendix G.

integration comes with significant channel coordination costs. These costs appear to rise steeply with integration, presenting a source of deadweight loss to the retailer, and negatively impacting their financial returns. We discuss the contribution and implications of our results below.

Research Contributions

Several papers point out how any strategic dividends borne of a firm's strategy can be hostage to the transaction costs it triggers (e.g. Elhelaly and Ray 2024). Kannan and Li (2017) point out the importance of this consideration in digital marketing. As omnichannel retailers seek to create a seamless experience for consumers as they navigate the on and offline channels, they incur the costs of synchronizing myriad channel functions. One of our key contributions is to offer a theory of how certain characteristics of these costs (the steep curve hypothesis) can derail the strategic dividends from such channel integration. In this we contribute to a growing literature of coordination costs and their impact on the firm (Gulati, Wohlgezogen, and Zhelyazkov, 2012; Dessein, Lo, and Minami, 2022; Ghazimatin, Mooi, and Heide, 2023). We also contribute to a growing literature on retailing that has outlined the complex nature of these coordination costs but few of which explain their role in determining the outcomes of omnichannel retailing (Gallino and Moreno 2014; Cao and Li 2015; Wiener, Hobbach & Saunders 2018).

We also build, and find empirical support for, a theory of consumer expectations specific to the emerging omnichannel ecosystem. This has been part of popular press discourse (Gulati and Garino 2000, McKinsey 2021), but not been addressed much in the literature till date (cf. Cao & Li, 2018). We propose and document how runaway consumer expectations can act as a barrier to the retailer claiming value from its omnichannel efforts. This adds critical boundary

conditions to a growing literature that discusses how omnichannel retailing enhances consumer experience (Herhausen et al., 2015; Wallace, Giese, and Johnson 2004; Bendoly et al., 2005; Schramm et al., 2011; Emrich, Paul and Rudolph 2015).

One of our key propositions has been that retailers face a bandwagon effect which creates an incentive to commence their channel integration efforts even if they do not have all the resources in place. Deriving from this, we build, and find empirical support for, a theory of U-shaped relation between revenue and level of channel integration. Revenue decreases when consumer expectations outstrip the value-add from channel integration at low levels of the latter. However, at high enough levels, the retailer can meet and exceed the consumer expectations, so, revenue increases. To the best of our knowledge, this novel result is the first such empirical evidence and builds on a growing series of papers devoted to the relation between different channel integration efforts and retailer revenue (e.g. Dinner et al. 2014; Danaher et al. 2020; Goic, Alvarez & Montoya 2018; Liaukonyte et al., 2015; Thomas and Sullivan, 2005).

One of our important empirical contributions is in documenting a negative association between ROA and channel integration. Tension between the potential value addition and the coordination costs of channel integration holds important lessons for evidence-based normative prescriptions for omnichannel activities. Our result would be the first documentation of the negative result in a comprehensive study, complementing the limited literature in the domain (e.g., Oh, Teo & Sambamurthy 2012; Gallino & Moreno 2014; Cao & Li 2015; Tagashira & Minami 2019).

Methodologically, our research makes two distinct contributions. (1) Our study constitutes the longest timeframe till date (12 years, 2008-2019) used to study the impact of

channel integrations, thereby capturing more steady-state outcomes of their impact. Earlier papers study much shorter time frames of four years or less, focused on early-stage outcomes (e.g. Gallino & Moreno 2014). (2) Our study is also the most contemporary till date (our data extends to 2019). With ongoing technological advances, this gives more current relevance to our results compared to earlier published work that had data only till 2015 (Cao and Li 2015; Tagashira & Minami 2019). So, our results are more informed with the ongoing developments in technology geared to improving operational efficiency. The negative ROA-channel integration result we observe is thus, even more salient, suggesting that the coordination costs are not just high but are significant, bulk of it hidden in the myriad channel processes, much like an iceberg.

Managerial Implications

Beware of the iceberg! The key managerial implication of our results relates to the enormous coordination costs faced by omnichannel retailers (Neslin 2022). Company accounts do not specifically capture these costs since they manifest in the many administrative efforts required to synchronize omnichannel activities. So, much like an iceberg, 90% of which remains concealed, bulk of these costs remain hidden. Yet, these are frictions that come in the way of the retailer successfully deploying its resources to create and claim value, reflecting in metrics of performance such as profitability and ROA. So, retailers must carefully calibrate their omnichannel commitments and act proactively to manage and minimize these internal administrative costs. This is in line with the normative prescriptions of Williamson's (1985) transaction cost economics. Our results offer the following three sharp takeaways on how managers should proactively calibrate, manage and minimize these costs.

Identify ballooning demands of coordination! Managers should acknowledge that they will face ballooning demands on omnichannel integration of large store networks. We find a larger store network amplifies the negative impact of channel integration on ROA. This is not unexpected because despite vertical integration, firms face heightened monitoring, control, incentives mismatch, and performance measurement challenges to prevent opportunistic shirking (Poppo and Zenger 1998; Zhang et al. 2010; Kannan, Reinartz, and Verhoef 2016). These are compounded by the increased complexity of reconciling a larger scale of customer search and sales data across stores, especially in the context of customers researching in one channel and purchasing in another (Kannan, Reinartz, and Verhoef 2016; Cui et al. 2020).

Spot the canaries in your coalmine! Managers should proactively set up organizational routines and processes to collate data and learn from periods of turbulence in their industry. Turbulent periods are like canaries in the coalmine, foreshadowing much of the uncertainties and challenges that may come with efforts at omnichannel integration. Our results suggest that, on average, retailers who have experienced higher industry turbulence are more likely to generate greater efficiency in coordinating future tasks, an effect that we attribute to learning by doing.

Do not promise the moon! Managers should also be mindful of what they promise to their customers in terms of their omnichannel capabilities. Perhaps one of the most provocative results we observe, is high advertisement intensity worsens the negative impact of channel integration on revenue, an effect we attribute to runaway consumer expectations. The central lesson here is to be mindful of how retailers should buy time as they seek to retain their competitive edge with promises. Trying to retain competitive advantage by claims that one is not able to deliver on, will invite consumer penalties till the resources are in place. We believe,

our approach to measuring channel integration levels offers a valuable, evidence-based tool for managers to assess where they are and where they need to be, in their omnichannel journey.

Bandwagons do not guarantee safe navigation! Last but not the least, managers should acknowledge that bandwagons do not guarantee success. Our results point out that the merits of getting on the omnichannel bandwagon do not obviate the need to focus on individual survival. Our result emphasize individual retailers on the omnichannel ship must manage their operational readiness, for they will inevitably come across the coordination cost iceberg and will need to navigate around the challenges. In essence, this calls for managers to ensure they make the requisite investments in human, systems, and social capital before boarding the bandwagon.

3.9 CONCLUSIONS, LIMITATIONS AND FUTURE RESEARCH

To conclude, we offer a theory of how consumer expectations and coordination costs are key boundary conditions for the retailer's value creation and claiming from their channel integration efforts. Using data from 81 publicly traded U.S. chain retailers over a period from 2008 to 2019, we find broad support for our theoretical propositions. We find retail revenue and channel integration are positively related, but only at higher levels of channel integration. At lower levels, runaway consumer expectations act as barriers to the value generating proposition. Advertising raises consumer expectations, increasing their gap with the retail ability to deliver, worsening the barriers. The retail return on assets (ROA) and channel integration are *negatively* related, consistent with steep curve characterization of coordination costs. The size of the store network that compounds the complexity of coordination, exacerbates this negative relation. On the other hand, past industry turbulence, which facilitates learning and adaptation, thereby increasing coordination capabilities, dampens the negative relation. To the best of our

understanding, these explanations and results are both new and present the most comprehensive contemporary accounting of the impact of omnichannel integration.

Our work has limitations, some of it related to data. Omnichannel retailers are not all vertically integrated across all channel functions. So, some of the coordination are internal, and others are external (Oh, Teo & Sambamurthy 2012; Neslin 2022). These may have different impact on outcomes given differences in potential opportunism related hazards. Unfortunately, our data is not granular enough to parse out the different effects. In our secondary data, we lack information about internal processes, contractual arrangements, and specific investments in channel integration initiatives. We call for future research in the domain, possibly using primary data sources such as surveys, interviews, or even company records.

We believe future research can also improve upon our measure of the level of channel integration. Our measure is based on textual data in annual reports and investor presentations. While this may be a reasonable proxy, specific characteristics of online channels and local markets may play a role in defining what is considered a low- or high-level channel integration. We feel that will be a worthwhile avenue to pursue.

Omnichannel retailing is an important part of the digital transformation of our retail ecosystem and presents an exciting opportunity for marketing researchers to contribute to both theory and practice. Many researchers are paving the way with notable efforts in the domain. We attempt to contribute to this, but much work remains. Among others, trying to understand the role of channel conflict and governance, as well as the resilience of such channels to black swan events like the recent COVID-19 pandemic, massive data breaches etc. We call on future

researchers to explore these avenues and uncover greater nuances of the efficiency and efficacy of channel integration efforts of omnichannel retailers.

3.10 REFERENCES

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3.11 APPENDIX

Appendix 2 The Effectiveness of Omnichannel Integration: Theory and Evidence

3.11.1 Appendix (A): Literature Summary

Table 3. 5 Research on the impact of channel integration on firm outcomes

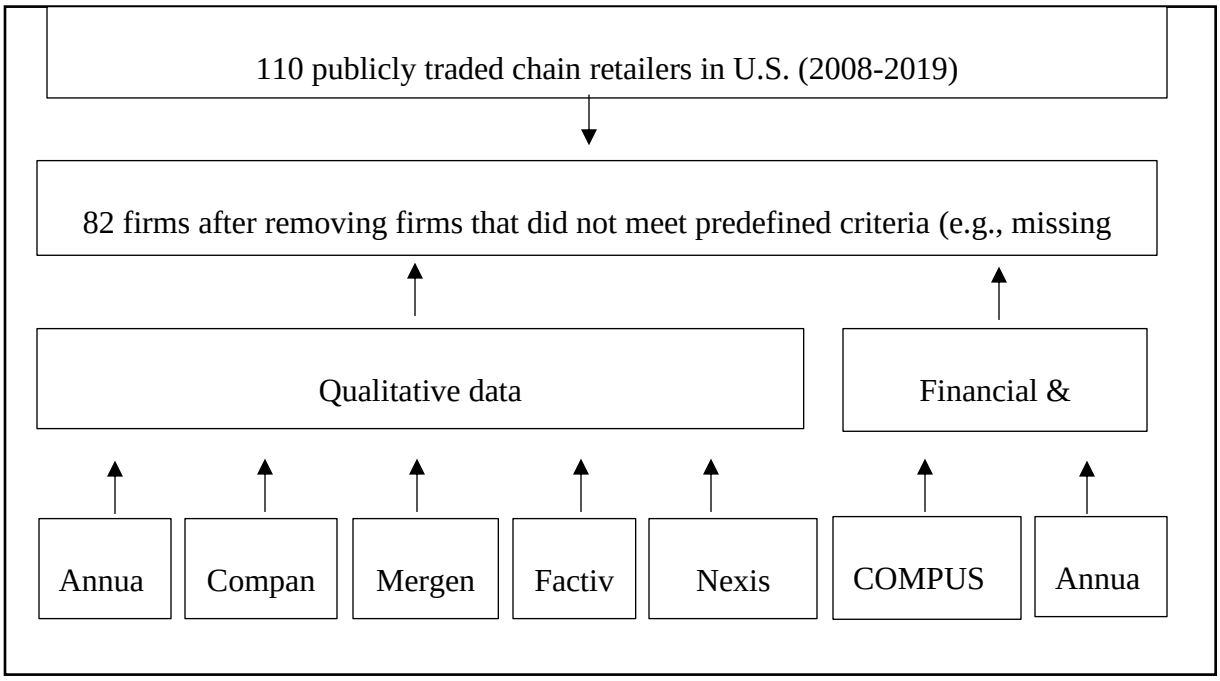
Paper	Research approach	Study period & Sample size	Channel integration measure	Outcome	Moderator
Berger, Lee & Weinberg (2006)	Analytical	N/A	Advertising coordination across channels	Profits (+)	N/A
Ofek, Katona & Sarvary (2011)	Analytical	N/A	Adding online channel to retail stores	Profits (-)	N/A
Oh, Teo & Sambamurthy (2012)	Survey	2010 & 125 firms in Singapore	Integration based on marketing mix, information access, order fulfillment & human resources.	Market share (+) Net profits (+) Revenue growth (+) ROI (+) ROA (+)	1. Environmental dynamism
Gallino & Moreno (2014)	Quasi-experiment	2011-2012; One chain retailer	Buy online and pick-up in store	Store sales (+) Online sales (-)	No
Cao and Li (2015)	Empirical; Company reports data	2008-2011; 71 chain retailers in U.S.	27 factor formative scale for integration	Sales growth (+)	1. E-commerce experience 2. Size of store network
Tagashira and Minami (2019)	Empirical; Company reports data	2012-2015 & 79 chain retailers in Japan	Same as Cao and Li (2015)	Cost efficiency (+)	1. E-commerce experience 2. Size of store network 3. Level of in-person service
This paper (2023)	Empirical; Company reports data	2008-2019 & 82 chain retailers in U.S.	32 factor formative scale for integration	Sales (-/+) ROA (-)	1. Consumer barriers 2. E-commerce experience 3. Size of store network 4. Inventory management 5. Past industry turbulence

Notes: (+)/ (−) represents a positive / a negative impact on the firm performance

3.11.2 **Appendix (B):** Data Sources, Data Collection and Data Curation Process

We build on previous marketing studies (Oh et al. 2012; Cao and Li 2015) in collecting relevant data. Our data collection falls under two categories: (1) textual, qualitative data to measure the degree of channel integration (2) Financial and accounting data. We began with 110 publicly traded retail firms in U.S., covering seven retail sectors, according to the Industry Classification Benchmark: drug retailers (retail-sector code 5333), food retailers and wholesalers (5337), apparel retailers (5371), broadline retailers (5373), home-improvement retailers (5375), specialized consumer services (5377), and specialty retailers (5379).

