ATTENDING TO ATTENTION: AN EMPIRICAL EXAMINATION OF THE ATTENTION-BASED VIEW IN OPERATIONS MANAGEMENT CONTEXTS

by

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Dedications

This dissertation is dedicated to all those individuals who have inspired me and actively encouraged me to pursue a path of continuous learning and include:

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Abstract

Attention is shown to be an important antecedent in several strategic and information processing contexts both within and outside firm boundaries. We examine the key roles that attention plays in three distinct contexts in operations management (OM), and which involves extensive executive utilization and leveraging of information technology (IT) based capabilities. In the following three essays in this dissertation, we further understand the impacts of executive and external stakeholder attention on certain key performance outcomes of firms, which are important for maintaining sustained levels of competitive advantage.

The first essay is set in the context of e-Business capabilities, and we examine the moderating roles of two distinct attention processes on the e-Business to firm performance relationship. Specifically, we address the research question: what roles do executive attention processes play in reinforcing the effects of e-Business capabilities on firm performance? We call these processes focused attention and expansive attention, and both of these processes are conceptualized based on managerial cognition literature. Data for the essay comes from the InformationWeek 500 and Compustat databases for the years from 2001 – 2003, and the final panel sample contained 491 observations from 183 unique firms. Based on extant OM and Marketing literature, we disaggregate e-Business capabilities into e-Business transaction (e-transaction) based and e-Business relationship (e-relationship) based capabilities. We hypothesize that focused attention and expansive attention moderate the relationship between e-transaction and accounting-based firm performance, measured by return on sales (ROS). We also hypothesize that both types of attention would moderate the relationships between e-relationship and market-based performance, measured by Tobin's Q. Our results indicate that focused attention moderates the relationship between e-transaction to ROS. Both types of attention play moderating roles in the e-relationship to Tobin's Q relationships. The study makes the following key contributions to the

OM literature. We empirically demonstrate that the interactive effect of e-transaction and focused attention is positively associated with accounting-based firm performance, measured by ROS. The interactive effects of e-relationship and focused attention, and e-relationship and expansive attention, are positively associated with the market-based firm performance, measured by Tobin's Q.

The second essay examines the impact of executive attention in the context of firm omni-channel strategies. Firms usually design multiple channels for their customers, but research suggests that over time, firms should make conscious efforts to blur channel boundaries and hence create seamless customer transactions. Heterogeneity in individual and firm level capabilities can lead to differences in the timing and deployments of omni-channel strategies, which are considered an innovation in retailing by recent research. Two broad streams in the literature show that executive attention and board of director (BOD) heterogeneity have positive associations with firm level innovation. We seek to bring together these two important streams of literature in this study. Specifically, we investigate the interactive roles of two distinct executive attention foci, called external focus and internal focus, and BOD heterogeneity, on the speed of omni-channel development. Data for the essay comes from annual reports and Compustat for the years 2009 to 2018 from firms consistently placed in the Fortune list, which belong to the SIC divisions of Retail Trade and Manufacturing (G and D).

The third essay is developed in the context of cause-related marketing (CM) initiatives and their performance. Such CM initiatives are a subset of corporate social responsibility (CSR) initiatives of the firm. Extant research on CSR shows that firm size and advertising intensity are factors that are associated with media attention to CM initiatives. Due to advancements in IT capabilities, firms can design multiple channels, including retail, online, mobile and social media

channels to facilitate customer transactions. Such channel proliferation entails active firm efforts to provide information about these CM initiatives across multiple channels for customers, in order to facilitate their engagement with these initiatives. We use event-based attention theory to examine the effects of cross-channel capabilities, firm size, advertising intensity, and their interactions, on media attention to such CSR initiatives. We demonstrate that firm size plays a moderating role in the relationships between both advertising intensity and media attention of firm CM initiatives, and cross channel capabilities and media attention of firm CM initiatives. We also show that media attention of firm CM initiatives mediates the relationship between cross-channel capabilities and the performance of CM initiatives. Firm size is shown to play a moderating role in this mediating process. We find broad support for our hypotheses by performing empirical tests on a sample of 322 observations between the years 2009 and 2017 from 44 unique firms featured in the Fortune list.

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Introduction

The attention-based view of the firm (ABV) has been used in multiple contexts of firm level decision making, including knowledge integration, CEO succession, patent activity, innovation, technological changes in the firm's environment, and other contexts (Ocasio, 2011). The applications of this theory can have important implications in the OM literature in the contexts of firm level decision making. According to the ABV, it is individuals who attend to decision making, and this individual attention is situated in the context of the firm's activities and procedures, and these situational contexts, and the decision makers, issues, and answers they are linked to, are distributed throughout the firm (Ocasio, 2011). The OM literature has only recently begun to have a proliferation of studies using this important theoretical perspective in various contexts (Demeester, De Meyer, & Grahovac, 2014; Phadnis, Sheffi, Caplice, & Singh, 2017). The goal of this dissertation is to empirically apply and/or extend the propositions of the ABV in distinct OM contexts, which involve utilization of firm level IT based capabilities, and how attention process both within and outside the firm interact with, and get shaped by leveraging these IT capabilities. We therefore seek to understand patterns of organizational attention, the distinct focus of time and effort by the firm on a particular set of issues, problems, opportunities, and threats, and on a particular set of skills, routines, programs, projects, and procedures (Ocasio, 2011). We also seek to further understand how attention of external entities are shaped because of specific firm factors, including IT based capabilities, through the lens of event-based attention theory (Hoffman & Ocasio, 2001). The aforementioned contexts, in order of appearance in the essays, are electronic business (e-Business) capabilities, channel management strategies, and cause-related marketing and corporate social responsibility (CSR) initiatives.

In the first dissertation essay, we conceptualize two different types of executive attention, based on an extensive review of managerial cognition literature (Ocasio, 2011; Shepherd, Mcmullen, & Ocasio, 2017), in an e-Business context. We call these focused attention and expansive attention. Extant literature shows that there is mixed evidence of the direct impact of e-Business capabilities on firm performance (Dehning, Richardson, & Zmud, 2007; Devaraj, Krajewski, & Wei, 2007). We demonstrate that the two attention processes can help explain these mixed findings, and posit that they play moderating roles in the relationship between e-Business capabilities and the two distinct types of firm performance.

The second essay further develops the notion of executive attention in the context of firm channel management strategies. We develop a model to demonstrate the impact of executives' attention foci, and board of director (BOD) heterogeneity, and their interactive effects, on the speed of development of omni-channel strategies. Research shows that a higher level of executive attention to specific entities outside the firm, including customers, competitors and other external stakeholders, relative to internal entities of the firm, including management and employees, is positively related to speed of innovation (Yadav, Prabhu, & Chandy, 2007). Board of director heterogeneity is another factor shown to have a positive impact on speed of innovation (C. S. Tuggle, Schnatterly, & Johnson, 2010). Omni-channel strategies are considered as a specific instance of innovation in retailing, and a key component of maintaining firm competitiveness and survival (Cao & Li, 2018; Gallino & Moreno, 2014). Therefore, our model aims to bring these two sets of factors together in this specific context of retailing innovation.

The third essay examines how attention of the business media, an external stakeholder of the firm, get shaped in the contexts of cause-related marketing, a specific type of CSR initiatives. Specifically, we examine how the previously discussed channel capabilities, along with other firm

factors, shapes the attention of the business media in terms of articles published on various cause-related marketing initiatives that the firm initiates. We demonstrate that such media attention has a mediating effect on the relationship between channel capabilities and the performance of such cause-related marketing initiatives.

By empirically examining the roles of attention processes that get shaped within and outside firm boundaries, and understanding their impacts on distinct firm performance outcomes, we develop a nuanced understanding of the roles played by attention processes on these outcomes, in medium and large-sized firms. Many of the firms in our study have also featured in the Fortune list consistently. Our research contexts are in downstream firm operations, and therefore, we broaden the scope of application of the ABV to this important context of decision making, by leveraging IT based capabilities.

Essay One: E-Business Capabilities and Firm Performance: The Moderating Effects of Executive Attention Processes

Abstract

Research has suggested that how a firm uses strategic IT capabilities such as e-Business capabilities can explain their limited direct impact on firm financial performance. Recent studies in the OM literature have highlighted the roles of executive attention in strategy formulation. Using the theoretical lens of the attention-based view, we develop an empirical model with two distinct types of executive attention, called focused attention and expansive attention, and demonstrate the moderating roles they play in the e-Business to firm performance relationship. We hypothesize that focused attention and expansive attention moderate the relationship between e-Business transaction and short-term firm performance measured by return on sales (ROS). We also hypothesize that both types of attention moderate the relationship between e-Business relationship (e-relationship) and market performance measured by Tobin's Q. Using a panel dataset with 491 firm-year observations for our empirical tests, our results indicate that focused attention moderates the relationship between e-transaction to ROS. Both types of attention play moderating roles in the e-relationship to Tobin's Q. Overall, our study provides empirical support for the key moderating roles that executive attention processes play in the e-Business to firm performance relationships.

Keywords*:* e-Business, Firm Performance, Attention-Based View, Moderation.

1.1. Introduction

Several studies in Operations Management (OM) literature have found direct impacts of electronic business (e-Business) and other information technology (IT) based supply chain management (SCM) capabilities and firm financial performance (Dehning et al., 2007), and also indirect impacts on performance through variables such as customer service performance and inter-organizational collaboration (Sanders, 2007; Vickery, Jayaram, Droge, & Calantone, 2003). The emphasis has been typically on the possession of these strategic IT capabilities, rather than on how they are utilized in various integration processes with suppliers and customers, which enable performance benefits in both immediate and future time periods (Devaraj et al., 2007). A firm's knowledge of its internal operations transactions, as well as transactions with customers and suppliers, is often embedded in e-Business systems (Shepherd & Patzelt, 2013). More recent studies in the OM literature have begun to highlight the key roles of executive attention in initiating and executing efforts aimed at having an impact on current and future performance levels (Demeester et al., 2014; Shepherd & Patzelt, 2013). It is the extent to which executives absorb, or attend to market knowledge contained in e-Business transactions that enhances their likelihood of detecting and exploiting opportunities for strategic action, thereby sustaining the firm's competitive advantage (Li, Maggitti, Smith, Tesluk, & Katila, 2013; Shepherd et al., 2017; Shepherd & Patzelt, 2013).