Table 3. 6 Data Sources and Collection Process



3.11.3 **Appendix (C):** Approach to Determining Degree of Channel Integration

Our approach to identifying relevant channel integration data is similar to that of Cao and Li (2015), which we describe in the following three steps.

Step 1: Building a dictionary of keywords: We analyzed annual reports of 25 firms, or 150 firm-years, using empirical codes from Cao and Li (2015) to build a dictionary of keywords & phrases for identifying retailer's textual data about channel integration (Table WB1).

Step 2: Using this dictionary of key words, we searched relevant contents from company records (annual reports, quarterly filings and investor presentations) and downloaded textual data for each firm in our dataset for the years 2008 to 2019.

Step 3: We then manually reviewed the identified text and coded the degree of channel integration for each firm for the years 2008 to 2019 using 32-factor coding scale. (An illustrative example in table WC 2).

Table 3. 7 Dictionary of keywords

Subcategory	Keywords and Phrases
Channel Strategy	Selling channels, Omnichannel, multichannel, crosschannel, mobile, eCommerce, electronic commerce, digital channel, Direct channels, Digital orders, Internet store, online kiosks, online capabilities, web-based store, clicks and mortar strategy, direct to consumer, seamless and frictionless shopping, chat functionality, customer contact center
Integration of consumer order fulfillment	Buy online and pickup in store, Buy online and ship to store, Drive up and go pick up points, pickup locations, Site to Store, Click to call or chat, reserve online, ship from store, store to door, return or exchange instore, Instore Lockers, curbside pickups
Integr of cons infor.	Access to online inventory, browse inventory in store, WiFi in store
Alignment of fundamentals	customer services, promotion, price, loyalty programs, assortment, merchandise offerings across channels
Centralization of back-end system	Integrate customer data, marketing, shopping channels, information systems, database, services, logistics optimization, direct channel integration, digital and data analytics capabilities, eCommerce fulfillment capabilities, Ship from store
Organization transformation	Sharing knowledge across channels, competences in retail and digital commerce, changing organizational structure, Incentive program linked to sales, Digital team, Digital department, omnichannel strategy department,
Additional Channel Functionalities	Same Day Delivery, Same Day Pickup, Free shipping, Delivery Unlimited, NextDay Delivery, Expanded product assortment online, Infinite Aisle, eCommerce fulfillment centers, self-service lockers, customers ratings and reviews

Table 3. 8 An illustrative example of content analysis to measure degree of channel integration

Level	Sub-category	Empirical Codes	Sample excerpts
1. Low	Different retail-mix policy	Different assortment policies across channel	*…….. it can continue to grow sales with its eCommerce store by broadening its online assortment with new product exclusives and expanded product extensions (**RTWInc. 2012**)*
		Different brand in different channel	
		Different price policies across channel	*"MarketLive to Provide the Bon-Ton Stores, Inc. with E-Commerce Platform" (**Bon Ton, June 2007**)*
		Different service in different channel	
	Presence in different channels	Presence in different channels	
2.Medium	Integrated marcom across channel	Consistent use of the same brand in all channels	*"So …consistent branding and a consistently positive shopping experience in stores and online" (**Target 2011**)*
		Consistency of marketing message across channels	*".....with a more integrated and consistent shopping experience. (**Staples 2012**)*
3.High	Integration of consumer order fulfillment	Buy online and pick up in-store	*"…introduced new programs, such as Buy Online, Return In Store and Buy Online, Ship To Store" (**Home Depot**, 2012)*
		Reserve online and pick up in-store	
		Curbside pick up	*".... expanded over 1,000 online grocery pickup locations" (**Walmart 2017**)*

		Ship from store	*".. launched ship from store capability, now active in more than 400 stores" (**Best buy 2013**)*
		Same Day Delivery	*"...Expanded markets for Same Day Delivery, as previously announced" (**Macy's 2015**)*
		Free shipping for online orders	
		In-store lockers	
		Click-to-call	
		Buy online and return in-store	
	Integration of consumer information access	Access to online inventory and online orders fulfilled by staff in-store	
		Allowing online consumers to browse the inventory in-store	
		Linkage between store and mobile app	*"Our sales and profits are driven through our physical stores which are highly integrated with our e commerce, digital and mobile businesses" (**Game stop 2013**)*
		Aligned services across channels	*"…steps to provide our customers with a seamless and frictionless shopping experience in our stores, online, on the job site and in their homes" (**Home Depot 2016**)*
4. Very High	Alignment of fundamentals	Aligned promotion across channels	
		Aligned price across channels	
		Aligned loyalty program across channels	

	Aligned assortment across channels	
Centralization of back-end system	Integration of merchandize planning systems across channels	"*…centralized our inventory planning and replenishment function and implemented new forecasting and replenishment technology." (**Home Depot**, 2012)*
	Integration of logistics across channels	
	Integration of information systems across channels	*"…… integrate data from the field sales, eCommerce sales, design, merchandising, planning and distribution, and financial reporting functions" (**RTW/New York & Company**, Inc. 2014)*
	Centralized call center service across channels	
	Integration of database of clients across channels	
Organization transformation	Sharing knowledge across channels	
	Recruiting talents with competences in retail and digital commerce	*"..... I am committed to building the leading global e commerce and multi channel business " chief omnichannel manager, Castro Wright (**Walmart 2010**)*
	Changing org structure to align to OC	
	Incentive linked to online & offline sales	

3.11.4 **Appendix (D).** Testing for a U-shaped relationship between integration and revenue

A formal test for a U-shaped relationship between integration and revenue shows that the slope at both the lower end and upper end is significant.

Table 3. 9 Test for a U-shape relationship b/w integration and revenue

Specification: f(x)=x^2
Extreme point: 1.400901
Test:
H1: U shape
vs. H0: Monotone or Inverse U shape

	Lower bound	Upper bound
Interval	**0**	**4**
Slope	**-1948.921**	**3615.843**
t-value	**-1.430032**	**2.53557**
P>t	**0.0765866**	**0.0057261**

Overall test of presence of a U shape:
t-value = 1.43
P>t = .0766

3.11.5 Appendix (E). Moderation effect of advertising on the integration-revenue U-shaped relationship

Appendix E 1. Determining if advertising flattens or steepens the integration-revenue U-shaped relationship

Following Haans et al. (2016), we have the following specification for the moderation effect on Revenue-*integration* relationship:

$$Revenue_{i,avg\ (t\ \&\ t+1)} = \beta_0 + \beta_1 ChanInteg_{it} + \beta_2 ChanInteg_{it}^2 + \beta_3 ChanInteg_{it} \times xad_{it} + \beta_4 ChanInteg_{it}^2 \times xad_{it} + \beta_5\, xad_{it} + \beta_6\, controls \qquad (E1.1)$$

First order condition:

$$\frac{\delta Revenue_{avg}}{\delta ChanInteg} = \beta_1 + 2\beta_2 ChanInteg + \beta_3 xad + 2\beta_4 ChanInteg * xad = 0$$

Solving for integration gives the *turning* point.

$$ChanInteg^* = \frac{-\beta_1 - \beta_3 xad}{2\beta_2 + 2\beta_4 ChanInteg \times xad} \qquad (E1.2)$$

When $xad = xad_1$, the turning point is at:

$$ChanInteg_1{}^* = \frac{-\beta_1 - \beta_3 xad_1}{2\beta_2 + 2\beta_4 ChanInteg \times xad1} \qquad (E1.3)$$

When $xad = xad_2$, *the* turning point is at:

$$ChanInteg_2^* = \frac{-\beta_1 - \beta_3 xad_2}{2\beta_2 + 2\beta_4 ChanInteg \times xad_2} \qquad (E1.4)$$

When $xad_2 > xad_1$, *assuming* equation E1.1 is a U-shape and remains so within the relevant range of advertising spend, *xad*. Then going the same distance, a (a>0) to the left of both turning points, the designating S1 the slope at xad_1*-a and S2 the slope at X_2*-a:

$$S_1 = \beta_1 + 2\beta_2 (X_1^* - a) + \beta_3 xad_1 + 2\beta_4 (X_1^* - a) xad_1$$

$$S_2 = \beta_1 + 2\beta_2 (X_2^* - a) + \beta_3 xad_2 + 2\beta_4 (X_2^* - a) xad_2$$

If S2 >S1 the U-shape is steepening. By symmetry, the same holds if we move *a* (*a*>0) to the right of the turning points. Then:

$$S_2 - S_1 = -2\beta_4 (xad_2 - xad_1)\, a \qquad (E1.5)$$

Because $xad_2 > xad_1$ and *a*>0, the U-shape is steepening if $\beta_4 > 0$, which is the result we get from our estimation. This suggests that increase in advertising spend steepens the U-shape curvilinear relation between revenue and integration.

Appendix E 2. Determining the direction of the turning **point shift as advertising changes**

Since the moderation effect of advertising spend can also impact the turning point of the U-shaped "revenue-channel integration" relationship, we determine the direction of the turning point shift as advertising spend changes. Following Haans et al. (2016 p1195), we first take the derivative of the equation E1.

$$Revenue_{i,avg\ (t\ \&\ t+1)} = \beta_0 + \beta_1 ChanInteg_{it} + \beta_2 ChanInteg_{it}^2 + \beta_3 ChanInteg_{it} \times xad_{it} + \beta_4 ChanInteg_{it}^2 \times xad_{it} + \beta_5\, xad_{it} + \beta_6\, controls \qquad (E2.1)$$

First order conditions:

$$\frac{\delta Revenue_{avg}}{\delta ChanInteg} = \beta_1 + 2\beta_2 ChanInteg + \beta_3 xad + 2\beta_4 ChanInteg * xad = 0$$

Solving for integration gives the turning point.

$$ChanInteg^* = \frac{-\beta_1 - \beta_3 xad}{2\beta_2 + 2\beta_4 ChanInteg \times xad} \qquad (E2.2)$$

Then, we take the derivative of equation E2 with respect to advertising spend, xad.

$$\frac{\delta\, ChanInteg^*}{\delta xad} = \frac{\beta_1\beta_4 - \beta_2\beta_3}{(2\beta_2 + \beta_4 xad)^2}$$

The direction of shift depends on the sign of the numerator, as the denominator is strictly larger than zero. In our estimation, the value positive, suggesting the turning point will move to the right as *xad* increases.

However, a formal test using the *nlcom* command in Stata shows that the impact is not significant at the various values of advertising spend, xad . Output from *nlcom* stata command at the 50% percentile value of advertising spend. Results are not significant at 75 percentile value of advertising spend.

F.revt	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
_nl_1	.0014702	.0067924	0.22	0.829	-.0118426	.014783

3.11.6 **Appendix (F).** Testing for the U-shaped relationship between integration and ROA

A formal test for a U-shaped relationship between integration and ROA shows that the slope is *not significant* at the upper end.

Table 3. 10 Test for U-shaped relationship b/w integration and ROA

Specification: f(x)=x^2
Extreme point: 3.984901
Test:
H1: U shape
vs. H0: Monotone or Inverse U shape

	Lower bound	Upper bound
Interval	**0**	**4**
Slope	**-0.0143073**	**0.0000542**
t-value	**-1.729987**	**0.0062309**
P>t	**0.0420533**	**0.4975152**

Overall test of presence of a U shape:
t-value = **0.01**
P>t = **0.498**

3.11.7 Appendix (G). Robustness tests

Tobin's q as an alternative measure of return on channel integration: We use Chung and Pruitt's (1994) method to calculate Tobin's q = (MVE +PS+DEBT) / TA, where MVE is the closing prices of shares at the end of the financial year × number of common shares outstanding, PS is the liquidation value of outstanding preferred stock, DEBT = (current liabilities – current assets) + (book value of inventories) + (long-term debt), and TA is the book value of total assets.

Table 3. 11 Results for H3-H6 analysis (outcome variable: Tobin's q)

Variables	Model 1	Interaction effects
ChanInteg	-0.15***	-0.58***
	(0.035)	(0.171)
(LN) Xad	-0.24***	-0.21**
	(0.087)	(0.088)
(LN) Stores	-0.67***	-0.69***
	(0.174)	(0.175)
Ecomexp	-0.06***	-0.08***
	(0.023)	(0.029)
(LN) Invtmgmt	0.15	0.07
	(0.219)	(0.240)
PIT	-1.83***	-3.23***
	(0.687)	(1.113)
ChanInteg × (LN) Stores		0.05**
		(0.023)
ChanInteg × Ecomexp		0.01
		(0.004)
ChanInteg × (LN) Invtmgmt		-0.01
		(0.047)
ChanInteg × PIT		1.11**
		(0.567)
Firm size	0.67***	0.64***
	(0.196)	(0.200)
Cashholding	2.24***	2.24***
	(0.416)	(0.415)
SellIntens	-7.61***	-7.42***
	(1.084)	(1.084)
GrowthOpp	0.29*	0.26*
	(0.151)	(0.151)
CapIntens	0.08	0.28
	(0.237)	(0.244)
Competition	1.80**	2.08**
	(0.844)	(0.860)
Revgrowth	1.57***	1.59***
	(0.300)	(0.299)
Firm fixed effects	YES	YES
Year fixed effects	YES	YES

Constant	-231.23***	-232.71***
	(47.06)	(51.29)
Observations	831	831
R-squared	0.251	0.262
Number of firms	82	82

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 3. 12 Results H3-H6 analysis from Pooled OLS Regression Analysis (outcome variable: ROA_avg)

	Pooled OLS		RE regression	
VARIABLES	Main effects	Interaction effects	Main effects	Interaction effects
ChanInteg	-0.01**	0.01	-0.01**	0.005
	(0.004)	(0.017)	(0.002)	(0.011)
(LN) Xad	-0.01*	-0.01	-0.02***	-0.017***
	(0.005)	(0.005)	(0.004)	(0.004)
(LN) Stores	-0.00	0.01	-0.01	0.000
	(0.006)	(0.007)	(0.006)	(0.007)
Ecomexp	-0.00	-0.00	-0.00	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)
(LN) Invtmgmt	-0.05***	-0.05***	-0.04***	-0.053***
	(0.010)	(0.015)	(0.010)	(0.012)
PIT	0.02	-0.30***	-0.08	-0.276***
	(0.101)	(0.107)	(0.049)	(0.072)
ChanInteg × (LN) Stores		-0.01**	-0.00602**	-0.004**
		(0.002)	(0.00237)	(0.001)
ChanInteg × Ecomexp		0.00	0.00106**	0.000
		(0.001)	(0.000525)	(0.000)
ChanInteg × (LN) Invtmgmt		0.00	0.000979	0.003
		(0.006)	(0.00608)	(0.003)
ChanInteg × PIT		0.22***	0.215***	0.143***
		(0.068)	(0.0707)	(0.039)
Firm size	0.02***	0.02***	0.03***	0.025***
	(0.009)	(0.008)	(0.007)	(0.007)
Cashholding	0.15***	0.16***	0.16***	0.169***
	(0.042)	(0.041)	(0.026)	(0.026)
SellIntens	-0.27***	-0.24***	-0.46***	-0.467***
	(0.067)	(0.060)	(0.054)	(0.053)
GrowthOpp	-0.01	-0.01	0.00	0.002
	(0.016)	(0.015)	(0.011)	(0.011)
CapIntens	0.03	0.03	0.03**	0.032**
	(0.020)	(0.020)	(0.014)	(0.014)
Competition	0.08**	0.09**	0.04	0.058
	(0.037)	(0.037)	(0.038)	(0.039)

Revgrowth	0.20***	0.21***	0.12***	0.115***
	(0.053)	(0.052)	(0.019)	(0.019)
Year fixed effects	YES	YES	YES	YES
Industry fixed effects	YES	YES	YES	YES
Firm Fixed effects	YES	YES	YES	YES
Constant	-3.73	-2.63	0.13	1.340
	(3.463)	(3.410)	(2.013)	(2.034)
Observations	747	746	747	747
R-squared	0.30	0.39	0.337	0.304
Number of firms	82	82	81	81

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

3.11.8 Appendix (H). Gaussian Copula Endogeneity Correction Method

As discussed in the paper, we utilize the instrument-free *Gaussian Copula* method (Park & Gupta 2012) to correct for the potential endogeneity and construct copula term for channel integration (Equation 1).

$$C\_ChanInteg_{it} = \phi^{-1}\left(H_{ChanInteg}\left(ChanInteg_{it}\right)\right) \quad (1)$$

Where ϕ^{-1} is the inverse of the normal cumulative distribution function. $H_{ChanInteg}\left(ChanInteg_{it}\right)$ is the empirical cumulative density function of the channel function integration. We add these copula terms as controls to Equation 4 to mitigate the endogeneity concerns. The instrument free Gaussian copula captures the correlation of the endogenous variable and the error term by modeling their joint normal distribution based on the observed data (Park and Gupta 2012; Datta et al. 2015; Rossi 2014). This method requires the distribution of the endogenous variables to be non-normal with a normally distributed error term (Lenz et al. 2016). Our endogenous variables meet this requirement, as reflected in the Shapiro-wilk normality test results (See Table WG 1).

Table 3. 13 Shapiro-Wilk Test

Variable	Obs	W	V	z	Prob>z
ChanInteg	921	0.97576	14.183	6.545	0

In the following models, we estimate both the Revenue (Table WH2) and the ROA (Table WH3) models with copulas. Models 1 in each case is run without any interaction, including the copula term for ChanInteg. Models 2 in both cases, introduces the interactions with ChanInteg, with only the copula term for ChanInteg. Models 3 in has the interactions for ChanInteg, and we also include copula terms for the interaction of ChanInteg with the relevant variables. If ChanInteg is endogenous, its interactions would also be endogenous. Notice that None of the copula terms in Table WH2 are significant. In Table WH2, only one of the seven copula coefficients is significant. Overall, it appears that in this data, the endogeneity of ChanInteg debatable.

Table 3. 14 Regression, including Copula correction terms (Revenue)

	DV: Revenue_avg		
Variables	Model 1	Model 2	Model 3
ChanInteg	-2,414	2,948	2,899
	(1,489)	(3,466)	(3,533)
ChanInteg^2	635.3**	-2,602***	-2,646***
	(315.3)	(885.8)	(893.6)
ChanInteg x (LN) Xad		-585.2	-608.2
		(658.8)	(673.7)
ChanInteg^2 x (LN) Xad		526.1***	531.1***
		(164.5)	(165.5)
(LN) Xad	-1,318	-807.7	-895.9
	(1,208)	(1,236)	(1,302)
(LN) Stores	8,581***	7,319***	7,388***
	(2,599)	(2,537)	(2,545)
Ecomexp	-208.0	-223.0	-186.1
	(350.9)	(346.1)	(358.4)
(LN) Invtmgmt	15,149***	15,139***	15,234***
	(3,129)	(3,043)	(3,059)
PIT	-16,455*	-15,140	-15,077
	(9,986)	(9,725)	(9,739)
Copula_cci	616.5	292.9	249.8
	(796.9)	(776.8)	(783.8)
Copula_sq_cci	-166.9	-648.6	-681.6
	(813.2)	(801.5)	(810.0)
Copula_cci_lnxad			-345.6
			(1,707)
Copula_sq_cci_lnxad			776.3
			(1,631)
Firm size	1,656	3,777	3,688
	(2,804)	(2,748)	(2,760)
Cashholding	-1,919	-1,382	-1,567
	(5,834)	(5,722)	(5,744)
SellIntens	-28,471*	-33,674**	-33,224**
	(15,303)	(14,912)	(14,992)
GrowthOpp	1,737	1,191	1,187
	(2,239)	(2,184)	(2,189)
Caplintens	-11,850***	-9,060***	-9,178***
	(3,457)	(3,420)	(3,435)
Competition	-51,704***	-46,618***	-46,456***
	(12,639)	(12,358)	(12,400)
Revgrowth	5,773	3,227	3,261
	(4,041)	(3,952)	(3,959)
Firm fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Constant	-1.442e+06**	-1.302e+06*	-1.238e+06*

	(692,888)	(683,113)	(702,499)
Observations	746	746	746
R-squared	.267	.308	.309
Number of firms	81	81	81

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 3. 15 Regression, including Copula correction terms (ROA)

	DV: ROA_avg		
Variables	Model 1	Model 2	Model 3
ChanInteg	-0.00701*	0.0104	0.0464**
	(0.00373)	(0.0125)	(0.0204)
(LN) Xad	-0.0212***	-0.0183***	-0.0186***
	(0.00606)	(0.00609)	(0.00608)
(LN) Stores	-0.0238*	-0.0182	-0.0114
	(0.0130)	(0.0131)	(0.0137)
Ecomexp	-0.00422***	-0.00283	-0.00389*
	(0.00159)	(0.00200)	(0.00218)
(LN) Invtmgmt	-0.0192	-0.0284*	-0.00878
	(0.0157)	(0.0171)	(0.0199)
PIT	-0.0732	-0.254***	-0.242*
	(0.0500)	(0.0749)	(0.126)
ChanInteg × (LN) Stores		-0.00412**	-0.00789***
		(0.00166)	(0.00282)
ChanInteg × Ecomexp		0.000238	0.000731
		(0.000292)	(0.000554)
ChanInteg × (LN) Invtmgmt		0.00179	-0.00795
		(0.00332)	(0.00645)
ChanInteg × PIT		0.123***	0.121
		(0.0412)	(0.0744)
Copula_cci	-0.000293	0.00161	-0.0419**
	(0.00394)	(0.00395)	(0.0212)
Copula_cci × (LN) Stores			0.00445
			(0.00307)
Copula_cci × Ecomexp			-0.000575
			(0.000619)
Copula_cci × (LN) Invtmgmt			0.0117
			(0.00728)
Copula_cci × PIT			0.00676
			(0.0861)
Firm size	0.0198	0.0184	0.0177
	(0.0140)	(0.0142)	(0.0142)
Cashholding	0.161***	0.168***	0.166***
	(0.0293)	(0.0293)	(0.0292)
SellIntens	-0.678***	-0.684***	-0.689***
	(0.0767)	(0.0766)	(0.0767)
GrowthOpp	0.00321	0.00357	0.00277
	(0.0112)	(0.0112)	(0.0113)
Caplintens	0.0399**	0.0349*	0.0321*
	(0.0173)	(0.0178)	(0.0178)
Competition	-0.0160	0.0116	0.0158
	(0.0627)	(0.0645)	(0.0645)

Revgrowth	0.110***	0.105***	0.105***
	(0.0203)	(0.0202)	(0.0201)
Firm fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Constant	-7.824**	-4.539	-5.249
	(3.287)	(3.515)	(3.597)
Observations	746	746	746
R-squared	.264	.279	0.286
Number of firms	81	81	81

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

3.11.9 References

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4 ACCELERATING INTO A QUAGMIRE? THEORY AND EVIDENCE ON THE EFFECTIVENESS OF THE SPEED OF OMNICHANNEL INTEGRATION

4.1 ABSTRACT

While rapid channel integration offers strategic dividends, it also imposes considerable costs associated with intra- and inter-firm coordination. This is an important concern for the emerging omnichannel retail ecosystem where retailers have to decide how rapidly to implement their omnichannel integrations. Existing research on the relationship between speed and firm performance remains mixed, and theoretical propositions in the multichannel retailing context are limited. Addressing this gap, we propose that omnichannel retailers' business outcomes are a function of the speed of their omnichannel integration, in ways that discriminate between the positive impact of the strategy dividend they garner and the negative impact of the coordination costs they incur. Using a novel dataset of U.S. chain retailers for 2008-2019 period, our empirical analyses find that while channel integration speed enhance financial performance on average, the efficacy of omnichannel integration speed is contingent upon important boundary conditions keeping with consideration of strategic dividend and coordination costs.

Keywords: Omnichannel integration speed, coordination cost, strategic dividends, firm profitability

4.2 INTRODUCTION

Remarkable brands know that speed is essential." (Dennis 2024)

Investing in omnichannel retailing has become a top priority for retailers, as highlighted in a recent survey of 1,005 retail decision-makers across the U.S., U.K., and India (Pastore, 2023). At the core of omnichannel retailing is tighter integration of channel functions. While the task is complex, costly and challenging since it requires synchronizing different business processes, people, and technology, a key challenge for retailers is to also decide how rapidly to implement such integration. Walmart, Best Buy and Home Depot were very quick to launch their omnichannel operations, while the likes of Michaels, Williams-Sonoma and Foot Locker delayed their efforts by nearly a decade (Hamstra and Turcsik 2018). This poses several questions. Indeed, if firms are too slow to integrate and evolve, they will likely yield market advantage to their competitors who integrate rapidly and capture not only customer market share but may also lock in upstream advantages. On the other hand, if a firm were to pull the trigger too quickly, they may find themselves woefully inadequate to deal with the burgeoning coordination costs – for, such costs are clearly significant. Greater channel integration comes with looming costs of operations; mistakes leave little time for adjustments, making learning and adaptations costly; interfaces between different functions (e.g., logistics, inventory, information systems and marketing) present unforeseen problems. Not all of these costs relate to technology, some derive from human loci – incentives, shirking and error; unforeseen changes in the business environment disrupt plans and force reprioritizations, opportunistic renegotiations and much more, which have been shown to impose significant drag on a firm's business outcomes (Gulati, Wohlgezogen and Zhelyazkov 2012; Ghazimatin, Mooi and Heide 2023; Elhelaly and Ray 2024). Not surprisingly, industry experience with omnichannel integration has not always

been positive. Several retailers like Sears, Toys "R" Us, and J.C. Penny did not survive the ongoing disruption of the retail ecosystem. While such failures are normal parts of doing business in disruptive markets, speed is often implicated, with over 75% of CEOs reporting that their organizations are not adapting *quickly enough* to face the significant disruptions (2023 Disruption Index Study). It is this concern with *speed* of omnichannel integration, that is the central motivation of this paper.

We offer an explanation for why the speed of implementing channel integration can be a key contributor to firm performance. The core of our explanation draws on the tension between the strategic dividends that firms can extract from a speedy implementation of channel integration, and the resulting high levels of coordination challenges that they may be ill-equipped to manage. So, our key research questions are: (a) How does the speed of channel integration impact firm performances, and (b) What factors moderate the speed-firm performance relation?

Our paper seeks to fill several critical gaps in the scholarly literature. While the literature on first-mover advantage and entry timing has explored the relationship between speed and performance outcomes, it has not been adequately examined in the omnichannel context. Moreover, research has primarily conceptualized speed in terms of the shortest time to launch an event or a new product or a channel etc. Such a conceptualization largely emphasizes the *pioneering* effects of first mover. However, omnichannel retailing requires a different conceptualization of speed that can capture not only speed to a launch or large event but also involves speed of implementing successive channel integration initiatives. So, speed of channel integration should be viewed in terms of rapid execution, learning and adaptation, which can afford the *acceleration* advantage associated with speed of channel integration. This is

particularly relevant in the retailing industry where launch of omnichannel offerings is highly publicized and known by competitors and customers without any delays.

Indeed, speed can accelerate organizational learning, facilitate new routines and enhance adaptation to changing environments is well recognized (Teece 2007; Hashai et al. 2018). It is associated with increased coordination, efficient resource utilization and establishing entry barriers, all of which could provide strategic dividends in contributing to firm performance (Lee and Grewal 2004, Pentina et al. 2009). However, such speed comes with steep costs and constraints. Such constraints relate primarily to time-compression diseconomies, which pertains to the additional costs incurred by firms seeking to accelerate their implementation when such strategic action could be implemented more economically over a longer duration (Dierickx and Cool 1989). Research on such *acceleration effects* (as opposed to the pioneering effects) is rather limited, particularly in the context of omnichannel. Hence, we have limited understanding of the trade-offs firms face as they speed up their omnichannel integration.