It is known that individuals and firms possess limited attention capabilities (Ocasio, 1997; Simon, 1973), and opportunities for strategic action can be incremental or radical in nature. Executives interact frequently with their customers through several transactions, and hence can attend to incremental opportunities using existing product and service offerings, thereby positively impacting immediate accounting-based firm performance (Vickery et al., 2003). These interactions

also shape the nature of purchase relationships that customers forge with the firm. Some customers enter into sustained and loyal relationships if they are satisfied with the various product and service offerings of the firm, whereas others might form purely transaction-oriented and impersonal relationships focusing primarily on economic aspects of transactions. It is important for executives to devise specific marketing strategies for transaction and relationship-oriented customers based on the sentiments they express in e-Business transactions. Significant changes in the firm's environment can also take place, which can present radical opportunities that further require executives to formulate strategic plans and initiate innovation-oriented tasks to exploit such opportunities. These innovative solutions can positively impact future oriented market-based performance measures. OM literature, unlike management cognition literature, is still nascent in terms of an understanding of distinct attentional processes needed to address the different types of opportunities for strategic action (Ocasio, 2011; Shepherd et al., 2017).

The formulation of strategic plans and the associated analytical endeavors place further demands on executive attention (Phadnis et al., 2017; Yadav et al., 2007). Research has shown that business intelligence (BI) capabilities can leverage e-Business capabilities by aiding attention towards innovation-based tasks by providing a clearer picture of the payoffs (or consequences) of pursuing (or avoiding) various predicted action alternatives based on current transaction data (Fink, Yogev, & Even, 2017). Attending to these tasks help formulate effective marketing strategies for transaction and relationship-oriented customers, thereby leading to impacts on accounting and market performance (Anderson, Fornell, & Mazvancheryl, 2004). Executives usually prioritize attending to opportunities that arise from everyday customer issues rather than to those that can generate future value (Rerup, 2009; Yadav et al., 2007), even though attending to both types of opportunities simultaneously is important in order to maintain competitive

advantage. Although extant research has highlighted the roles of transaction processing capabilities of e-Business, it is somewhat silent regarding the key roles that attention processes can play in absorbing knowledge contained in e-Business transactions, and initiating strategies to create positive impacts on multiple dimensions of firm performance. Therefore, in this study we seek to answer the following research question: What are the specific roles executive attention processes play in reinforcing the effects of e-Business capabilities on firm performance?

The following steps are taken to answer the above question. We use return on sales (ROS) as an accounting-based measure of firm performance, and Tobin's Q as a market-based measure of performance. We disaggregate e-Business into e-Business transaction and e-Business relationship capabilities (e-transaction and e-relationship hereafter) based on prior research (Srinivasan, Anderson, & Ponnavolu, 2002; Tsikriktsis, Lanzolla, & Frohlich, 2004). We conceptualize two distinct executive attention processes based on managerial cognition literature, which aid in attending to existing task demands and to novel situations such as radical innovation contexts (Ocasio, 2011; Shepherd et al., 2017). These are called as focused attention and expansive attention in this study. The extent to which executives utilize strategic IT capabilities such as e-Business and BI, in order to attend to immediate task demands and to future opportunities, helps to create impacts on both types of performance. Therefore, we examine the moderating roles of both the attention processes on the e-transaction to ROS relationship, and also the moderating roles of both types of attention on the e-relationship to Tobin's Q relationships. Our results indicate that focused attention positively moderates the e-transaction capability to ROS relationship. The results also show that both focused attention and expansive attention positively moderate the relationship between e-relationship capability and Tobin's Q.

The following key contributions are made in this study. First, we provide a richer and more nuanced understanding of the role that executive attention plays in e-Business to firm performance relationship. Our study shows that the interactive relationship between e-Business capabilities and managerial attention is positively associated with both dimensions of firm performance. In the process, we also provide an empirical setting in which we study executive attention processes in an e-Business context, thereby broadening the scope of research on managerial cognition in the OM literature. This also attempts to empirically address an issue raised by Phadnis et al. (2017) that managerial cognition is relatively underexplored in the OM literature. Second, we theorize and empirically examine the effects of two distinct types of executive attention, which help to attend to specific task demands and overall data patterns (Ocasio, 2011) in our e-Business context. Therefore, we also heed the call of Ocasio (2011) in examining specific impacts of the two types of attention processes in our e-Business context.

We next review studies that examine the relationships between e-Business capabilities and various dimensions of firm performance, followed by a discussion of attention-based view. We then develop our hypotheses and empirical model. We conclude by discussing our results and additional robustness tests, and provide implications for research and practice.

1.2. Theoretical Background and Hypotheses

1.2.1. Types of e-Business Capabilities and Firm Performance

e-Business capabilities 'use the internet or any web based applications for conducting intra-firm and inter-firm business processes' (Sanders, 2007). These can include applications like electronic data interchange (EDI), online reverse auctions, electronic requests for quotations (e-RFQ) and electronic transfer of purchase orders (Johnson, Klassen, Leenders, & Awaysheh, 2007). The literature gives evidence of how e-Business capabilities can impact various dimensions of firm

performance. Such capabilities facilitate collaborative information sharing and transaction processing with suppliers and customers, and they have a positive impact on performance (Dehning et al., 2007; Devaraj et al., 2007). In our study, we will focus on accounting based and market based firm performance. Strategic IT capabilities of a firm typically involve the synergistic combination of several organizational resources and are shown to be positively associated with accounting performance measures such as ROS (Bharadwaj, 2000). These capabilities are also positively associated with market valuation measures such as Tobin's Q (Mithas & Rust, 2016). e-Business capabilities are higher order IT capabilities (Eisenhardt & Martin, 2000; Teece, Pisano, & Shuen, 1997) that can create competitive advantage through enhanced integration abilities with suppliers and customers (Barua, Konana, Whinston, & Yin, 2004), thereby improving customer loyalty and ultimately financial performance (Flynn, Huo, & Zhao, 2010).

Extant OM and marketing research disaggregates e-Business into two distinct capabilities (Srinivasan et al., 2002; Tsikriktsis et al., 2004) called e-transaction and e-relationship capabilities respectively. e-transaction capabilities are those which enable the firm to achieve efficiency in transaction processing, and can include fulfilling orders online, configuring products and services, automating bidding capabilities and providing information regarding various dealer locations. e-relationship capabilities are those which help to create, improve and extend customer relationships, and include providing customer service and support, community-oriented discussions, and cross-selling, which can create personalized levels of marketing. These capabilities enable the firm to reach a larger number of customers and to improve customer service productivity respectively, thereby improving firm performance (Tsikriktsis et al., 2004). Customers can use e-transaction capabilities to make evaluative judgments of specific transactions when initially doing business with a firm, where they focus primarily on economic aspects related to the transaction. Customer

loyalty generated over time through several such transactions and using e-relationship capabilities ensure they become willing to pay price premiums and also avoid deflecting to competitor products or services, thereby positively impacting current and future performance levels (Anderson, Fornell, & Lehmann, 1994; Srinivasan et al., 2002). Marketing literature calls these approaches transaction marketing and relationship marketing respectively (Grönroos, 1995; Jayachandran, Sharma, Kaufman, & Raman, 2005). e-transaction capabilities primarily aid in attracting new customers by improving cost efficiencies, and e-relationship capabilities play a key role in retaining key customers by forging strong relationships with them through repeated transactions (Amit & Zott, 2001). e-Business capabilities create value by helping customers manage nearly all purchasing-related activities and enabling real-time information sharing of such customer transactions with multiple departments within the firm (Mithas, Krishnan, & Fornell, 2005; Mithas, Ramasubbu, & Sambamurthy, 2011; Ray, Muhanna, & Barney, 2005; Zhao, Dröge, & Stank, 2001). OM literature also highlights the key roles of sharing such real-time transaction information with the firm's suppliers in enhancing customer loyalty. Supplier integration allows firms to maintain the necessary levels of inventory, reduce costs associated with shortage and backorders, improve cross-selling by maintaining large sets of complementary product/service offerings and provide instantaneous demand visibility (Barua et al., 2004; Xue, Ray, & Sambamurthy, 2013). Research has shown that both types of e-Business capabilities are associated with improved customer loyalty and ultimately impact both accounting based firm performance measures such as ROS, and market based performance measures such as Tobin's Q (Srinivasan et al., 2002; Zhu, 2004). We next briefly look at these two dimensions of firm performance that are used in this study.

1.2.2. Types of Firm Performance

Multiple streams of literature point to the existence of distinct dimensions of firm financial performance. The first dimension is called accounting or profitability based performance. This dimension of performance is derived with an assumption that previous period investments mainly affect current period earnings (Anderson et al., 2004). Bharadwaj, Bharadwaj, and Konsynski (1999) describe how these accounting measures are used in the literature as proxies for the economic rate of return, or the discount rate that equates present value of the net cash stream from a firm's investment with the initial outlay, because it is not possible to actually observe future cash flows. However in reality, the payoffs from IT investments can take several years until it can yield impacts on a firm's performance and accounting based measures do not usually reflect such time lags (Bharadwaj et al., 1999). Even though accounting performance measures provide important information regarding how well the firm uses its overall assets in immediate periods, there is a need for forward-looking measures of performance that considers such time lags and complements these accounting measures. Such forward looking measures are called financial market measures of performance, and represent ex ante market valuation of future cash flows or a reflection of future earnings relative to current levels of book value (Bardhan, Krishnan, & Lin, 2013). Such performance measures have several advantages. First, they are comparable across firms and industries. Second, they capture the effects of market movements, inflation and market risk (Anderson et al., 2004). This is important in our study because opportunities for strategic action are dynamic in nature, and hence can require development of innovative solutions. Third, it is known that the benefits of generic IT components can usually be competed away. Therefore, it is important that firms need to invest significant efforts to improve other intangible capabilities, along with IT investments, including customer service process, product and service quality

improvements and other reengineering efforts. These efforts therefore can also require significant organizational learning spanning department boundaries in understanding how IT capabilities can continue to add value to customers. Market based performance measures have the ability to capture such intangible value generated by the firm and also serve as a measure of brand equity (Bharadwaj et al., 1999).

1.2.3. Attention-Based View (ABV)

Attention is defined to be the noticing, encoding, interpreting, and focusing of time and effort by firm executives on various issues and action alternatives (Ocasio, 1997). Based on an extensive review of managerial cognition literature, we conceptualize two types of executive attention processes in this study that capture distinct aspects of attention and play unique interactive roles in the e-Business to firm performance relationship. We call these processes focused attention and expansive attention respectively. Organizations provide the context in which executives can make decisions using relatively simple rules of thumb, from a subset of all behavioral alternatives (Barnard & Simon, 1947). The context or stimuli are dependent on activities of various entities in the environment (March & Simon, 1958). In developing an attention-based view of the firm, Ocasio (1997) considered these elements along with other factors that decide various organizational moves. The literature gives us many instances of how the nature of events in the firm environment can lead to changes in attentional orientation of executives. After substantial deregulation in the airline industry, Cho and Hambrick (2006) showed that there was an increased attention focus towards prioritizing market needs, compared to an earlier emphasis on cost efficiencies. Rerup (2009) developed the concept of attentional triangulation, which helped identify a general inability to attend to weak signals of danger in the environment that could have resulted in a major crisis at a world leader in diabetes care. Daft, Sormunen, and Parks (1988)

further explain how changes in a firm's task environment, which includes customers and competitors, is more important than those in the general environment for executives to attend to. These changes in the firm environment also present several opportunities for value creation, and the efficacy of exploiting these opportunities and converting them into competitive benefits usually depends on the extent to which executives scan the external environment for opportunities and threats (Garg, Walters, & Priem, 2003).

As Shepherd et al. (2017) describe, executives notice the changes in the firm's environment and enter into a phase of sustained attention, wherein they evaluate the worthiness of what they have noticed in terms of being pursued as opportunities for strategic action. Exploiting such opportunities is critical for a firm's competitive advantage. These strategic opportunities can be incremental or radical. Incremental opportunities arise from small changes in technology trajectories or existing unmet customer needs. Radical opportunities arise from large changes in technology or market trajectories, which open up whole new markets or potential applications (Shepherd et al., 2017). The nature of the firm's environmental changes can also range from incremental to discontinuous levels. Executives' knowledge structures play a key role in directing attention to environmental changes, and in making attributions about the value and meaning of dynamic and changing information in an environment (Li et al., 2013). If environment changes are incremental, executives are more likely to form incremental value creation opportunity beliefs using their existing knowledge structures and core concepts learned from past experiences embedded in these structures. If environmental changes are discontinuous, they are more likely to develop radical opportunity beliefs (Shepherd et al., 2017). Existing knowledge structures usually cannot guide attention in such situations and executives require an adaptation of these structures by searching for unfamiliar, distant or diverse information to develop strategic responses in terms

of innovative solutions and new products. Therefore, distinct attentional processes exist that help guide attention when executives are faced with various levels of environmental changes and the associated opportunities (Li et al., 2013; Ocasio, 2011; Shepherd et al., 2017).

While the managerial cognition literature points us to the existence of these distinct executive attention processes, there is a lack of understanding in the OM literature regarding how these attentional processes play important roles in e-Business settings where thousands of transactions occur on an everyday basis. Although the use of e-Business capabilities can increase executives' likelihood of recognizing strategic opportunities (Shepherd & Patzelt, 2013), they have to initiate and sustain several additional tasks over time to convert such opportunities into impacts on the firm's bottom line. Executives can also often be constrained by short-term decision making, thereby reducing an orientation towards making innovation decisions that can affect the long-term strategy and positioning of the firm (Phadnis et al., 2017). Extending this argument in an e-Business context, a tension invariably exists between prioritizing everyday issues or requests related to transactions from specific customers, and evaluating the purchase patterns of the overall customer base underlying these transactions, in order to make sense of complex underpinnings of purchase data and to come up with innovative responses. Executives invariably focus on everyday transactions and related customer issues first because they are considered as crucial for a firm to maintain levels of performance in immediate timeframes, and only subsequently attend to innovation based solutions. Developing such solutions to address future market needs is a time consuming effort which also requires an inherent future orientation from executives (Rerup, 2009; Yadav et al., 2007). However, they need to strike a balance between attending to value creation opportunities of the present and the future simultaneously, by utilizing distinct facets of managerial attention in order to maintain competitive advantage (Shepherd et al., 2017).

As described previously, we conceptualize two distinct types of executive attention processes in this study, and they play specific interactive roles in both the e-Business to firm performance models. We call these processes focused attention and expansive attention, and discuss their roles in detail next. We focus specifically on how IT executives attend to customer behavior in this study. Grönroos (1995) stresses the importance of individuals other than marketing specialists to 'accept' marketing roles within a firm and to be responsible for various initiatives to improve customer experience. Research has also shown that that Chief Information Officers (CIOs) and other senior IT executives have such growing responsibilities towards creating such improvements in customer experience. These executives are in an optimal position to know the capabilities of IT in the firm which can be used to fulfil market needs through new product development. Higher the time spent on monitoring external customer behavior by senior IT executives, higher they can help sell products/services, strengthen customer relationships with peer to peer CIOs of customer firms and hence create further value for the focal firm (Weill & Woerner, 2013).

1.2.4. Hypotheses

1.2.4.1. Accounting Performance (ROS) Model

Figure 1 below shows the overall hypothesized model structure. Focused attention is the attention process that IT executives utilize in efforts to fulfil specific customer task demands expressed in e-Business transactions. It is the process that helps in attention allocation to information and developing action sequences related to specific transaction(s) and away from other transactions/issues, and aids in attending to incremental opportunities. Focused attention can include efforts put in to meet customers, respond to their requests or complaints, and attend annual customer meetings wherein joint planning can take place regarding various aspects of production

planning, distribution, and service agreements. Interactions with customers can occur through face-to-face or technology mediated modes in e-Business contexts (Froehle, 2006). Studies show how proactively soliciting customer feedback and responding to it enhances customer loyalty, and therefore firm performance (Bone et al., 2017). Expansive attention is the attention process that IT executives utilize to attend to underlying patterns and associations in the overall e-Business transaction data, without a focus on specific transactions. The emphasis is on leveraging the data embedded in e-Business transactions, in order to attend to overall patterns of the entire customer base (Ocasio, 2011). Expansive attention processes include performing extensive data analysis of customer purchase habits and website browsing patterns, and using business intelligence systems which help enhance the performance of a wide range of business processes (Elbashir, Collier, & Davern, 2008). By using transaction data contained in e-Business systems, these statistical analyses and data mining can facilitate various techniques such as association analysis, clustering, data segmentation, regression and other predictive modeling capabilities (Chen, Chiang, & Storey, 2012). Expansive attention can aid in developing efficient and personalized service programs in current periods, and also brings a future orientation because of its underlying basis of developing actionable predictions using current transactional data of the entire customer base. Expansive attention can help executives form data-driven predictions of various future scenarios and can be used in attending to radical innovation (Fink et al., 2017). It can also help executives gain a better understanding of what represents actionable opportunities and what represents noise (Shepherd & Patzelt, 2013). Managerial cognition literature shows the existence of the two types of attention that we use in our study (Ocasio, 2011; Shepherd et al., 2017). Focused attention is similar to the conceptualization of attention driven by customer task demands and requests, whereas expansive attention is similar to attention of data patterns, where cognitive resources are assigned to diverse

information which help guide action in even novel situations when no predetermined schema exist to achieve task demands (Ocasio, 2011).

Customer requests are usually a significant part of executives' task demands, and satisfied customers can almost solely affect current and future performance levels of a firm (Anderson et al., 2004). In the immediate time horizons, customers use e-transaction capabilities to configure or customize products, locate dealers, automate pricing bids, and efficiently fulfil their order requests. These transactional capabilities are usually designed for attracting new customers, and are largely impersonal. Customers use these capabilities to get a sense of control over the content, order and duration of information flows (Barua et al., 2004). Frequent interactions between focal firm executives and their customer counterparts regarding various aspects of order fulfilment including joint inventory planning, demand surges, order scheduling, tracking, and delivery requests can positively impact financial performance in both B2B and B2C contexts (Frohlich & Westbrook, 2002; Thirumalai & Sinha, 2005). Marketing literature gives further evidence of the positive effect that proactive executive interactions has on immediate firm performance. Firm executives who reach out to their customer counterparts proactively after purchase transactions help in preempting product failures, increasing value-add of the purchase and generating rich feedback of the overall purchase experience (Challagalla, Venkatesh, & Kohli, 2009). These actions by executives usually lead to a perception of fairness and positivity for customers, and therefore enhance the effect of e-transaction capabilities on short-term firm performance. This leads us to our first hypothesis:

H1: *Focused attention positively moderates the relationship between e-transaction capabilities and accounting performance.*

e-Business transactions can often generate data containing rich customer behavioral information and sentiments (Chen et al., 2012). Extensive data analysis of customer transactions

can help the firm profile the subset of customers who frequently face issues related to demand surges, lead times and inventory obsolescence, among other issues. Executives can then take preemptive actions to address these problems, thereby allowing the firm to be more responsive (Flynn et al., 2010). Expansive attention helps executives to leverage the underlying richness of transactional data into efficacious marketing actions that lead to favorable behavioral consequences. Using business intelligence tools to analyze overall patterns arising from transactions can help executives in in tailoring necessary service programs, targeting offerings to a wide range of customers, and finally promoting products to elicit favorable customer responses (Kohli & Jaworski, 1990). These behavioral consequences in turn lead to further the positive impact of e-transaction capabilities on accounting-based performance:

H2: *Expansive attention positively moderates the relationship between e-transaction capabilities and accounting performance.*

1.2.4.2. Market Performance (Tobin's Q) Model

We use market performance models to account for the time lags for strategic IT investments to reflect on the firm's bottom-line performance. Such time lags are also usually indicative of the duration of forming close relationships between the firm and its suppliers and customers. Studies have shown that the association between customer satisfaction and market performance is stronger for firms that achieve a dual strategic emphasis of revenue expansion and cost efficiencies simultaneously (Mittal, Anderson, Sayrak, & Tadikamalla, 2005). Firms which realize a high level of customer satisfaction by interacting with their customers during several transactions over time, typically generate a lasting commitment from them to maintain a valued relationship with the firm. e-relationship capabilities play a key role in the creation and maintenance of such lasting relationships (Jayachandran et al., 2005; Srinivasan et al., 2002). While transaction marketing is

primarily aimed at managing the marketing mix to attract and satisfy newer customers, relationship marketing is a time intensive effort by firms which involves developing interpersonal relationships through cooperative interactions for mutual benefits (Coviello, Brodie, Danaher, & Johnston, 2002). It is known that it is less expensive to transact with satisfied existing customers than with a new customer (Grönroos, 1995). Moreover, many customer relationships are usually not profitable during early transactions and usually it takes several such transactions from loyal customers to realize scale efficiencies. Studies have shown that a stable, loyal customer base provides a predictable source of future revenue and shields the firm from the threats of competition and environmental shocks (Anderson et al., 2004). Customer receptivity and acceptance of e-relationship capabilities also provide more accurate information to develop customer profiles and launch targeted marketing campaigns (Tsikriktsis et al., 2004). Higher levels of focused attention by executives improve the effects of e-relationship capabilities on market performance by improving customer experience both during and after the sales transactions, speeding up customer inquiry responses and ensuring consistencies in order fulfilment (Mithas, Krishnan, & Fornell, 2016). IT executives who exhibit high levels of focused attention also help in tailoring various service programs to customers (Weill & Woerner, 2013). Therefore, we hypothesize:

H3: *Focused attention positively moderates the relationship between e-relationship capabilities and market performance.*

Although executives can focus their attention on contemporary behavioral trends of customers using e-transaction and e-relationship capabilities, such focus is not likely to be a sufficient basis for innovation, which requires them to labor through a series of additional tasks over time. Executives need to make conscious efforts to pull away from current exigencies in order to increase attention to new, radical opportunities and be more prepared for any changes in the

environmental landscape. Such efforts lead to faster detection of new opportunities and faster deployment of new products based on these opportunities (Yadav et al., 2007). Attending to radical opportunity beliefs forms a basis for developing radical strategic actions which can have significant market impacts (Shepherd et al., 2017). Expansive attention involving rigorous data analysis of market intelligence (Trkman, McCormack, De Oliveira, & Ladeira, 2010) helps in interpreting complex and contradictory data trends, and evaluating the relationships between the various possible action alternatives (Ocasio, 1997, 2011; Rerup, 2009). A stable, loyal customer base who have long-term relationships with the firm is shown to be willing to try out new products and not deflect to competition, and also promote them to fellow customers thereby positively impacting future cash flows (Gruca & Rego, 2005). Expansive attention gives executives a clearer understanding of the subset of this customer base who are likely to accept and embrace these new products. Higher levels of expansive attention also help in determining the payoffs from acting on the opportunity, and more importantly, in also providing a clearer picture of not acting on the opportunity and its consequences, given current information (Shepherd & Patzelt, 2013). These actions can help executives to better predict the receptivity and success rates of new products with customers who have long-term relationships with the firm, thereby further contributing to future cash flows. Therefore, we hypothesize:

H4: *Expansive attention positively moderates the relationship between e-relationship capabilities and market performance.*

<Insert Figure 1 here>

1.3. Data and Methodology

1.3.1. Data and Variables

The data for this study were obtained from three different sources. Firm-level IT information came from the InformationWeek 500 (IW) annual survey from 2001 to 2003. The survey has some repeated questions on enterprise IT implementation of various technologies and associated budget data. The IW survey has been used in previous studies and its reliability has been well established (Mithas, Tafti, Bardhan, & Goh, 2012). Firm- level financial and accounting information were compiled from Compustat and Compustat – Capital IQ Standard & Poor's databases. The firms which were part of the IW survey and which also were listed on the North American stock exchanges were used to construct a panel dataset. The final sample consisted of 491 firm-year observations. We did not restrict our sample to a specific industry as Table 1 below shows. Table 2 provides the correlations and descriptive statistics. We used SAS 9.4 to perform all data analyses.

<Insert Table 1 here>

<Insert Table 2 here>

1.3.1.1. Dependent Variables

We use the return on sales (ROS) and Tobin's Q as the measures of accounting and market performance respectively, in this study. Following recent studies (Mithas et al., 2016) and as a preliminary step towards addressing issues of reverse causality, the dependent variables are captured as lead measures with two years (t+2) of chronological difference relative to all the independent variables, which are measured for the years 2001 to 2003.

Return on Sales (ROS)

ROS was adopted as the accounting measure of firm performance in this study. The ROS is calculated as the ratio of income before extraordinary items to the total sales of the firm, expressed

as a percentage. It is used as a short-term measure of firm performance in other studies (Bharadwaj, 2000). The values for income and sales are taken from the Compustat database. We measure ROS for the sample of firms for the years 2003 to 2005.

Tobin's Q

Tobin's Q was used as the measure of market based firm performance in this study. Tobin's Q has been used in many studies as a measure of market performance (Bharadwaj et al., 1999). It is based on an efficient security market evaluation of a firm's future value generating potential. It is risk adjusted, more forward looking, and is less affected by accounting conventions (Anderson et al., 2004; Bharadwaj et al., 1999; Hall, 1993). We computed the values of Tobin's Q for the years 2003 to 2005, based on the formulation given below by Chung and Pruitt (1994):

Tobin's Q = [(Price-Fiscal Year-Closer * Common Shares Outstanding) + Liquidating Value of Outstanding Preferred Stock + Book Value Current Liabilities – Book Value Current Assets + Book Value Long Term Debt] / Book Value Total Assets.

1.3.1.2. Independent Variables

We have two types of e-Business capabilities, two types of attention and their interactions that we use in this study. We detail the measures for each of these below.

e-transaction and e-relationship Capabilities

The IW survey contains several types of e-Business capabilities that the firm uses to transact with its customers. Executives respond with a Yes/No answer on whether each type of capability is extensively used by the firm's e-Business system. For e-transaction capabilities, the IW survey contains items that ask the respondent to indicate whether the focal firm's e-Business system provides the customer with the following options: dealer locator, product fulfilment online, product or service configuration, and finally automated auctions. These items have been used in

prior studies in the literature (Frohlich & Westbrook, 2002; Srinivasan et al., 2002; Vakharia, 2002). For e-relationship capabilities, respondents answer questions to indicate whether the e-Business system provides the customer with the following options: customer service and support, community discussions, personalization options, cross-selling functionalities and finally negotiations for prices and discounts. These items have also been used in prior literature (Srinivasan et al., 2002; Vickery et al., 2003). We use an indicator variable to measure if the respective dimension of e-Business capability is realized. We sum these and take an average to generate scores on a scale between 0 and 1 for both e-Business transaction and e-Business relationship capabilities. In addition, we also followed an approach similar to Xue et al. (2013) and ensured through principal components analysis (PCA) that there are two distinct factors for e-Business, and dropped three out of the twelve items which either showed poor or cross loadings. The final items used for both types of e-Business capability are shown in Appendix A1.

Focused Attention and Expansive Attention

The IW survey contains items which request the various means through which senior IT executives study customer behavior. In a study of Chief Information Officers' (CIOs) roles in a digital economy, Weill and Woerner (2013) describe two distinct dimensions in which CIOs can play critical roles in positively impacting customer satisfaction by strengthening customer relationships. The first dimension consists of meeting customers through electronic or in-person modes, responding to their requests and attending annual customer meetings to help gauge their needs, and to sell the firm's suite of products and services. The second dimension consists of attending to unmet customer needs through innovation and maximizing the value they attain through IT enabled products and services. Analyzing customer website traffic, purchase habits and using business intelligence tools to generate predictive reports of various action alternatives aligns

to this second dimension. Similar to the approach followed for e-Business, we also ran a PCA on the nine binary items to ensure that there are two distinct factors for attention. We dropped three of the nine items which showed poor or cross loadings. We then took the average scores of the items to generate Focused Attention and Expansive Attention scores. The final items are provided in Appendix A1. We also created the interaction terms between the two e-Business capabilities and the two types of attention to be used for our regressions.

1.3.1.3. Control Variables

We incorporated several control variables in our regression models that have been known to be correlated with the dependent variables and used in prior studies (Chari, Devaraj, & David, 2008; Kobelsky, Richardson, Smith, & Zmud, 2008). The values for the variables are taken from the Compustat and Compustat Segment databases. First, we control for firm size which is measured as the natural logarithm of annual firm sales. Second, we control for sales growth, measured as the percentage growth in sales between the previous and current year (year t – 1 and t). Third, we control for environmental uncertainty, measured as the standard deviation of each firm's net income before extraordinary items for the previous five years (t − 5 to t – 1), scaled by sales in the previous year (t – 1), and expressed in percentage. Fourth, we control for the debt ratio which is measured as the ratio of long-term debt to the total assets of the firm, and is expressed as percentage. Next, we control for market concentration which is measured using the Herfindahl-Hirschman Index (HHI) and it uses the market shares of all the firms in the same industry. Next, we control for IT Budget which is calculated as a fraction of the sales revenue used for IT purposes by the firm, and is expressed in natural logarithm. Lastly, we control for the various tools that a firm can invest in, to increase productivity. The IW survey has several different ways in which this

can be done, each being a binary measure. The items are detailed in Appendix A1. We take an average of the items and use the productivity score in our regressions.

1.3.2. Analytical Model

We have multi period panel data and this means we can have the presence of fixed effects in our model. We conducted the Hausman test (Hausman, 1978) to check whether fixed effects or random effects need to be used for both our ROS and Tobin's Q models. The null hypothesis for the test is that there is no correlation between these time invariant fixed effects and the predictors. The null hypothesis was rejected for the ROS model and not rejected for the Tobin's Q model, indicating the use of fixed effects estimates for the ROS model and random effects estimates for Tobin's Q. Prior studies have also used random effects models for Tobin's Q (Bardhan et al., 2013). The use of the fixed effects model for ROS also considers sources of unobserved heterogeneity, so the concern of omitted variables is also greatly reduced (Mithas et al., 2016; Woolridge, 2003). We use standard errors clustered by each firm and also incorporate heteroscedasticity and autocorrelation consistent estimators in our analysis (SAS Institute, 2015; White, 1980). We lag our independent variables by two years relative to the dependent variables as preliminary steps to address the issue of reverse causality and also as an appropriate time window to realize the full value of e-Business capabilities (Bharadwaj et al., 1999). We mean centered our variables and created the interaction terms for our models (Aiken, West, & Reno, 1991). We did not find any issues with multicollinearity in our models, based on the variance inflation factor tests. Below are the model specifications:

$$ROS_{i,\,t+2} = \beta_1.\ Controls_{it} + \beta_2.\ e\text{-}tran_{it} + \beta_3.\ e\text{-}rel_{it} + \beta_4.\ FocAttn_{it} + \beta_5.\ ExpAttn_{it} + \beta_6.\ e\text{-}tranXFocAttn_{it} + \beta_7.\ e\text{-}tranXExpAttn_{it} + \gamma_i + \alpha_t + \varepsilon_{it} \quad \ldots\ldots\ (1)$$

$$Tob\ Q_{i,\,t+2} = \beta_1.\ Controls_{it} + \beta_2.\ e\text{-}tran_{it} + \beta_3.\ e\text{-}rel_{it} + \beta_4.\ FocAttn_{it} + \beta_5.\ ExpAttn_{it} + \beta_6.\ e\text{-}relXFocAttn_{it} + \beta_7.\ e\text{-}relXExpAttn_{it} + \gamma_i + \alpha_t + \varepsilon_{it} \quad \ldots\ldots\ (2)$$

1.4. Results

The results of the full ROS model (Equation 1 above) are given in Table 3, Model 3 and the Tobin's Q full model (Equation 2 above) are given in Table 4, Model 8. The base models with only controls and the main effects results are also shown in Model 1, Model 2 in Table 3 and Model 6, Model 7 in Table 4. Our models have a reasonable explanatory power as seen from the R-square values. Referring to Table 3 and Model 3, we can say that there is strong support for H1. The interaction term involving e-transaction and focused attention is positive and significant ($\beta_6 = 3.300$, $p < 0.05$). We can say that the effect of e-transaction capabilities on accounting performance depends on the level of focused attention that managers pay to their customers in fulfilling their needs. Contrary to our expectations, the interaction term involving e-Business transaction and expansive attention is negative and significant ($\beta_7 = -2.363$, $p < 0.05$), and therefore H2 is not supported.