We seek to address the above gaps in multichannel retailing literature by studying some sources of firm level heterogeneity across both firm and industry level factors that affect the considerations of strategic dividend and coordination costs. We examine our theoretical predictions with a comprehensive longitudinal data of 79 U.S. multichannel retailers, spanning twelve years between 2008 and 2019. While we pose speed as a key determinant of firm performance, driving from the tension between strategic dividend and coordination cost, our results also suggest that forward looking retailers would be able to use their speed of channel integration to manage coordination costs. Illustrating this efficiency aspect of speed would be a novel contribution to the efficiency-oriented channel governance literature (Williamson 1985; Ghosh and John 2009; Kashyap, Antia, and Frazier 2012; Heide, Kumar, and Wathne 2014).

The rest of the paper is organized as follows: In the next section, we provide an overview of the speed construct and the related literature. We then present theoretical arguments and develop our hypotheses. After describing measures and econometric methods, we report results and discuss key findings. We conclude by discussing the limitations and future research.

4.3 BACKGROUND LITERATURE

Speed, in the strategy literature, has been intuitively conceptualized in terms of time, shortness of time (Homburg and Bucerius 2006), the interval between events (Kessler and Chakrabarti 1996), the pace of activity (Prashantham and Young 2001) etc. Not surprisingly, it overlaps with constructs like first mover advantage (Lieberman and Montgomery 1988). The marketing strategy literature related to speed has evolved from a "first mover" focus into a more nuanced and more pragmatic focus on the timing or order of entry, where the focus has been on ideas such as, "lead time" (Golder and Tellis 1993; Boulding and Christen 2008), or "window-of-strategic opportunity" (Agarwal and Bayus 2004), and "agility" (Roberts and Grover 2012; Kalaignanam et al. 2020), as predictors of firm performance.

The "lead time" literature is rooted in the logic of first mover being a strategic advantage. The theoretical explanations of these studies are primarily grounded in the resource-based view, emphasizing the importance of firm resources for early entrants in establishing barriers to entry and achieving sustainable competitive advantage (Robinson, 1988; Golder and Tellis, 1993).

The concept of "window-of-strategic opportunity" broadly relates to the stage of industry or market evolution (Agarwal and Bayus 2004) and centers around the timing of action, in which starting point is often just *before* the emergence of a dominant design (Christensen et al., 1999)

or a category (Suarez, Grodal and Gotsopoulos 2015), and the ending point coincides with the emergence of a dominant design or category (Anderson and Tushman 1990).

"Agility" emphasizes firm responsiveness to technological shifts and their impact on customers, competition, and the market. It has been categorized as *customer agility*, which is about firm's speed of response to customer-based opportunities for innovation and competitive action (Roberts and Grover 2012) and as *marketing agility*, which refers to "the extent to which an entity rapidly iterates between making sense of the market and executing decisions to adapt to the market" (Kalaignanam et al. 2020 P 35).

Some studies pose speed as a firm level characteristic contributing to competitive advantage, viewing it variously as a resource (Teece 1981), an intrinsic firm capability to "execute projects faster than competitors at the same cost" (Hawk et al., 2013 p. 1532), a dynamic capability (Brown and Eisenhardt 1997), or a process (Baum and Wally 2003). These examine the role of these characteristics in outcomes such as, new product development (Scherer 1967), response to competitive actions (Smith et al. 1991), decision-making processes (Baum and Wally 2003, Eisenhardt 1989), post-merger marketing integration (Homburg and Bucerius 2006), international market expansion (Chang and Rhee 2011), and alliance portfolio expansion (Hashai et al. 2018).

Nevertheless, research evidence of the speed-performance relationship is mixed (Dykes et al. 2018). For example, speed, exemplified by shorter product life cycles, positively affect market share in manufacturing firms (Vesey 1991), while delays in product introduction adversely impact profitability (Hendricks and Singhal 2008). However, speed of alliance portfolio expansion is negatively associated with firm profitability (Hashai et al. 2018). Other

contingencies have also been identified. A study by Homburg and Bucerius (2006) show that the effects of integration speed following mergers and acquisitions are contingent on the degree of relatedness, which authors define as the compatibility between internal (e.g., management styles) and external aspects (e.g., target markets) of the combined entities. Speed of expansion to international markets influences firm performance, and the impact is dependent on firm resources, capabilities and the competitive environment (Chang and Rhee 2011).

Based on our review of research about the speed-firm performance relationship in multichannel marketing, we summarize the relevant research in Table 4.1. For the most part, these papers have examined the relationship between speed of online channel entry and firm performance. Researchers have investigated the complementary or substitutive effects of online channel on existing offline channels. For instance, retailing firms that adopted internet for communication more quickly were able to enhance performance outcomes, likely due to complementary effects (Lee and Grewal 2004; Min and Wolfinbarger 2005). In contrast, retailers with extensive catalog experience that adopted online retailing early experienced a decline in performance, presumably due to substitutive effects (Pentina, Pelton, and Hasty 2009).

In examining the relationship between "entry-timing" (early or late entry) and performance outcomes for online retailers, researchers also find mixed results. Min and Wolfinbarger (2005) show no impact of early entrants on firm performance. However, Srinivasan and Moorman (2005) show positive impact on customer satisfaction for online retailers that were not too early nor too late to enter the market. Research on speed of joining third-party e-commerce platform (Wang et al., 2016) or B2B platforms (Deng and Wang 2016), on the other hand, show that speed provides early mover advantage and positively impact firm revenue.

This research, largely grounded in the resource-based view converge on the following explanations: (1) *Isolating mechanisms*, which protect first movers from imitation (Golder and Tellis, 1993); (2) *Firm-level resources and capabilities* that facilitate the exploitation of early mover advantages (Teece, 1986); and (3) *Environmental conditions* that either enable or constrain these advantages (Dess and Beard, 1984). Much of this literature, thus, focus on speed as a desirable factor and look at firm or industry level enablers of speed. Consequently, comparatively less attention is paid to the mechanisms that may underline the potential negative consequences of speed. This is particularly important for omnichannel contexts that are rife with coordination challenges of channel integration.

In this paper, we study the speed-performance relation for omnichannel integration. We seek to contribute to the literature by looking at the relation through the lens of strategic dividend and coordination cost trade-offs, imposed by different firm and industry factors.

Table 4. 1 Literature on 'Speed-Firm performance' Relationship

Paper	Study period & sample size	IV (Speed)	Outcome	Moderators
Lee & Grewal 2004	1994-2000 & 83 store-based chain retailers	Speed of announcing internet adoption	Tobin's q	Slack resources
Key Findings: Both the speed of announcing internet adoption for communication and e-alliance formation positively impact firm performance; however, no such impact of adopting internet as sales channels.				
Srinivasan & Moorman 2005	2001 &187 pure online retailers (e-tailers)	Firm's online experience relative to the first entrant in the industry	Customer satisfaction rating	1. Firm's CRM investments 2. Firm CRM capability
Key Findings: Moderate speed (firm's relative online experience) strengthens the effects of a firm's CRM system investments more than low and high online experience.				
Min & Wolfinbarger 2005	1996-2000 &42 e-tailers	Time between the e-tailer's entry & the first first entrant	Market share, profit margin & marketing efficiency	N/A
Key Findings: Earlier entrants have neither a higher market share, nor higher margins, nor higher marketing efficiency than do later entrants, presumably due to low consumer switching costs in e-commerce.				
Varadarajan, Yadav & Shankar 2008	Conceptual paper			

Key Findings: Resources enable firms in internet-enabled markets (digital markets) to reach customers fast, create switching costs, and retain them through investments in innovations.

Pentina, Pelton & Hasty 2009	1996-2006 & 158 store-based chain retailers	Speed of online sales channel entry	Net income, market share, gross margin	1. Catalog experience 2. B&M experience 3. Firm size

Key Findings: Firm resources (catalog experience, bricks-and-mortar experience and firm size) determine the success of the speed of online entry strategy.

Wang, Cavusoglu & Deng 2016	38 weeks and 7309 e-tailers	Delays (days) after the entry of the first entrant	Sales	CRM capabilities

Key Finding: EMA exists for e-tailers operating on third-party e-commerce platforms; CRM capabilities enhance EMA effects.

Deng and Wang 2016	300K transactions by 4000 firms, 2007–2014	Number of months since the start of joining the B2B e-commerce portal	Sales	1. Product price 2. Product diversity

Key Findings: Early mover advantage (EMA) for cross-border B2B e-commerce portals diminish beyond a critical length of tenure because of the free-riding costs, resolution of technological or market uncertainty, as well as the incumbent inertia of early movers.

This paper 2024	2008-2019 & 79 chain retailers in U.S.	Speed of omnichannel integration	Firm profitability (Return on Assets)	1. Stores 2. bmexp 3. Invt. mgmt efficiency 4. Industry turbulence 5. Industry channel integration

6. Adv. intensity
7. Market share

Key Findings: Retailers use channel integration speed as a governance tool to economize on coordination costs and drive the firm's strategic behavior. Finds support for key hypotheses.

4.4 THEORY AND HYPOTHESIS

There are several key components of our theoretical arguments that inform the development of our hypotheses: (1) The transition from multichannel to omnichannel retailing, which is time consuming and demands investments in human, system, and organizational capital; (2) The omnichannel integration speed decision; and (3) The speed-firm performance relation and firm heterogeneity. The general conceptual framework is in Figure 4.1. We now discuss these components to support the reasoning behind our hypotheses.

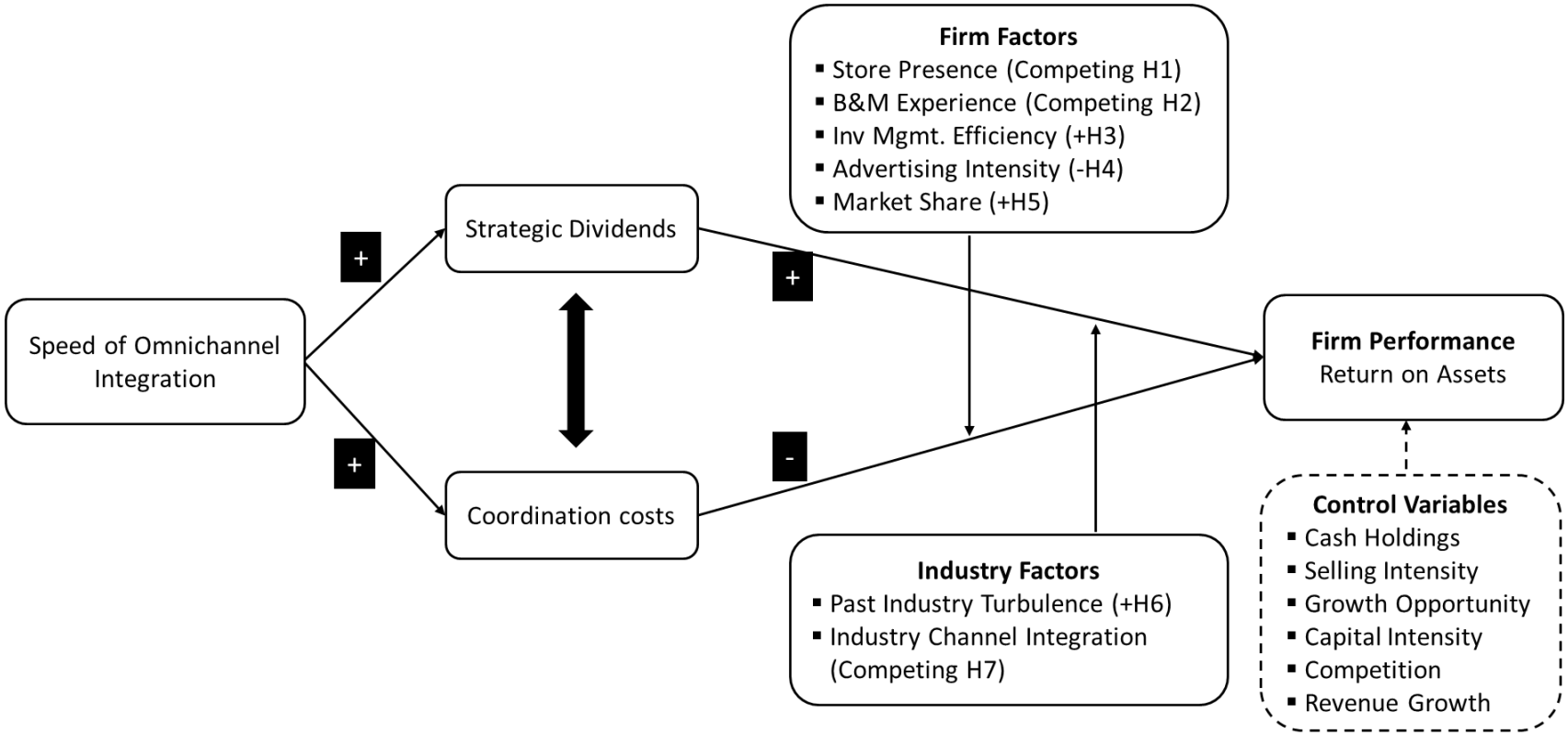

Figure 4. 1 Conceptual framework of speed of integration-performance relationship

(1) *The transition from multichannel to omnichannel retailing*: With the maturing of internet and subsequent digitization, multichannel retailing became a dominant form of retailing. The key considerations in multichannel retailing included optimizing each channel independently, with limited cross-channel coordination (Neslin et al. 2006). The underlying idea was that customers self-select into their preferred channel at each stage of the purchase journey (Bell, Gallino, and Moreno 2018). So, coordination between channels was largely restricted to marketing communications, aimed at improving operational efficiencies (Thomas and Sullivan 2005, Naik and Peters 2009).

However, the rise of social media-which began shifting the balance of power in firm-customer interactions (Brynjolfsson, Hu, and Rahman, 2013; Baxendale, Macdonald, and Wilson, 2015), and the proliferation of mobile devices-which enabled customers to shop anytime, anywhere, expanded the scope of channel integration (Verhoef, Kannan and Inman 2015). High customer expectations were already set in motion as service sectors like banking and travel adopted omnichannel integration before retailers did (Gulati and Garino 2000; McKinsey 2021). Also, media coverage amplified the customer expectations of seamless omnichannel retailing.