<Insert Table 3 here>

Referring to Table 4 and Model 8, we see that the interaction terms involving e-relationship capabilities and focused attention, and e-relationship capabilities and expansive attention, are positive and significant ($\beta_6 = 0.278$, $p < 0.01$ and $\beta_7 = 0.207$, $p < 0.01$), thereby lending strong support for H3 and H4. We can say that the effect of e-relationship capabilities on market performance is dependent on the levels of focused attention and expansive attention that managers pay to their customers. We discuss these findings in the subsequent section. Figures 2 to 5 below provide the interaction plots for both the ROS and Tobin's Q models.

<Insert Table 4 here>

1.4.1. Robustness Checks

We conducted several robustness tests of our models and we discuss a subset of those here. The use of lead measures for our dependent variables can address the threat of reverse causality. To

address endogeneity concerns, we followed the steps similar to those followed by Mithas and Rust (2016), and other studies involving IT variables. We used lagged values of focused attention and expansive attention as instruments for a two-stage least squares regression model. We used one-year and two-year lags for these models. These variables are correlated with both attention variables and are not expected to be correlated with the error terms in the models because of the duration of the lag involved. The results are given in Table 3, Model 4 and Table 4, Model 9. We get quantitatively similar results to the hypothesized results for both ROS and Tobin's Q. We performed an additional test to further mitigate concerns of endogeneity. We had used the productivity score as a control variable in our regressions. The use of such tools aids employees to potentially increase the levels of both types of attention. We generated first and second order lags of the productivity score. These lagged productivity scores are correlated significantly with both types of attention, and are not correlated with the error term in both the regressions. We then used these lagged productivity scores as instruments and used a two-stage least squares approach. The results are shown in Table 3, Model 5 and Table 4, Model 10, and they are also similar to our main hypothesized results. All the two-stage least squares models use clustered standard errors.

Our results are also robust to alternate measurement specifications of our dependent variables. We used the three-year average lead measures of ROS and Tobin's Q (average of ROS_{t+1}, ROS_{t+2}, ROS_{t+3} and average of $Tobin's\ Q_{t+1}$, $Tobin's\ Q_{t+2}$, $Tobin's\ Q_{t+3}$) instead of the two-year lead measures in our main models. The results are given in Table 5, Model 11 and Table 6, Model 13. The interactions are similar in signs and significance as compared to our hypothesized main models. We also used the three-year average lead measure of ROA instead of ROS in Model 12 of Table 5, and we find that the results remain quantitatively similar to the ROS model. We also test our results to an alternate measure of Tobin's Q. Following Bardhan et al. (2013), we

measure Tobin's Q as the value of a firm's total assets plus market value of equity minus the book value of equity scaled by total assets, and the values for these variables were taken from the Compustat database. We use the three-year average lead measure of Tobin's Q for this model and the results are shown in Table 6, Model 14. The signs and significance of our hypothesized interactions remain similar to the results in our main model.

<Insert Table 5 here>

<Insert Table 6 here>

1.5. Discussion

The primary goal of this study was to theorize and empirically examine the effects of executive attention in an e-Business setting. Specifically, we set out to examine the moderating roles of executive attention in the e-Business to firm performance relationship using two models for ROS and Tobin's Q. First, our unbalanced panel data results for the ROS model indicate that focused attention positively moderates the e-transaction capabilities to ROS relationship. This result is robust to alternate specifications of ROS, and also to other measures of accounting performance such as ROA as well. Our full model results did not support the hypothesis of the moderating effect of expansive attention in the e-transaction to ROS relationship, and the sign of the interaction was negative. In the ROS main models with interactions, we note that in the presence of attention, e-transaction has a negative impact on ROS (Models 3 to 5 in Table 3). This means that e-transaction capabilities by themselves do not have positive direct impacts on short-term firm performance, a finding that supports the arguments made by other studies in the OM literature (Devaraj et al., 2007). The sign for e-transaction is positive (but not significant) for the three-year average ROS model in Table 5, Model 11, indicating that the direct impact of e-transaction capabilities on short-term performance is weak overall. A similar trend of positive, insignificant estimates is seen for

the direct impacts of e-relationship capabilities on ROS in all our models. This lends further credence to the core argument that it is not the availability of e-Business capabilities, but how managers leverage these capabilities by attending to various customer demands that has a bottom-line impact on accounting performance.

Our panel results for Tobin's Q indicate that both focused attention and expansive attention moderate the relationship between e-relationship capabilities and Tobin's Q. Similar to the ROS model, we find that both the main effects for both e-transaction and e-relationship on Tobin's Q are negative in the full models. This also extends the argument that the availability of e-Business capabilities cannot positively influence even market performance. It is how executives use these capabilities in attending to various strategic actions that actually has the intended impact on performance. We also see that the signs in many instances for the two types of attention in the ROS and Tobin's Q models are also negative. This is because attention is not expected to explain performance by itself, as argued by Ocasio (1997). Rather, how attention is used in the context of other organizational capabilities that enable a firm to compete effectively in its markets is what often decides its performance levels.

Our study makes two key contributions to the OM literature. First, many firms can design sufficient e-transaction and e-relationship capabilities for their customers. We show that it is the interactive relationship between e-transaction and focused attention that has a positive impact on accounting firm performance measure of ROS. We also show that the interactive relationships between e-relationship and focused attention, and e-relationship and expansive attention, are both positively associated with Tobin's Q. By empirically testing out these moderating relationships, we provide a richer and nuanced understanding of executive attention in the e-Business to firm performance relationships. Second, the e-Business context we use in the study helps us to theorize

and empirically test the impacts of both types of attention. Based on an extensive review of managerial cognition literature, we theoretically conceptualize and empirically test the impacts of both focused attention and expansive attention in this study. These attention processes aid in attending to immediate task demands using preexisting cognitive frameworks and to strategic action alternatives including radical innovation contexts, where no preexisting frameworks might exist for attention (Ocasio, 2011; Shepherd et al., 2017). The use of BI capabilities help in leveraging the data contained in e-Business transactions and enable executives to get an idea of the payoffs of various strategic paths of action with current data trends.

Our study has certain limitations. First, the sample of firms in our study are typically large in terms of their revenues. As detailed in other studies (Mithas et al., 2016), the InformationWeek survey is typically directed towards firms in the Fortune-500 range. Therefore, our results might not generalize to small and medium sized firms, where there might exist totally different mechanisms for managerial attention to environmental opportunities. Second, the age of our data means that latest developments in e-Business functionalities might not be captured, which can include a firm's social media presence and multi-channel distribution capabilities. For customers, it broadens the scope of community oriented discussions and reviews using these various social media platforms, in addition to only the firm's websites. Third, firms now can possess even more advanced capabilities for data mining, warehousing, and retrieval. Big data and cloud technologies offer avenues for firms to make even more informed decisions by owning their data at potentially low costs in spite of significant volumes (Demirkan & Delen, 2013). Using these capabilities and larger volumes of data can lead to even more enhanced predictive modeling power for firms. Lastly, we look at attention to overall customer behavior in this study. Future studies can focus on attention to a key portfolio of customers and their needs by initiating specific projects. Also, future

studies can focus on specific instances of environmental changes or technological advancements for which firms specifically initiate the development of incremental or radical solutions.

1.6. Conclusions

We discuss the implications for research arising from our results. Many studies actually focus on the impact of executive attention in addressing issues and problems that arise in within-firm contexts (Haas, Criscuolo, & George, 2014; Rerup, 2009). Our study focuses on attention to customer transactions and therefore broadens the scope of research on the attention-based view in addressing issues of strategic importance related to this key aspect that can have profound impacts in the growth and survival of firms. Second, ours is one of the first studies in the OM literature to theorize and empirically test the impacts of attention processes based on customer task demands and overall data patterns, which are discussed extensively in the managerial cognition literature (Ocasio, 2011; Shepherd et al., 2017). We show that a firm's strategic IT capabilities including e-Business and BI capabilities are critical enablers of both focused and expansive attention. The extent to which executives use these market based IT capabilities in various attention processes helps leverage strategic opportunities and can go a long way in maintaining competitive advantage (Ocasio, 1997; Shepherd et al., 2017; Shepherd & Patzelt, 2013), a key set of propositions which we empirically tested in this study. Lastly, we also examine how focused attention and expansive attention play interactive roles in the two e-Business to firm performance relationships. In this process, we also attempt to study the interactions between these two attention processes, heeding the calls of Ocasio (2011).

Our study also has certain key implications for practice. First, even though firms can make significant investments in IT capabilities, executives need to make significant efforts to constantly accumulate their knowledge of customer behavioral trends embedded in these capabilities. They

also need to scan their environment continuously for strategic opportunities and threats (Garg et al., 2003) and exploiting these opportunities can be crucial to maintain competitive advantage (Shepherd et al., 2017). Once they evaluate these opportunities, they can form beliefs for developing incremental and radical strategic action. Executives need to meet and interact with customers over several transactions in order to address incremental needs and positively impacting performance in the immediate periods. They need to spend time and efforts in understanding the underlying customer sentiment in several e-Business transactions in order to have higher impact on performance. In terms of radical opportunities, BI capabilities aid executives in enhancing decision making by providing predictive reports of various action alternatives using current data patterns. These reports can help executives choose those action paths in terms of new products or service transformations which are feasible and have higher likelihood of being accepted by customers. It is the extent to which executives fully leverage these BI capabilities by investing time in understanding the various functionalities such as associative analyses and regression models that help in generating the most optimal paths of action.

Tables

Table 1: Industries Considered in Sample

SIC	Industry
12	Coal Mining
13	Oil & Gas Extraction
14	Nonmetallic Minerals, Except Fuels
15	General Building Contractors
16	Heavy Construction, Except Building
20	Food & Kindred Products
22	Textile Mill Products
23	Apparel & Other Textile Products
24	Lumber & Wood Products
25	Furniture & Fixtures
26	Paper & Allied Products
27	Printing & Publishing
28	Chemical & Allied Products
29	Petroleum & Coal Products
30	Rubber & Misc. Plastics Products
33	Primary Metal Industries
34	Fabricated Metal Products
35	Industrial Machinery & Equipment
36	Electronic & Other Electric Equipment
37	Transportation Equipment
38	Instruments & Related Products
39	Misc. Manufacturing Industries
40	Railroad Transportation
42	Trucking & Warehousing
44	Water Transportation
45	Transportation by Air

SIC	Industry
47	Pipelines, Except Natural Gas
48	Communications
49	Electric, Gas, & Sanitary Services
50	Wholesale Trade – Durable Goods
51	Wholesale Trade – Nondurable Goods
52	Building Materials & Gardening Supplies
53	General Merchandise Stores
54	Food Stores
55	Automotive Dealers & Service Stations
56	Apparel & Accessory Stores
57	Furniture & Home furnishing Stores
58	Eating & Drinking Places
59	Miscellaneous Retail
60	Depository Institutions
61	Nondepository Institutions
62	Security & Commodity Brokers
63	Insurance Carriers
67	Holding & Other Investment Offices
70	Hotels & Other Lodging Places
72	Personal Services
73	Business Services
75	Auto Repair, Services, & Parking
79	Amusement & Recreation Services
80	Health Services
87	Engg. & Management Services

Table 2: Descriptive Statistics and Correlations

	Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Firm Size – Ln Sales	8.75	1.15	1.00												
2	Sales Growth	6.82	11.18	0.02	1.00											
3	Debt Ratio	0.22	0.14	-0.09	-0.09	1.00										
4	HHI	0.07	0.05	0.22	0.06	0.13	1.00									
5	Env. Uncertainty	0.04	0.05	-0.16	0.02	-0.10	-0.11	1.00								
6	Worker Productivity	0.74	0.22	0.11	0.01	-0.06	0.03	-0.10	1.00							
7	Log IT Budget	5.02	1.39	0.73	0.01	-0.13	0.11	0.00	0.15	1.00						
8	Focused Attention	0.80	0.29	0.08	-0.08	-0.07	0.10	-0.02	0.20	0.13	1.00					
9	Expansive Attention	0.61	0.35	0.24	-0.02	-0.10	0.07	-0.03	0.29	0.23	0.18	1.00				
10	e-transaction	0.54	0.29	0.39	0.01	-0.16	0.09	-0.06	0.24	0.38	0.16	0.29	1.00			
11	e-relationship	0.51	0.27	0.30	-0.02	-0.10	0.08	0.01	0.30	0.29	0.22	0.36	0.48	1.00		
12	ROS – Year + 2	5.92	5.21	-0.04	0.16	-0.12	-0.15	0.20	-0.06	0.10	-0.10	0.05	-0.03	0.04	1.00	
13	Tobin's Q – Year + 2	1.09	0.69	-0.12	0.15	0.00	-0.04	0.20	-0.01	-0.02	0.03	0.11	-0.03	0.10	0.38	1.00
N=491, correlations with magnitude greater than 0.07 are significant at the $p < 0.10$ level.																

Table 3: Results for ROS (Std. errors in Parenthesis)

	Model 1 – Controls Only	Model 2 – Main Effects	Model 3 – Full Model	Model 4 – 2SLS Lag Attention	Model 5 – 2SLS Lag Productivity
	Fixed Effects	**Fixed Effects**	**Fixed Effects**	**Fixed Effects**	**Fixed Effects**
Variable	**DV – ROS_{t+2}**	**DV – ROS_{t+2}**	**DV – ROS_{t+2}**	**DV – ROS_{t+2}**	**DV – ROS_{t+2}**
Controls			**Test for H1, H2**	**Robustness Test**	**Robustness Test**
Firm Size – Log Sales	0.112 (1.644)	-0.145 (1.642)	0.101 (1.611)	-0.565** (0.241)	-0.518** (0.240)
Sales Growth	0.021 (0.014)	0.020 (0.014)	0.020 (0.013)	0.118*** (0.020)	0.121*** (0.017)
Debt Ratio	4.345* (2.502)	4.350*(2.611)	4.450* (2.636)	-2.600** (1.315)	-2.470** (1.316)
HHI	9.992 (9.027)	8.083 (9.200)	10.932 (9.480)	-4.460 (4.030)	-4.630 (4.116)
Env. Uncertainty	1.980 (5.518)	2.983 (5.944)	4.901 (5.748)	-0.207 (3.850)	-0.112 (3.932)
Productivity	-0.911 (0.757)	-0.938 (0.856)	-1.074* (0.867)	-1.296 (0.854)	-0.270 (1.611)
Log IT Budget	0.935*** (0.231)	0.978*** (0.232)	0.959*** (0.238)	-0.027 (0.193)	-0.035 (0.198)
Predictors & Interaction					
Focused Attention		-0.991* (0.539)	-2.391** (0.960)	-2.135 (2.030)	-3.040 (8.500)
Expansive Attention		0.035 (0.378)	1.251 (0.771)	1.657 (1.155)	-0.961 (5.334)
e-transaction		0.374 (0.532)	-0.730 (1.572)	-3.122** (1.360)	-2.796** (1.314)
e-relationship		0.486 (0.469)	0.535 (0.472)	1.036 (0.802)	1.105 (0.810)
e-tran X Foc Attn (H1)			3.300** (1.670)	2.353* (1.340)	2.532*** (0.980)
e-tran X Exp Attn (H2)			-2.363** (1.160)	1.866* (1.040)	1.540 (1.210)
R-Square	0.106	0.126	0.141	0.142	0.140
Unstandardized coefficients are reported above, standard errors in parentheses.					
*p < 0.10; **p < 0.05; ***p < 0.01					

Table 4: Results for Tobin's Q (Std. errors in Parenthesis)

	Model 6 – Controls Only	Model 7 – Main Effects	Model 8 – Full Model	Model 9 – 2SLS Lag Attention	Model 10 – 2SLS Lag Productivity
	Random Effects	Random Effects	Random Effects	Fixed Effects	Fixed Effects
Variable	**DV – Tob Q_{t+2}**	**DV – Tob Q_{t+2}**	**DV – Tob Q_{t+2}**	**DV – Tob Q_{t+2}**	**DV – Tob Q_{t+2}**
Controls			**Test for H3, H4**	**Robustness Test 1**	**Robustness Test 2**
Firm Size – Log Sales	-0.071*** (0.001)	-0.066*** (0.001)	-0.064*** (0.001)	-0.118*** (0.041)	-0.114*** (0.042)
Sales Growth	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.009*** (0.003)	0.010*** (0.003)
Debt Ratio	0.306*** (0.007)	0.303*** (0.007)	0.322*** (0.007)	0.220 (0.222)	0.230 (0.229)
HHI	-0.562*** (0.010)	-0.520*** (0.011)	-0.550*** (0.011)	-0.335 (0.681)	-0.362 (0.701)
Env. Uncertainty	0.086** (0.039)	0.040 (0.039)	0.026 (0.038)	2.347*** (0.650)	2.368*** (0.669)
Productivity	0.074*** (0.002)	0.074*** (0.002)	0.066*** (0.002)	-0.208 (0.145)	0.016 (0.019)
Log IT Budget	0.022*** (0.001)	0.018*** (0.001)	0.012*** (0.001)	0.041 (0.033)	0.040 (0.030)
Predictors & Interaction					
Focused Attention		0.063*** (0.002)	-0.095*** (0.003)	-0.374 (0.343)	-0.683 (1.448)
Expansive Attention		-0.017*** (0.002)	-0.070*** (0.003)	0.125 (0.196)	-0.052 (0.908)
e-transaction		-0.073*** (0.002)	-0.086*** (0.006)	0.392 (0.357)	0.462 (0.362)
e-relationship		0.077*** (0.002)	-0.284*** (0.002)	-0.906** (0.411)	-0.904** (0.423)
e-rel X Foc Attn (H3)			0.278*** (0.007)	1.075*** (0.425)	1.066** (0.437)
e-rel X Exp Attn (H4)			0.207*** (0.005)	0.570* (0.320)	0.588* (0.328)
R-Square	0.074	0.108	0.131	0.129	0.124
Unstandardized coefficients are reported above, standard errors in parentheses.					
*p < 0.10; **p < 0.05; ***p < 0.01					

Table 5: Results for 3-year Average ROS and ROA (Std. errors in Parenthesis)

	Model 11 – Robustness Test 3	**Model 12 – Robustness Test 4**
	Fixed Effects	**Fixed Effects**
Variable	**DV – $ROS_{3\text{-Yr Avg}}$**	**DV – $ROA_{3\text{-Yr Avg}}$**
Controls	**Test for H1, H2**	**Test for H1, H2**
Firm Size – Log Sales	3.078 (2.578)	4.228 (2.770)
Sales Growth	0.085*** (0.027)	0.125*** (0.030)
Debt Ratio	10.929** (4.431)	13.188** (5.280)
HHI	26.595 (21.083)	9.790 (24.195)
Environmental Uncertainty	16.436 (11.584)	12.383 (13.410)
Worker Productivity Score	-2.965** (1.333)	-2.001*** (0.990)
Log IT Budget	1.054*** (0.362)	1.137*** (0.436)
Predictors and Interaction		
Focused Attention	-4.860*** (1.585)	-4.518*** (1.306)
Expansive Attention	2.016 (1.456)	0.114 (1.306)
e-transaction	0.808 (2.486)	-1.803 (2.035)
e-relationship	0.397 (0.872)	0.653 (0.824)
e-tran X Foc Attn (H1)	4.907* (2.660)	5.089** (2.221)
e-tran X Exp Attn (H2)	-3.724* (1.903)	-1.568 (1.730)
R-Square	0.141	0.175
Unstandardized coefficients are reported above, standard errors in parentheses.		
*p < 0.10; **p < 0.05; ***p < 0.01		

Table 6: Results for 3-year Average Tobin's Q & Alternate Formulation of Tobin's Q (Std. errors in Parenthesis)