Both business press and academic researchers acknowledge this pivotal shift from *multichannel to omnichannel,* piling pressure on multichannel retailers to invest on omnichannel integration (Rigby 2011; Brynjolfsson, Hu and Rahman 2013).

(2) The omnichannel integration speed decision: In a competitive retail environment in which launch of omnichannel initiatives (e.g., Buy online and pick up in store, curbside pickups, in-store lockers, etc.) are transparent and highly publicized, the incumbent multichannel retailers

have an incentive to launch omnichannel retailing early to meet increasing consumer expectations. Speed orientation is linked to intense communication and enhanced coordination, leading to efficient resource utilization and accelerated organizational learning (Eisenhardt 1989). So, the multichannel retailers that launched omnichannel integration early could enjoy greater strategic dividends in terms of learning and dominant market position through the cross-channel customer retention, much like a positive externality in microeconomic terms (van Baal 2014). However, considerable coordination challenges arise in managing omnichannel integration, which can be internal coordination within the retail firm and external coordination with suppliers and vendors (Gulati et al. 2012). Internal coordination across various functional units (e.g., sales, marketing, customer service, logistics, and technology, etc.) requires setting up processes, protocols and monitoring systems and relates to operational issues. Additionally, it involves resolving organizational issues related to differences in channel-specific competencies, incentive structures and established routines. External coordination, on the other hand, involves writing and monitoring arm's length contractual agreements with suppliers and vendors (e.g., technology, logistics, and advertising agencies). It is important to emphasize here that without adequate coordination to deal with internal operational and organizational issues as well as external inter-firm coordination, transitioning to omnichannel integration could incur penalties in terms of increased *ex-post* coordination costs (Elhelaly and Ray 2024; Ghazimatin et al. 2023). For example, lack of coordination could result in subpar customer service or worse, data breaches, and other costly moral hazards (Janakiraman, Lim, and Rishika 2018). So, *ex-post* coordination costs, which are not evident beforehand, for myriad contingencies could dampen firm performance if the firms rush to omnichannel integration. Thus, we posit that the firms

choose an appropriate channel integration speed to economize on coordination costs and derive strategic dividends associated with omnichannel integration.

(3) The 'speed-firm performance' relation and firm heterogeneity: A firm's performance in relation to omnichannel integration speed is the result of a trade-off between strategic dividends and coordination costs. Therefore, the net effect of integration speed on firm performance depends on the dominance of these two opposing forces. We do not have fixed priors about which effect dominates, and so, we treat that as an empirical question. However, we identify factors that discriminate between considerations of strategic dividend and coordination costs and focus on their moderating effects on the 'speed-firm performance' relationship.

A natural way to advance our understanding about the moderating effects of 'speed-firm performance' relation is to recognize the role of firm-level heterogeneity, as prior research has emphasized that the net benefit of speed on firm performance is contingent upon a variety of firm and industry factors (Geyskens, Gielens and Dekimpe 2000, Lee and Grewal 2004). Based on prior multichannel literature and availability of data, we identify following firm factors: *store presence, brick-and-mortar experience, inventory management efficiency, advertising intensity* and *market share* (Lee and Grewal 2004; Pentina, Pelton, and Hasty 2009; Cao and Li 2018). Our choice of moderators is based on their role in influencing the strategic dividends and coordination costs associated with channel integration speed. For instance, experienced retailers likely face lower coordination costs, if they can draw on relational strength with suppliers and their experience in managing retail operations. Conversely, firms with little experience of managing retail operations would be in disadvantageous position to anticipate the coordination challenges. Thus, a firm's retail management experience moderates the relationship between integration speed and firm performance.

We use a widely used measure of firm performance, Return on Assets (ROA) - the ratio of net income to total assets - as our measure of firm performance (Zajac, Kraatz, and Bresser 2000; Angulo-Ruiz, Donthu and Prior 2014; Saboo, Kumar and Anand 2017).

Store presence: Store presence (stores) refers to a firm's physical store network and reflects its operational and retail footprint. Despite widespread predictions of a "retail apocalypse," physical stores remain integral to retail success, as more new retail stores opened than closed in the United States from 2017 to 2019 (Statista, 2024). A large store network offers significant strategic advantages by enabling omnichannel services such as Buy Online, Pick Up In-Store (BOPIS) and Ship-from-Store, while also driving operational efficiencies through cross-channel marketing effects and order fulfillment (Fisher, Gallino, and Xu, 2019). For example, Target utilized its store network to fulfill over 90% of its online orders through physical stores in 2020, accelerating its omnichannel success (Cosgrove, 2020). Thus, store presence can interact with channel integration speed to enhance strategic dividends.

However, managing an extensive store network introduces significant complexities. For retailers with a large number of stores, transitioning to omnichannel retailing requires implementing cross-channel processes, establishing robust performance monitoring systems, and providing employee training to ensure consistent retail value delivery. The size of a store network can also lead to increased coordination costs, particularly in performance monitoring systems designed to address opportunism issues within the firm and with external suppliers and vendors (Wallace, Johnson, & Umesh, 2009). Consequently, store presence can also interact with channel integration speed to amplify coordination costs.

While store presence has the potential to enhance both strategic dividends and coordination costs, its net moderating impact on the relationship between Return on Assets (ROA) and channel integration speed remains uncertain. Therefore, we propose competing hypotheses:

H1a: Store presence negatively moderate the ROA-speed relation. (Coordination cost)

H1b: Store presence positively moderate the ROA-speed relation. (Strategic dividend)

Bricks-and-Mortar Experience: A retailer's bricks-and-mortar experience (bmexp) reflects its organizational expertise, encompassing established routines, structures, and infrastructure. It indicates a firm's experience in managing suppliers and vendors to deliver retail value to customers. This experience can be particularly valuable during the transition to omnichannel integration, as a firm's history of managing diverse retail operations can help it better anticipate and mitigate uncertainties associated with post-launch adjustments. As a result, bmexp can help *reduce* the coordination costs associated with channel integration speed.

However, extensive bricks-and-mortar experience can also lead to incumbent inertia, fostering rigid organizational routines that diminish a firm's agility and flexibility in seizing strategic opportunities for channel integration (Chandy and Tellis, 2000). This rigidity may also limit the potential for strategic dividends from speedy implementation. Thus, we posit:

H2a: Brick and mortar experience positively moderates the ROA-speed relationship. (Coordination cost)

H2b: B*rick and mortar experience negatively moderate the ROA-speed relationship. (Strategic dividend)*

Inventory Management Efficiency: As a critical competency encompassing assortment planning, demand forecasting, replenishment, and coordination with marketing promotions, a multichannel retailer's inventory management efficiency is vital for deriving strategic benefits from omnichannel retailing (Patel, Guedes, and Pearce, 2017; Cao and Zhao, 2004). The growing popularity of online ordering has led to an increase in product returns (Ofek et al., 2011), requiring improved visibility, forecasting, and coordination across channels and with suppliers to effectively manage inventories. Furthermore, the rise of services such as ship-from-store, curbside pickup, and buy-online-pickup-in-store (BOPIS) demands a high degree of inventory management efficiency. Firms with higher inventory management efficiency are likely to benefit from lower coordination costs compared to firms with less efficient systems. Given its significant contribution to financial performance—inventory constitutes, on average, 36% of a retailer's total assets—inventory management is a key driver of strategic dividends while minimizing coordination costs (Gaur, Fisher, and Raman, 2005). Accordingly, we hypothesize:

H3: Inventory management efficiency positively moderates the ROA-speed relation. (Coordination cost)

Advertising intensity: Defined as the ratio of advertising expenses to total revenue, advertising intensity can aid in creating awareness of a retailer's omnichannel offerings and enhancing strategic dividends. However, advertising may intensify already heightened consumer expectations, outstripping the retailer's ability to deliver value. In such scenarios, retailers pursuing rapid omnichannel integration face higher coordination costs as they attempt to meet elevated expectations compared to retailers adopting a slower integration approach, allowing time for learning and adaptation. Consequently, high advertising intensity exacerbates

coordination costs and negatively impacts the relationship between channel integration speed and Return on Assets (ROA). Therefore, we propose:

H4: Advertising intensity negatively impacts the ROA-speed relationship. (Coordination cost)

Market share: Prior research indicates that early entry timing is positively associated with market share growth (Kerin, Varadarajan and Peterson 1992; Min and Wolfinbarger 2005; Pentina, Pelton and Hasty 2009). This relationship is particularly salient during the early stages of omnichannel retailing, when delays in omnichannel integration can lead to opportunity costs for incumbent multichannel retailers as customers migrate to competitors who offer seamless cross-channel experiences. Defending market share becomes increasingly challenging in the presence of entrenched competitors (Lieberman and Montgomery 1998). Therefore, firms with high market share face higher opportunity costs for slow omnichannel integration and are likely to incur greater strategic benefits from faster integration. Further, firms with higher market share can draw from a bigger pool in terms of share of consumer pocket by expanding consumer choices with integration. In a competitive retail industry characterized by considerable disruption, new ways to deliver retail value is crucial. Firms with high market share, often indicative of a strong relative advantage, are strategically positioned to react quickly and decisively. Maintaining this market share by implementing integration quickly and intensely is critical, as it represents a key driver of competitive advantage (Bowman and Gatignon 1995). Last but not the least, large market share firms compound their entry barrier advantage by extending the advantage across channels (Urban et al. 1986). Hence:

H5: Market share positively moderates the ROA-speed relationship. (Strategic dividend)

Past Industry turbulence (PIT): Characterized by volatile sales, past industry turbulence reflects the uncertainties associated with shifting consumer preferences and changing market conditions. As they navigate through them, such turbulence are opportunities for firms to learn and adapt. There are a number of advantages that accrue out of this in the aggregate. First, the learning enhances the firms' ability to quickly sense and respond to changes in the business environment. This ability allows them to design *more effective value creation and claiming* when engaged in a rapid implementation of channel integration. Second, this learning also allows the firms to anticipate potential implementation challenges and act proactively to *reduce coordination costs*. So,

H6: Past industry turbulence positively moderates the ROA-speed relationship. (Strategic dividend and Coordination cost)

Industry Channel Integration: As an average degree of channel integration at firm's primary industry in year *t-1*, industry channel integration can serve as a proxy for the bandwagon effect in omnichannel retailing. Our data reveal an increasing trend toward greater channel integration (Figure 1). Retailers acknowledge that customers engage across multiple channels and demand a seamless omnichannel experience (Gallino and Moreno, 2019). Popular media coverage (McKinsey 2021), advancements in social media (Lamberton and Stephens 2016), and technology innovations (Cui et al., 2020) further elevate customer expectations, intensifying the pressure on incumbent multichannel retailers to adopt omnichannel strategies. In response, many retailers prioritize speed over adequate planning and hastily jump on the omnichannel bandwagon. This lack of planning exacerbates coordination costs.

However, higher levels of industry channel integration can also create an urgent need to seize opportunities for attracting new customers and retaining existing ones. Failure to do that would affect the firm's competitive advantage, dampening any strategic dividend to be gained. Accordingly, we propose the following competing hypotheses:

H7a: Industry Channel Integration negatively moderates the ROA-speed relation. (Coordination cost)

H7b: Industry Channel Integration positively moderates the ROA-speed relation. (Strategic dividend)

Table 4.2 summarizes the hypothesized moderating effect.

Table 4. 2 Moderating effect on strategic dividends & coordination costs influencing the ROA-speed relation

Moderator	Coordination costs	Strategic dividends	Hypotheses	Results
Firm factors				
Store Presence	▪ Exacerbate coordination costs (e.g., monitoring)	▪ Higher cross-channel marketing effects	Competing H1	- (High Coordination Costs)
Brick and Mortar experience	▪ Manage coordination easier with better anticipation of future uncertainties	▪ Organizational rigidity comes in the way of extracting strategic dividend	Competing H2	+ (Low Coordination Costs)
Inv. mgmt. efficiency	▪ Lowers coordination costs		+ H3	n.s.
Adv Intensity	▪ Higher consumer expectations, raises the bar for coordination		- H4	- (High Coordination Cost)
Market Share		▪ Retaining customers, generating greater share of consumer pocket, compound barriers to entry advantage	+ H5	+ (High Strategic Dividend)
Industry factors				
PIT	▪ Better anticipate coordination challenges	▪ Better design value creation and claiming	+ H6	n.s.
IndChanInteg	▪ Results in steep rise in coordination costs	▪ Helps in organizational focus and urgency	Competing H7	+ (High Strategic Dividend)

4.5 DATA

Our research sample comprises publicly traded multichannel retailing companies classified under Standard Industrial Classification (SIC) codes, namely: 53 (General Merchandise), 54 (Food Stores), 56 (Apparel and Accessories), 57 (Home Furniture, Furnishings, and Equipment), and 59 (Miscellaneous Retail). This selection ensures diverse representation of firms engaged in cross-channel integration initiatives and access to information about channel integration in their annual reports, investor presentations, and the business press.

From an initial random pool of 110 firms, we excluded firms that either primarily focus on wholesale operations (e.g., Nike, whose sales to wholesalers constitute about 68% of sales in 2019) or don't disclose required information. Since our focus is on examining the 'speed to launching omnichannel retailing and firm performance relationship, any firm that has already launched omnichannel before the starting study year of 2008 must be excluded from the data sample. So, we exclude Walmart and Nordstrom from our sample. Our final sample includes 79 firms and presents a diverse array of multichannel retail firms. Notably, our sample includes all firms that are in the National Retail Foundation's (NRF) list of top one hundred retailers after excluding privately owned firms and firms operating quick service restaurants, gas stations, and franchising stores from the list as they don't meet our selection criteria.

We record their financial and accounting data from both COMPUSTAT and annual reports and also use other data sources such as company websites, Mergent online, Factiva, and Nexis Uni Academia, to record their channel integration initiatives. We collect this as yearly data for 2008-2019, when the U.S. retail industry sales witnessed significant growth from 2.72 to 3.81 trillion dollars (Statista 2021). Several retailers (e.g., Sears and Bon-ton stores) filed for

bankruptcy during this period, ceasing to report the required information. Consequently, we have an unbalanced panel data set, comprising a total of 897 firm-year observations. In Table 4.3, we provide a summary of the measures, descriptions and the data sources of each variable used in this research.

Dependent variable: *Return on Assets, ROA*

As a measure of firm profitability, ROA is used as a dependent variable for hypotheses H1-H7. To mitigate potential issues of reverse causality, where a firm's financial performance could influence its investment in channel integration speed, we employ a temporal separation in our measurements. Specifically, our dependent variable, ROA, is measured in year *t+1*, while the independent and control variables are measured in year *t*.

Focal Independent Variable*: Channel integration speed* (*ChanIntegSpd)*

Building on prior research (Lee and Grewal 2004; Pentina, Pelton and Hasty 2009), we measure channel integration speed with the duration since a firm initiated its omnichannel integration efforts. A firm is considered to have launched omnichannel integration when it achieves a *high* or *very high* level of integration[27]. Consequently, a longer duration indicates an earlier (hence speedier) launch of omnichannel integration compared to a shorter duration. For instance, if firm A begins omnichannel integration in 2008 and firm B in 2010, their proxy measure of channel integration speed in 2019 would be 11 (2019–2008) and 9 (2019–2010)

[27] These levels of channel integration are important, as customers see value only at the higher levels of integration. Moreover, higher levels of integration require significant coordination costs to deliver retail value and represent significant milestones in the integration process.

respectively. Similarly, in 2018, the integration speed for firm A would be 10 and for firm B, 8. Using this measure allow us to capture both the impact of the timing of a firm's omnichannel integration launch as well as the impact of the accumulating experience over time. Firms that launch more speedily, can be seen to be building a bigger stock of knowledge and experience that they can deploy to improve outcomes at any given time.

Our measure of speed differs from the usual measure of speed used in prior research – the shortest time to achieve a specific milestone, such as a new product launch (Schoonhoven, Eisenhardt and Lyman, 1990) or market expansion (Chang and Rhee, 2011; Meschi, Recard and Tapia Moore, 2017). Such approaches are relevant when performance outcomes are linked to *pioneering advantages*. However, in the context of omnichannel retailing, learning and experiential gains significantly influence performance outcomes. So, there is a need for a measure that will be appropriate for capturing the *accelerating effects* that will accumulate over the duration of omnichannel integration (Lieberman & Montgomery 1988; Robinson and Fornell 1985; Szymanski, Troy and Bharadwaj 1995). Our measure meets these needs.

Moderating variables

We have five firm level moderating variables: number of physical stores ($stores_{it}$), years of bricks and mortar experience ($bmexp_{it}$), inventory management efficiency ($Invmgmt_{it}$), advertising intensity ($advintensity_{it}$), and market share ($revt\_pc_{it}$); and two industry level ones: degree of past industry turbulence (PIT_{it}) and degree of industry channel integration ($IndChanInteg_{it}$). These are described below.

$stores_{it}$, is the natural logarithm of the number of physical stores at the year-end (Cao and Li 2015). $bmexp_{it,}$ is the number of years of brick-and-mortar experience (Pentina et al. 2009). $Invmgmt_{it}$ is the natural log of the ratio of cost of goods sold and total inventory – more efficient

retailers tend to hold few unsold stocks in their inventory (Gaur, Fisher and Rahman 2005). $advintensity_{it}$ is a ratio of advertising spend to total revenue (Fang et al. 2008). $revt\_pc_{it}$ is a ratio of firm's annual sales to the corresponding industry sales (Pentina et al. 2009).

At the industry level, PIT_{it}, is the standard deviation of sales in the firm's primary industry in the four prior years, divided by the average industry sales for those years (Oh, Teo and Sambamurthy 2012). $IndChanInteg_{it}$, is the average channel integration at firm's primary industry in previous year (Cao and Li 2015).

Control Variables

Several firm and industry factors- such as *cash holding*, *growth opportunity* and *industry competition* may affect channel integration speed decision. So, we include the following control variables: *cash holding*, as a measure of financial assets, is a ratio of cash and short-term investments to total assets, which reflects retailer's assets held in ready cash as opposed to physical assets. We include a widely used ratio, the market-to-book ratio, to proxy the firm's *growth opportunity*. This is a measure of its intangible value and often argued as a critical source of competitiveness, affecting strategic decisions related to investments and resource allocation (Feng and Fay 2020). Retailers' spend on selling activities is an important determinant of its financial performance. We control *selling intensity*, which is measured as a retailer's selling, general, and administrative (SGA) expenses less advertising spend that is scaled by total sales (Ptok, Jindal, and Reinartz 2018). A firm's *capital intensity*, which refers to the level of fixed capital assets (e.g., gross property, plant, and equipment) to total assets and can influence firm profitability, is also controlled (Feng and Fay 2020). We control for *competition* (competitive intensity), which is operationalized as 1 minus the Herfindahl-Hirschman index (Lee et al. 2015). Finally, we control for *Revenue growth*, measured as a ratio of the difference

between revenue in year *t* and revenue in *t-1*, to the total revenue in *t-1*. It is an indicator of a firm's market performance and can influence both its investment in channel integration speed and overall firm performance (Cao and Li 2015).

Table 4. 3 Variables, measures, and data sources

Construct	Variable	Measure	Sample Reference	Data Source
1. Return on Assets	ROA	Net income/Total assets	Feng and Fay (2020)	Compustat
2. ChanIntegSpd	yrsinoc	Number of years since launched Omnichannel	Lee and Grewal (2004)	Compustat
3. Store network	(LN) Stores	Log of physical stores at the year-end	Tagashira & Minami (2019)	Annual reports
4. B&M experience	bmexp	Number of years of brick-and-mortar experience	Pentina et al. (2009)	Firm website
5. Inv. mgmt efficiency	(LN) Invtmgmt	Log of (cost of goods sold/total inventory)	Gaur et al. (2005)	Compustat
6. Advertising intensity	advintensity	Advertising expenses/total revenue	Fang et al. (2008)	Compustat
7. Market share	revt_pc	Annual firm sales/Industry sales	Pentina et al. (2009)	Compustat
8. Past industry turbulence	PIT	The SD of sales in firm's primary industry in prior four years/ The mean value of industry sales for those years	Oh et al. (2012)	Compustat
9. Industry channel integration	IndChanInteg	Average channel integration at firm's primary industry in prior year	Cao and Li (2015)	Mergent, EBSCO
10. Cash holdings	Cashholding	Cash and short-term investments to total assets	Feng & Fay (2020)	Compustat
11. Selling intensity	SellIntens	Selling, general and administrative cost less advertising spend/Total sales	Ptok, Jindal, & Reinartz (2018)	Compustat
12. Growth Opportunity	GrowthOpp	Market-to-book value	Fang et al. (2008)	Compustat
13. Capital intensity	CapIntens	Total of gross property, plant and equipment divided by total assets	Bonsall, Holzman, and Miller (2017)	Compustat
14. Competition	Competition	1 - Herfindahl index of firm's primary industry sales	Fang et al. (2008)	Compustat
15. Revenue growth	Revgrowth	$\text{Revenue}_{(t)} - \text{Revenue}_{(t-1)} / \text{Revenue}_{(t-1)}$	Cao and Li (2015)	Compustat

4.6 MODEL SPECIFICATION AND ESTIMATION

We run two sets of analyses. Our base model regresses firm ROA on ChanIntegSpd' and other independent variables without any interactions. Then we estimate a regression model with all the interaction terms included, to test for the hypotheses about the moderating effects on the 'ROA-ChanIntegSpd' relationship

Since transitioning from multichannel to omnichannel retailing is a multi-year phenomenon and it is not feasible to obtain a random sample of firms that are comparable across time dimensions, we employ panel data methods for estimation. These methods allow us to control for time varying factors that may account for variations in firm performance outcomes. It is assumed that any advantages or disadvantages associated with channel integration speed remain unchanged over time. We use a random effects model in Stata 18 for estimation purposes. We choose a random effects model because within cluster variation over time is minimal (e.g., industry fixed effects controlled for in our regression model) and a fixed effects model would not work well with such data. We ran the Hausman specification test, and the results ($p>0.05$) indicate that the fixed effects treatment of unobserved heterogeneity is not tenable. Equation 1 is our first regression model, while equation 2 is the model with interactions.

$$ROA_{i,t+1} = \beta_0 + \beta_1 ChanIntegSpd_{it} + \beta_2 Stores_{it} + \beta_3 bmexp_{it} + \beta_4 Invmgmt_{it} + \beta_5 PIT_{it} + \beta_6 IndChanInteg_{it} + \beta_7 AdvIntensity_{it} + \beta_8 revt_{pc_{it}} + B_k Controls_{kit} + \epsilon_{it} \quad (1)$$

$$
\begin{aligned}
ROA_{i,t+1} = {} & \beta_0 + \beta_1 ChanIntegSpd_{it} + \beta_2 Stores_{it} + \beta_3 bmexp_{it} + \beta_4 Invmgmt_{it} + \beta_5 PIT_{it} \\
& + \beta_6 IndChanInteg_{it} + \beta_7 AdvIntensity_{it} + \beta_8 revt_{pc_{it}} \\
& + \beta_9 ChanIntegSpd_{it} \times Stores_{it} + \beta_{10} ChanIntegSpd_{it} \times bmexp_{it} \\
& + \beta_{11} ChanIntegSpd_{it} \times Invmgmt_{it} + \beta_{12} ChanIntegSpd_{it} \times PIT_{it} \\
& + \beta_{13} ChanIntegSpd_{it} \times IndChanInteg_{it} \\
& + \beta_{14} ChanIntegSpd_{it} \times AdvIntensity_{it} + \beta_{15} ChanIntegSpd_{it} \times revt_{pc_{it}} \\
& + B_k Controls_{kit} + \epsilon_{it} \quad (2)
\end{aligned}
$$

Where, ϵ_{it} is the normally distributed random error term. Control variables include cash holdings, selling intensity, growth opportunities, capital intensity, competition and revenue growth.

Endogeneity: While we measure our dependent variable in period *t+1*, and predictors and control variables in period *t* to account for reverse causality, unobserved variables that influence a firm's channel integration speed decision could also influence firm performance, e.g., brand, consumer demographics, management beliefs, etc. So, the channel integration speed decision is likely endogenous, and the error term could be correlated with the dependent variables, thus, resulting in inconsistent estimates. To address this, we construct copula terms for channel integration speed and estimate our models with Gaussian Copulas (Park and Gupta 2012). The instrument free Gaussian copula captures the correlation of the endogenous variable and the error term by modeling their joint normal distribution based on the observed data (Park and Gupta 2012; Datta et al. 2015; Rossi 2014). Results from Shapiro-Wilk normality test confirms non-normality condition to include a copula. We add the copula terms as controls to Equation 2 to mitigate the endogeneity concerns.

4.6.1 Data Description and Preliminary Analysis

Sample Characteristics: On average a retail chain in our data sample has 46 years of brick-and-mortar experience, reflecting considerable retail management experience and an average of 1887 stores, indicating extensive stores network. The ChanIntegSpd varies considerably among firms, with mean and standard deviation of 1.25 and 2.27 years. With an annual revenue growth of 5% and ROA of 6%, along with inventory turnover of about five times, the sample represents a growing specter of multichannel retailers (Table 4.4).

Table 4. 4 Sample Descriptive Statistics and Correlation Matrix

Variables	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1. ROA	1														
2. ChanIntegSpd	-0.12*	1													
3. (LN) Stores	0.10*	0.20*	1												
4. B&M Exp	-0.01	0.03	0.15*	1											
5. (LN) Invtmgmt	-0.03	-0.03	0.17*	0.08*	1										
6. PIT	-0.02	-0.17*	0.11*	0.00	0.07*	1									
7. IndChanInteg	-0.16*	0.60*	0.06	0.10*	-0.16*	-0.16*	1								
8. Advintensity	-0.12*	-0.09*	-0.46*	-0.12*	-0.34*	-0.07*	-0.02	1							
9. Mktshare	0.08*	0.17*	0.37*	0.08*	0.06	0.29*	0.07	-0.13*	1						
10. Cashholding	0.25*	-0.21*	-0.18*	-0.11*	0.18*	-0.18*	-0.26*	0.05	-0.15*	1					
11. SellIntens	-0.23*	-0.01	-0.19*	0.05	-0.45*	-0.13*	0.05	0.17*	-0.25*	0.00	1				
12. GrowthOpp	-0.02	-0.05	0.04	-0.02	0.04	0.03	-0.04	-0.07*	0.03	0.01	-0.03	1			
13. CapIntens	-0.04	0.09*	-0.10*	0.11*	0.23*	-0.21*	0.07*	-0.13*	-0.14*	0.00	0.08*	-0.01	1		
14. Competition	0.14*	-0.15*	0.09*	-0.09*	0.16*	-0.20*	-0.22*	-0.25*	-0.36*	0.31*	0.10*	0.00	0.09*	1	
15. Revgrowth	0.27*	-0.10*	-0.11*	-0.11*	-0.05	0.02	-0.11*	0.03	0.03	0.09*	-0.05	0.10*	-0.30*	-0.01	1
No. of obs.	897	897	896	897	884	895	830	869	885	884	868	858	883	897	869
Mean	0.06	1.25	1887	46.4	4.42	0.06	1.58	0.03	0.07	0.13	0.26	0.98	0.71	0.82	0.05
SD	0.08	2.27	2432	19.07	2.39	0.04	0.81	0.03	0.12	0.11	0.09	0.14	0.29	0.13	0.10
Min	-0.33	0	4	10	0.57	0	0	0	0	0	-0.02	0.06	0.06	0.49	-0.34
Max	0.33	11	15370	118	15.03	0.27	4	0.24	0.61	0.63	0.67	1.84	1.55	0.95	0.8

Note: Stores are in thousands, B&M Exp in years, and rest of the variables are in ratio

** Significant at 95%*

Trend towards omnichannel integration among retail chains is evident, as the share of firms with omnichannel integration jumped from 13% in 2012 to 25% in 2013, reaching 68% in 2019 (Figure 4.1). While only suggestive, this period also witnessed a huge growth in mobile channel and social media marketing (Grewal et al. 2016; Lamberton and Stephen 2016). In Table 4.5, we report correlations among the variables. All the correlation results are as expected and within the acceptable range, indicating multicollinearity is not an issue in our sample.