	Model 13 – Robustness Test 3	**Model 14 – Robustness Test 4**
	Random Effects	**Random Effects**
Variable	**DV – Tob $Q_{3\text{-Yr Avg}}$**	**DV – Alt Tob $Q_{3\text{-Yr Avg}}$**
Controls	**Test for H3, H4**	**Test for H3, H4**
Firm Size – Log Sales	-0.158*** (0.009)	-0.133*** (0.008)
Sales Growth	0.001*** (0.000)	0.003*** (0.000)
Debt Ratio	0.613*** (0.045)	-0.025 (0.050)
HHI	-0.813*** (0.149)	-0.719*** (0.173)
Environmental Uncertainty	-0.001 (0.179)	0.841*** (0.239)
Productivity Score	0.151*** (0.012)	0.117*** (0.013)
Log IT Budget	0.063*** (0.005)	0.067*** (0.005)
Predictors and Interaction		
Focused Attention	-0.263*** (0.018)	-0.316*** (0.021)
Expansive Attention	-0.287 *** (0.021)	-0.234*** (0.023)
e-transaction	-0.180*** (0.032)	-0.219*** (0.036)
e-relationship	-0.357*** (0.035)	-0.360*** (0.039)
e-rel X Foc Attn (H3)	0.160*** (0.039)	0.213*** (0.045)
e-rel X Exp Attn (H4)	0.493*** (0.026)	0.435*** (0.029)
R-Square	0.142	0.147
Unstandardized coefficients are reported above, standard errors in parentheses.		
*p < 0.10; **p < 0.05; ***p < 0.01		

Figures

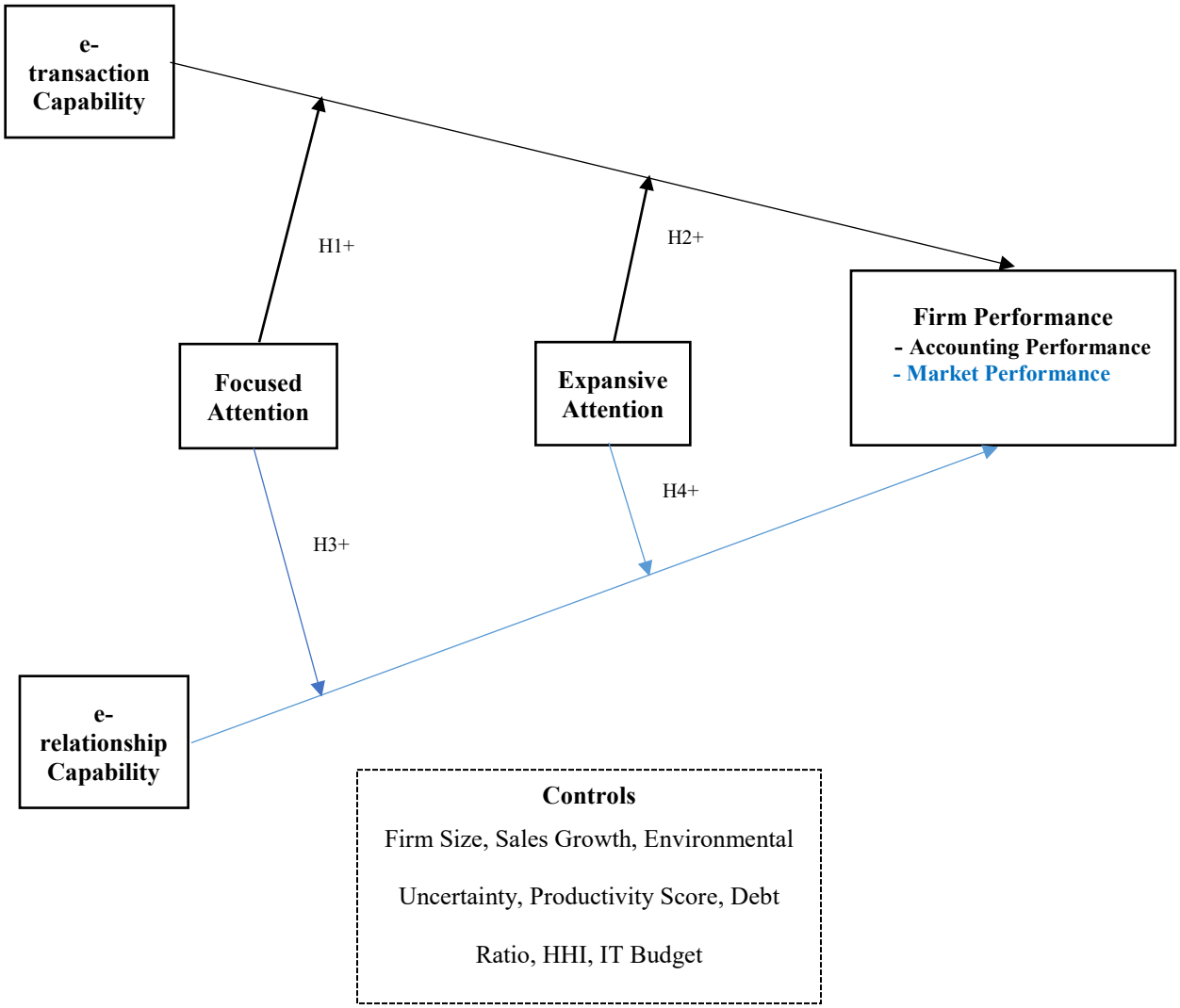

Figure 1 – Research Framework

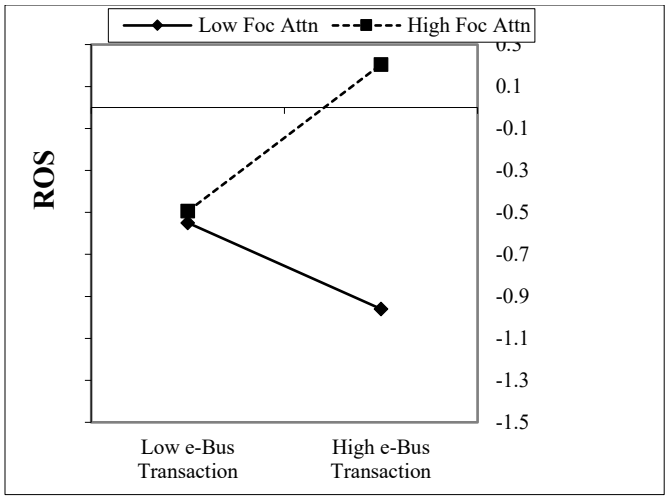

Figure 2 – e-transaction Focused Attention Interaction on ROS

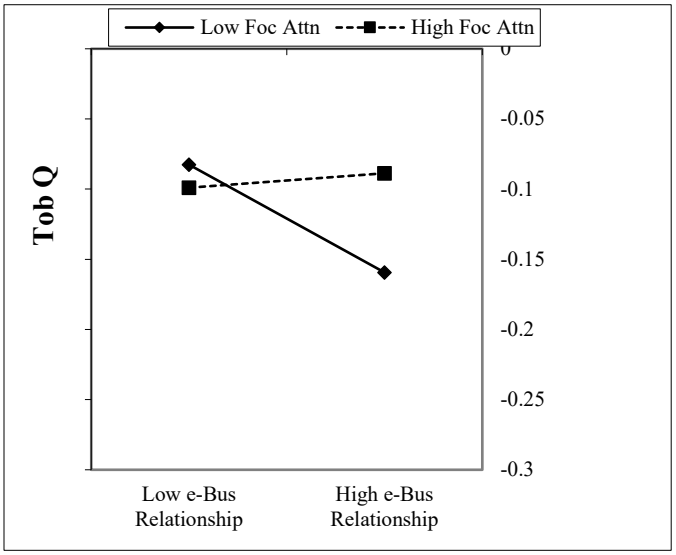

Figure 3 – e-relationship Focused Attention Interaction on Tobin's Q

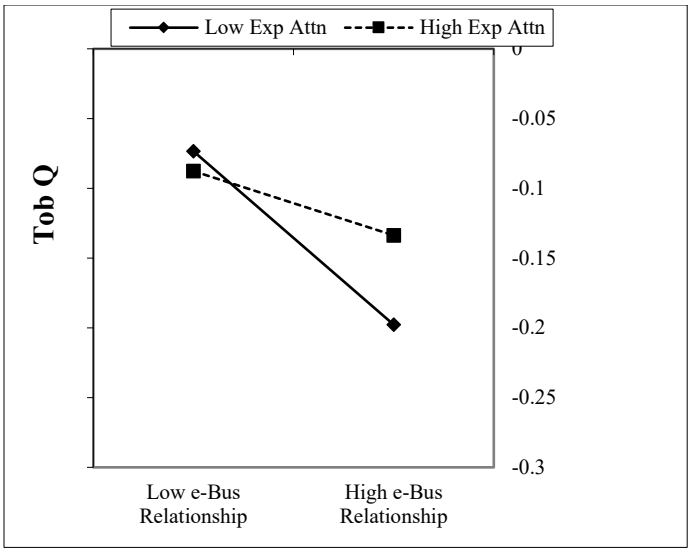

Figure 4 – e-relationship Expansive Attention Interaction on Tobin's Q

Appendix

A1. Items Used from IW 500 Survey

Transactional e-Business capabilities:

Which of the following types of electronic business applications does your company currently operate for its customers? (Choose ALL that apply):

- Dealer locator (1/0)
- Product distributed or fulfilled via the Web (1/0)
- Automated bidding (1/0)
- Product or service configuration and customization (1/0)

Relationship e-Business capabilities:

Which of the following types of electronic business applications does your company currently operate for its customers? (Choose ALL that apply):

- Customer service and support (1/0)
- Community or threaded discussions (1/0)
- Personalization (1/0)
- Cross-selling (1/0)
- Negotiation of prices or discounts (1/0)

Focused Attention:

In what ways do your organization's senior IT executives study customer behavior? (Choose ALL that apply):

- Attend annual customer meetings (1/0)
- Meet one-on-one with customers (1/0)
- Respond to customer requests or complaints (1/0)

Expansive Attention:

In what ways do your organization's senior IT executives study customer behavior? (Choose ALL that apply):

- Analyze Website traffic patterns (1/0)
- Analyze purchase habits (1/0)
- Use business intelligence tools (1/0)

Productivity:

Which of the following are the most effective technology steps managers in your organization have made in the past 12 months to raise worker productivity? (Choose ALL that apply)

- Deploy customer relationship management/front office solutions
- Call center software
- Allow more workers Internet access
- Moving legacy processes to E-business applications
- Implement enterprise applications such as ERP
- Boost network bandwidth/performance
- Upgrade desktop PCs with newer models
- Outfit workers with laptop PCs
- Upgrade desktop operating systems
- Upgrade desktop productivity software
- Wireless devices such as handheld PCs and cell phones
- Train workers to master key software programs
- Deploy collaborative software tools such as Intranet or e-mail
- Deploy collaborative hardware such as video conferencing
- Deploy knowledge management tools

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Essay Two: Roles of Executive Attention Foci and Board Characteristics in Firm Omni-Channel Development

Abstract

In this study we theorize that chief executive officer (CEO) attention foci and board of director (BOD) heterogeneity play interactive roles in firm omni-channel strategy development, which is considered to be an innovation in retailing. Prior literature has examined the effects of these variables separately in generic contexts of innovation. In this study, we bring together these two distinct and often disconnected streams of literature. We also examine the roles of these attention foci, BOD heterogeneity, and their interactions, on the speed of development of omni-channel strategies, which is considered a specific context of innovation in retailing. We hypothesize that the interactive effects between CEO external focus and BOD heterogeneity in functional backgrounds, output oriented backgrounds, and outside directors, is positively associated with faster development of omni-channel strategy. Our results show that the interactions of CEO external focus and output background heterogeneity, and CEO external focus and outside director heterogeneity, have a positive association with development speed of omni-channel capabilities. We used data from firm annual 10-K reports, Standard and Poor (SP) and Compustat databases to test our hypotheses.