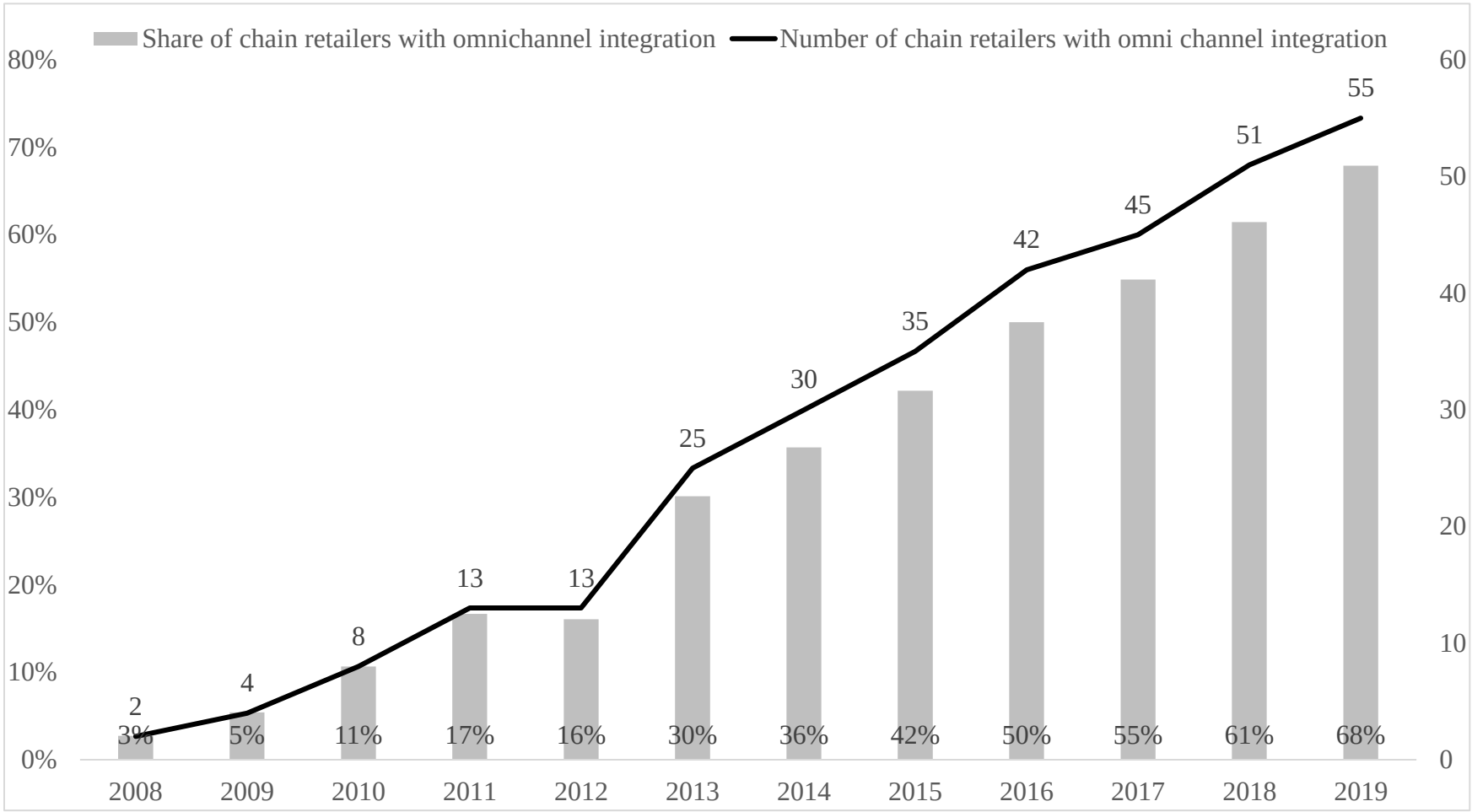

Figure 4. 2 Trend towards omnichannel integration

4.7 ANALYSES AND RESULTS

Table 4-5 shows our main results, in which Model 1 estimates the 'ROA-ChanIntegSpd' relationship and Model 2 estimates the relationship after including copula correction term. Model 3 estimates effects of moderators on the 'ROA-ChanIntegSpd' and Model 4 estimates the moderating effects after including copula correction terms.

The main effect of channel integration speed on the firm's ROA, for which we didn't propose a hypothesis as we don't have fixed priors about the relative dominance of strategic dividends and coordination costs, is not significant. In Model 1 (Table 4-5), the coefficient estimate for *ChanIntegSpd* is not significant. The results in Model 2 about the main effect of channel integration speed on ROA don't change after including the copula terms, indicating no endogeneity concerns. However, the main effect of channel integration speed turns positive and significant in Model 3 ($\beta_1 = 0.0321$, $p < 0.05$), suggesting that, on average, faster channel integration speed positively affect ROA when we consider firm and industry level factors.

Model 3 (Table 4-5) includes the interaction terms between moderators and channel integration speed. Our results for the interaction between *stores* and the *ChanIntegSpd* show that the coefficient for interaction of $ChanIntegSpd_{it}$ and $stores_{it}$ is negative and significant ($\beta_9 = -.0065$, $p<.01$). This suggests that a larger store network diminishes the ROA-ChanIntegSpd relationship, supporting our coordination cost hypothesis, H1b over the strategic dividend hypothesis, H1a. The coefficient for interaction of $ChanIntegSpd_{it}$ and $bmexp_{it}$ is positive and significant ($\beta_{10} = .00021$, $p<.01$) and shows that a firm's brick-and-mortar experience positively moderates the ROA-ChanIntegSpd relationship, supporting our strategic dividend hypothesis, H2b, associated with retail experience, over coordination costs hypothesis, H2a, associated with

organizational rigidity. In line with our hypothesis, H4, about the moderating impact of advertising on the ROA-ChanIntegSpd relationship, coefficient for interaction of $ChanIntegSpd_{it}$ and $advintensity_{it}$ is negative and significant (β_{14} = -.278, p<.01), suggesting that advertising potentially does increase the coordination costs. The coefficient for interaction of $ChanIntegSpd_{it}$ and market share ($revt\_pc_{it}$) is positive and significant (β_{15}= .028, p<.01), which is in line with our hypothesis, H5, suggesting that positive relationship between ROA-ChanIntegSpd strengthens for firms with larger market share, consistent with the strategic dividend explanation. Finally, the positive and significant coefficient for interaction of $ChanIntegSpd_{it}$ and $IndChanInteg_{it}$, (β_{13}= .0046, p<.05) supports our strategic dividend hypothesis, H7b, over the competing hypothesis, H7a based on coordination costs. The coefficients for interaction of $ChanIntegSpd_{it}$ and $Invmgmt_{it}$ (H3) and interaction of $ChanIntegSpd_{it}$ and PIT_{it} (H6) are not significant.

Model 4, introduces copula terms for the interaction of ChanIntegSpd with the relevant variables. Notice that only one of the eight copula coefficients is significant. Overall, it appears that endogeneity is likely not a big factor in our data.

Table 4. 5 Effects of ChanIntegSpd on retailer's ROA

DV: ROA_{t+1}	Model 1	Model 2	Model 3	Model 4
ChanIntegSpd	-0.000693	-0.00155	0.0321**	0.0310**
	(0.00160)	(0.00181)	(0.0132)	(0.0157)
(LN) Stores	-0.00121	-0.00131	0.00775	0.00800
	(0.00539)	(0.00539)	(0.00538)	(0.00547)
bmexp	0.000467	0.000468	0.000305	0.000121
	(0.000354)	(0.000353)	(0.000345)	(0.000346)
(LN) Invtmgmt	-0.0527***	-0.0528***	-0.0543***	-0.0515***
	(0.0121)	(0.0121)	(0.0123)	(0.0124)
PIT	-0.132*	-0.127	-0.231***	-0.254***
	(0.0774)	(0.0776)	(0.0817)	(0.0971)

IndChanInteg	-0.0149***	-0.0152***	-0.0182***	-0.0185***
	(0.00538)	(0.00539)	(0.00543)	(0.00569)
Advintensity	-0.553**	-0.555**	-0.350	-0.226
	(0.228)	(0.228)	(0.226)	(0.236)
Revt_pc	0.103*	0.102*	0.0335	0.0320
	(0.0602)	(0.0601)	(0.0623)	(0.0620)
Copula_ChanIntegSpd		0.00319		-0.00143
		(0.0032)		(0.0264)
ChanIntegSpd × (LN) Stores			-0.00648***	-0.00686***
			(0.00121)	(0.00155)
ChanIntegSpd × bmexp			0.000213***	0.000364***
			(7.38e-05)	(9.83e-05)
ChanIntegSpd × (LN) Invtmgmt			-0.00190	-0.00334
			(0.00222)	(0.00302)
ChanIntegSpd × PIT			-0.00725	0.00994
			(0.0375)	(0.0491)
ChanIntegSpd × IndChanInteg			0.00457**	0.00333
			(0.00181)	(0.00226)
ChanIntegSpd × Advintensity			-0.278***	-0.371***
			(0.0718)	(0.0893)
ChanIntegSpd × Mktshare			0.0274***	0.0315**
			(0.0103)	(0.0139)
Copula_ChanIntegSpd × (LN) Stores				0.00153
				(0.00311)
Copula_ChanIntegSpd × bmexp				-0.000389**
				(0.000170)
Copula_ChanIntegSpd × (LN) Invtmgmt				0.00400
				(0.00679)
Copula_ChanIntegSpd × PIT				-0.0528
				(0.0787)
Copula_ChanIntegSpd × IndChanInteg				0.00474
				(0.00468)
Copula_ChanIntegSpd × Advintensity				0.196
				(0.161)
Copula_ChanIntegSpd × revt_pc				-0.0136
				(0.0309)
Cashholding	0.194***	0.193***	0.183***	0.178***

	(0.0341)	(0.0340)	(0.0329)	(0.0328)
SellIntens	-0.399***	-0.398***	-0.411***	-0.393***
	(0.0675)	(0.0675)	(0.0654)	(0.0648)
GrowthOpp	-0.00155	-0.00128	3.65e-05	0.00102
	(0.0151)	(0.0151)	(0.0147)	(0.0148)
CapIntens	0.0661***	0.0661***	0.0529***	0.0502***
	(0.0172)	(0.0172)	(0.0170)	(0.0168)
Competition	0.0463	0.0464	0.0354	0.0302
	(0.0522)	(0.0521)	(0.0506)	(0.0499)
Revgrowth	0.107***	0.108***	0.0924***	0.0907***
	(0.0252)	(0.0252)	(0.0244)	(0.0245)
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Constant	3.854	3.931	2.993	2.498
	-2.738	-2.738	-2.689	-2.72
Observations	678	678	678	678
Number of firms	79	79	79	79

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

In Figures 4.2A, 4.2B, 4.2C and 4.2D, we show the marginal plot of the moderating effects of stores, bmexp, advintensity, revt_pc and IndChanInteg across high and low levels on 'ROA-ChanIntegSpd' relationship. Our results are based on simple slope analyses in which we treat one standard deviation below and above the mean of *stores, bmexp, advintensity, revt_pc* and *IndChanInteg* as low and high levels of the moderators. Most results are in line with our expectations with some nuances for stores network and advertising, which we discuss below.

Figure 4.2A results reveal that *high stores* further exacerbate the relationship between ROA and ChanIntegSpd, suggesting that coordination cost role dominates strategic dividend role. However, the relationship between ROA and ChanIntegSpd becomes positive at *low stores*, indicating strategic dividend-role dominating the coordination cost-role.

Figure 4.2C results show a exacerbated negative relationship between ROA and ChanIntegSpd relationship in the presence of high advertising, suggesting that high advertising further raises consumer expectations, which have already been high, stripping away retailer's delivery of value. However, the ROA-ChanIntegSpd turns positive in the presence of low advertising, implying low advertising may help by driving awareness about retailer's omnichannel offerings, without imposing the coordination cost penalties.

Figures 4.2B, 4.2D and 4.2E show expected results of stronger relationship between ROA and ChanIntegSpd at the *high bmexp, high revt_pc* and *high IndChanInteg*.

4.7.1 Robustness tests

We conduct additional analyses to confirm the validity of our results. First, we use an alternative measure of firm profitability, $ROA_{(i,avg)}$,which refers to the return on assets of firm *i* averaged over years (*t and t+1*). Our choice of ROA_avg is driven by the fact that firms launch channel integration initiatives throughout the year; however, their annual reports only attribute them to the year end. So, in effect, some integration efforts have a more proximal impact on performance than others. To better capture the cumulative effect of channel integration speed, we follow Feng and Fay (2020) in averaging firm performance over *t* and *t+1*. The results, included in Appendix Table WA1, remains largely consistent with those of the main model.

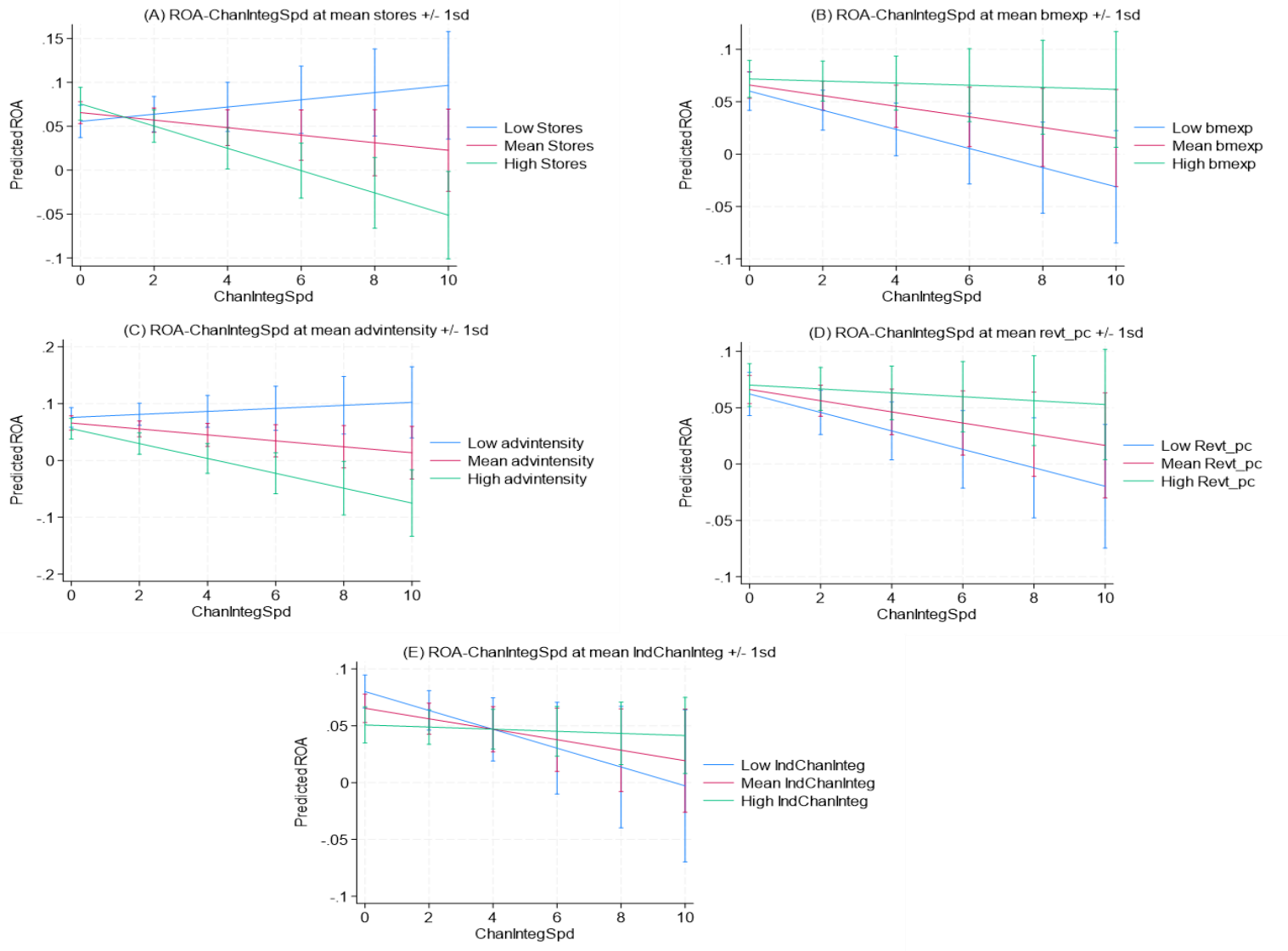

Figure 4. 3 Marginal plots for simple slope analyses

4.8 DISCUSSION

With digital transformation of the channels ecosystem that has altered consumer expectations, multichannel retailers have an incentive to transition to omnichannel retailing for delivering retail value and driving business outcomes (Verhoef et al. 2015; Dennis 2024). In the retailing industry where launch of omnichannel offerings is transparent, widely promoted and known by competitors instantaneously, speed of omnichannel implementation can provide strategic dividends. However, costs associated with intra- and inter-organizational coordination is endogenous to the speed of implementation. Our results show that retailers can benefit with speedy transition to omnichannel integration to deliver cross-channel customer experience. However, coordination costs can rise very fast chipping away strategic advantages. In particular, we find evidence that high market share firms benefit from a speedy implementation, presumably because they stand to compound the positive impact of strategic dividends. This is particularly relevant in the competitive retailing industry, characterized by disruption and consistent growth—U.S. retail sales have grown at an average rate of 4.7% annually from 1993 to 2023 (US Retail Sales Growth, U.S. Census Bureau). Additionally, retailers with extensive brick-and-mortar experience can leverage their organizational expertise and supplier relationships to better manage ex-post adaptation costs. Firms operating in retail sectors that have a high level of omnichannel adoption (e.g., books and music retailers) benefit from faster implementation, as customers are already familiar with omnichannel offerings, enabling firms to accrue strategic dividends more quickly.

Conversely, our evidence suggests that firms with large brick-and-mortar store networks do not benefit from rapid implementation. This is likely due to increased ex-post coordination

costs, such as challenges in performance measurement to mitigate shirking behavior and difficulties in managing cross-channel data and inventory (Kannan, Reinartz, and Verhoef, 2016; Cui et al., 2020). Similarly, firms with high advertising intensity face diminishing returns from faster implementation, as elevated consumer expectations can lead to penalties if there is a gap between the firm's omnichannel value proposition and its actual delivery.

While a vast 'first mover' literature has advanced our understanding of the *pioneering advantage* (Golder and Tellis, 1993), there is limited work in the domain of *acceleration advantage* where rapid execution, learning and adaption play important roles to accrue the acceleration advantages (Bowman and Gatignon 1995; Vakratsas, Rao and Kalyanaram 2003). We contribute to that literature by studying the 'speed-performance' relationship in the omnichannel context, which has not received much attention till date. To our knowledge, we are the first to do so.

Parenthetically, our results also suggest that speed of implementation can also be seen as an efficiency tool. Forward looking firms that consider how their speed of channel integration can impact the coordination costs they will incur, could therefore, strategically optimize their implementation speed to minimize such costs. In this, our results build an additional dimension to the channel governance literature that has traditionally not addressed speed as a governance tool (Williamson 1985; Ray, Bergen and John 2016; Heide and John 1988; Heide and John 1990).

Methodologically, we contribute to the measurement of integration speed construct by building on the prior research in multichannel marketing (Lee and Grewal 2004; Pentina, Pelton and Hasty 2009; Cao and Li 2015). Furthermore, our study period of 12 years (2008-2019)

provides a sufficiently long timeframe to capture the steady state of evolution of omnichannel retailing.

4.9 MANAGERIAL IMPLICATIONS

With digital transformation a priority for retail leadership, our research provides timely takeaways about the speed of change and strategy (Kalaignanam et al., 2021). Rising customer expectations for delivery speed, shopping convenience, and product variety intensifying the pressure to accelerate omnichannel integration (UPS, 2017; Jasin et al., 2019), our research offers practical and timely insights into how firm- and industry-level factors moderate the relationship between channel integration speed and firm profitability, helping managers navigate the complexities of omnichannel strategy.

First, while both store network and advertising efforts can generate strategic dividends, at high levels, they impose substantial coordination costs that negatively impact the relationship between speed and firm profitability. Managers of firms with extensive store networks should closely monitor and address the coordination costs associated with cross-channel integration. Similarly, excessive advertising claims about omnichannel capabilities, which may further elevate already high customer expectations, should be approached cautiously to avoid misalignment with operational capabilities.

Second, firms with extensive brick-and-mortar experience can capitalize on their retail management expertise and supplier relationships to generate strategic dividends and better manage *ex-post* uncertainties. However, these firms must remain vigilant against organizational rigidity, which can hinder agility and escalate coordination costs.

Finally, speedy omnichannel integration can serve as a competitive advantage for firms with significant market share, allowing them to reinforce their dominance and maintain relative advantage. Additionally, firms operating in industries with high levels of channel integration can benefit from accelerating their own integration efforts to improve performance outcomes and remain competitive.

4.10 LIMITATIONS AND FUTURE RESEARCH

In conclusion, our research explains the trade-offs that firms face between a cost minimizing approach and driving strategic dividends to create and capture customer value in the omnichannel retailing. Using the U.S. chain retailing context, our theoretically grounded and empirically robust analysis provides broad support for our propositions. We find that a retailer's brick-and-mortar experience, industry channel integration, and market share positively moderate the relationship between channel integration speed and ROA. Conversely, the size of a firm's store network and advertising intensity negatively moderate this relationship.

We acknowledge that, like any empirical work, our research has limitations. While our empirical setting provides a steady state of omni-channel retailing context to examine the 'ROA-speed' relationship, it limits the generalizability of our findings. Future research should explore this relationship in other contexts, such as emerging markets and B2B firms, to broaden the applicability of our results.

Data related limitations also exist in our study, specifically related to coordination mechanisms, some of which are related to internal adaptation, while others are external (Oh, Teo and Sambamurthy 2012). Our secondary data does not allow us to capture detailed information about firm's strategic goals that influence speed decisions. Similarly, data on contractual

arrangements, internal business processes and specific investments in omnichannel integration are unavailable, making it difficult to characterize different coordination costs and how they relate to speed. Future research could address these gaps by using primary data sources, such as surveys or interviews with managers, to gain deeper insights into these dynamics.

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4.12 APPENDIX

Appendix 3 Accelerating into a Quagmire? Theory and Evidence on the Effectiveness of the Speed of Omnichannel Integration

Table 4. 6 Results from regression model analysis

	DV: ROA_avg	DV: ROA_avg
Variables	Model 1	Model 2
ChanIntegSpd	-0.00235*	0.0284***
	(0.00128)	(0.0105)
(LN) Stores	-0.00522	0.00244
	(0.00497)	(0.00491)
bmexp	0.000509	0.000348
	(0.000345)	(0.000338)
(LN) Invtmgmt	-0.0510***	-0.0554***
	(0.0109)	(0.0108)
PIT	-0.0906	-0.204***
	(0.0612)	(0.0632)
IndChanInteg	-0.00862**	-0.0109***
	(0.00430)	(0.00424)
Advintensity	-0.571***	-0.426**
	(0.204)	(0.200)
Mktshare	0.108*	0.0486
	(0.0557)	(0.0575)
ChanIntegSpd × (LN) Stores		-0.00619***
		(0.000959)
ChanIntegSpd × bmexp		0.000230***
		(5.72e-05)
ChanIntegSpd × (LN) Invtmgmt		-0.00126
		(0.00173)
ChanIntegSpd × PIT		0.0175
		(0.0288)
ChanIntegSpd × IndChanInteg		0.00378***
		(0.00140)

ChanIntegSpd × Advintensity		-0.277***
		(0.0561)
ChanIntegSpd × Mktshare		0.0205***
		(0.00796)
Cashholding	0.174***	0.163***
	(0.0279)	(0.0265)
SellIntens	-0.490***	-0.517***
	(0.0596)	(0.0574)
GrowthOpp	0.00654	0.00679
	(0.0118)	(0.0112)
CapIntens	0.0512***	0.0383***
	(0.0147)	(0.0145)
Competition	0.0804*	0.0732
	(0.0477)	(0.0463)
Revgrowth	0.105***	0.0872***
	(0.0201)	(0.0190)
Industry fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Constant	1.325	1.067
	(2.258)	(2.174)
Observations	678	678
Number of firms	79	79

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

5 CONCLUSIONS AND LIMITATIONS

As digital transformation continues to reshape the channel ecosystem, omnichannel integration has become a strategic imperative for retailers to deliver customer value and drive firm performance. This dissertation advances our understanding of omnichannel integration by exploring the dynamic interplay between runaway consumer expectations and the coordination costs inherent in channel integration efforts.

To the best of my knowledge, this is the first and most contemporary research to examine the efficacy of omnichannel integration, addressing calls for greater insights into the returns on omnichannel investments. By leveraging a wide range of secondary data sources, mining text from public records, and employing robust econometric techniques, this research identifies critical trade-offs between the strategic dividends and coordination costs associated with omnichannel integration.

Chapter 2 provides a thematic exploration of the evolution of omnichannel literature, synthesizing 181 research papers published between 1995 and 2021. Through keyword analysis, topic categorization, and citation analysis, it captures the progression of discipline and identifies key insights and research opportunities. This chapter contributes to marketing literature by offering a framework to interpret heterogeneity in the multichannel marketing research.

In chapter 3, using a large panel data curated from multiple sources, I examine the consumer value that channel integration creates and how significant coordination costs are. In this regard, I offer a theory of omnichannel integration effectiveness that shows (1) coordination costs are endogenous to consumer expectations (2) rising consumer expectations and coordination costs create critical boundary conditions that impact the efficacy of integration efforts. These findings offer valuable insights to both scholars and practitioners.

Chapter 4 investigates the relationship between the speed of adopting omnichannel integration and firm performance. Using a unique dataset of U.S. retailers, it proposes a theory of integration speed effectiveness, demonstrating that omnichannel retailers' business outcomes are a function of the speed of their omnichannel integration, in ways that discriminate between the positive impact of the strategy dividend they garner and the negative impact of the coordination costs they incur. To the best of my knowledge, this is the most contemporary empirical research to examine the speed-firm performance relationship in omnichannel retailing context that find that while channel integration speed enhances financial performance on average, the efficacy of omnichannel integration speed is contingent upon important boundary conditions keeping with consideration of strategic dividend and coordination costs.

Limitations and future research. While every effort is made to approach this research rigorously and comprehensively, it is not without limitations and possible errors. Many of these stems from data availability. The use of secondary data restricts access to details about firms' strategic intent, intra-firm contractual arrangements, and inter-firm coordination mechanisms.

Additionally, the measurement of channel integration and speed of omnichannel adoption is based on observed activities that are accessible from public records (e.g., annual reports, investor presentations and company websites). Given that omnichannel integration is a priority of most retailers, it is highly unlikely that a retailer will discontinue omnichannel activities. However, if firms replace or discontinue integrated cross-channel offerings without disclosing this publicly, this study will not capture those adjustments. Future research could address these limitations by employing qualitative methods, such as interviews or surveys, to gain deeper insights. Moreover, while this study focuses on U.S. retailers, similar investigations in business-to-business contexts, emerging markets, and public sector organizations—such as healthcare and

government agencies increasingly adopting omnichannel strategies—could yield valuable insights. While our research shows the role of coordination costs in delivering retail value to customers, technologies are evolving and emerging technologies may bring the coordination costs down significantly, allowing firms to benefit in more compelling ways.

In conclusion, this dissertation contributes to the literature on omnichannel integration by providing actionable insights for retail managers and offering a foundation for future academic inquiry. I hope it serves as a useful guide for strategic decision-making and inspires further research on this evolving and important phenomenon.