Keywords: Omni-Channel, Executive Attention, Board of Directors, Innovation, Speed of Innovation

2.1. Introduction

There have been significant changes in the retailing landscape over the last few years, and an evolution of multi-channel customer management, defined as the design, deployment, coordination, and evaluation of channels to enhance customer value through effective customer acquisition, retention, and development (Neslin et al., 2006). More recently, further digitalization, along with the evolution of additional channels such as mobile devices, tablets and social media, and the integration of these new channels in online and offline retailing, have created the need for a new type of customer management strategy called omni-channel strategy (Verhoef, Kannan, & Inman, 2015). Verhoef et al. (2015) define omni-channel strategy as the synergetic management of all channels in such a way that the customer experience across channels and the performance over channels is optimized.

Operations management and marketing literature have viewed omni-channel strategy as important drivers of customer purchase intentions and willingness to pay (Herhausen, Binder, Schoegel, & Herrmann, 2015), and firm performance in terms of sales growth (Cao & Li, 2015). Omni-channel strategy is shown to facilitate integrated customer shopping experiences across channel boundaries, and studies show that they are necessary to compete effectively (Brynjolfsson, Hu, & Rahman, 2013; Gallino & Moreno, 2014). Being a fairly recent phenomenon, omni-channel strategies are considered an innovation in retailing (Akturk, Ketzenberg, & Heim, 2018; Cao & Li, 2018). Several studies in strategic management and product innovation literature have highlighted the roles of the speed of developing competitive actions (Caridi-Zahavi, Carmeli, & Arazy, 2016; Nadkarni, Chen, & Chen, 2016) and its importance in maintaining competitive advantage. Therefore, it is important to understand some of the key firm level drivers of innovation,

in terms of its development speed and deployment, in the context of omni-channel strategy, considered to be a specific instance of innovation in retailing.

Many studies highlight the roles of chief executive officer (CEO) and top managers' roles in innovation (Caridi-Zahavi et al., 2016; Wang & Dass, 2017). Specifically, CEO attention processes are shown to be associated with firm innovation speed and deployment (Yadav et al., 2007). The extent of cognitive capacity devoted to attention processes, relative to other activities, is important in establishing the link between attention and innovation (Li et al., 2013; Ocasio, 2011), and this cognitive capacity is usually directed to specific entities within and outside a firm (Hoffman & Ocasio, 2001). Greater attention by CEOs to external entities, relative to internal entities, is reflected in communications and action, and leads to employees also increasing attention to events and opportunities in the external environment, leading to quicker development and extensive deployment of innovations (Yadav et al., 2007).

Another important driver of firm innovation is the heterogeneity of the board of directors (BOD). BOD characteristics shape how executives attend to the environment and issues, and how they develop solutions. Specifically, greater heterogeneity in BODs can lead to greater diversity of information perspectives, and therefore to more focus related to discussion of innovation (C. S. Tuggle et al., 2010). Other studies also show that complex strategic change associated with contexts such as innovation requires heterogenous leadership (Haynes & Hillman, 2010). BOD members are qualified to provide professional advice to CEOs, who can consult with them about aspects of firm strategies being developed and obtain feedback from them about these strategic plans (Hambrick, Werder, & Zajac, 2008). It is the extent of constructive relationships between BODs and the CEO that is shown to have key impacts in strategic contexts such as innovation (Sundaramurthy, Pukthuanthong, & Kor, 2014). While extant research has examined the effects of

CEO attention foci (Yadav et al., 2007) and BOD heterogeneity (C. S. Tuggle et al., 2010) separately in contexts of innovation, no study has, to the best of our knowledge, examined the impacts of these factors together in omni-channel strategy development. Therefore, we seek to address the research question: does BOD heterogeneity interact with CEO attention and together lead to faster development and deployment of omni-channel strategy? In doing so, we make the following contributions. We bring together two important, yet often disconnected, streams of literature on CEO attention processes and BOD heterogeneity in the context of omni-channel development. We show that it is the interactive effects between CEO external focus and BOD heterogeneity that is associated with faster development of omni-channel strategy. By examining the impacts of these distinct phenomenon on a specific instance of retailing innovation, we provide an empirical validation of the propositions of individual (Ocasio, 1997) and BOD level (C. S. Tuggle et al., 2010) shaping of attention processes within a firm. We use text analytics methods to construct our measures and test our hypotheses. We also use measures based on cross-channel capability, the chosen way to implement omni-channel strategy (Cao & Li, 2018). We next discuss the relevant literature on cross-channel capabilities, omni-channel strategy, executive attention and BOD heterogeneity, and develop our hypotheses. We then discuss the methods we used, preliminary results obtained and finally provide a brief discussion of these preliminary results.

2.2. Theoretical Background and Hypotheses

2.2.1 Cross-Channel Capabilities, Omni-Channel Strategy and Retailing Innovation

A channel is a customer contact point or a medium through which the firm and the customer interact (Neslin et al., 2006). A channel capability is an enabling characteristic of a channel that allows customers to accomplish shopping goals (Avery, Steenburgh, Deighton, & Caravella,

2012). Avery et al. (2012) show that each channel provides certain complementary capabilities which attract new customers to existing channels or cause existing customers to purchase more. Such synergies between channels are facilitated by cross-channel capabilities, which refer to the increased effectiveness of a channel on a customer because the customer has used another channel from the same firm (Neslin & Shankar, 2009). As Cao and Li (2018) describe, cross-channel capabilities are usually the chosen means through which firms implement their omni-channel strategy. This is achieved through combining multiple channels by coordinating their objectives, design and deployment to create synergies for customers (Cao & Li, 2018). The focus therefore, is on how such synergies can be created by information technology (IT) based integration of channels (Oh, Teo, & Sambamurthy, 2012), and this approach is called omni-channel strategy in the literature. Verhoef et al. (2015) define omni-channel strategy as the synergetic management of all channels in such a way that the customer experience across channels, and the performance over channels is optimized. Earlier multi-channel based strategies did not always emphasize such coordination between channels (Neslin et al., 2006) to create seamless customer experiences. Cross-channel capabilities have important links to managerial actions in terms of observable firm competitive moves that enhance its competitive position (Luo, Fan, & Zhang, 2015).

Research shows that designing advanced channel capabilities are a competitive necessity for firms, given customer can have specific preferences of channels (Brynjolfsson et al., 2013; Gallino & Moreno, 2014). Other studies show that developing cross-channel capabilities and pursuing omni-channel strategy are considered innovation processes in retailing (Akturk et al., 2018; Cao & Li, 2018). Cross-channel capabilities and omni-channel strategies require adoption of disruptive information and material handling technologies, centralized data management, order management systems and mobile applications. Pursuing such strategies is often risky and can lead

to failure very often (Akturk et al., 2018). Therefore, it is important to understand the key drivers of innovation within firms. In this study, we focus on two important drivers of firm innovation which are executive attention processes and BOD heterogeneity, and discuss them in the context of channel capabilities.

2.2.2. Executive Attention and Cross-Channel Capabilities

Attention is defined as the noticing, encoding, interpreting, and focusing of time and effort by organizational decision-makers on both (a) issues; the available repertoire of categories for making sense of the environment: problems, opportunities, and threats; and (b) answers: the available repertoire of action alternatives: proposals, routines, projects, programs, and procedures (Ocasio, 1997). As Ocasio (1997) describes, technology based innovation is a basis of competition which decides how firms prepare for and respond to competitor actions. However, executives can often be bombarded with issues related to short term operational matters and they can overlook slow-changing long-term developments (Phadnis et al., 2017). In these contexts, attention becomes a scarce resource in executive levels of the firm (Simon, 1973).

Executives need to pursue innovation-oriented products and solutions, even though short-term matters are important. Studies in strategic management show that developing innovative solutions at a faster rate helps to maintain competitive advantage (Nadkarni et al., 2016; Rindova, Ferrier, & Wiltbank, 2010), and the CEO has an important role to play in faster development and deployment of innovations (Caridi-Zahavi et al., 2016; Nadkarni et al., 2016). We have seen from our discussion thus far that developing cross-channel capabilities is often risky and time consuming. It is important for executives to allocate cognitive resources in a sustained and intentional manner in problem solving, planning and decision making (Ocasio, 2011) to overcome

various challenges in the context of developing cross-channel capabilities. It also involves more expansive search of new information and knowledge to focus their cognitive resources on, in efforts to develop such channel based retailing innovations (Li et al., 2013; March & Simon, 1958). It therefore becomes important to understand certain foci of attention for executives which are important in contexts of innovation, given their intense job demands and to aid in efforts to avoid remaining steeped in the past or in their day-to-day activities (Yadav et al., 2007).

Yadav et al. (2007) describe two specific types of attention processes called external focus and internal focus. External focus is the amount of attention devoted to objects whose primary locus is outside the firm, and internal focus is the amount of attention given to objects within the firm. Studies show that attentional emphasis on external entities such as customers, relative to internal entities, is shown to lead to improved performance and better competitive positions (Rust, Moorman, & Dickson, 2002). This is because potential opportunities for innovation often reside outside the firm, and attending to such external entities increases the likelihood of executives becoming aware of these opportunities and developing innovative responses. (Daft et al., 1988; Garg et al., 2003; Yadav et al., 2007). Executives with high external focus are also shown to be associated with developing and deploying innovative solutions at a faster speed (Yadav et al., 2007).

2.2.3. Board of Director Heterogeneity and Cross-Channel Capabilities

Strategic management literature has shown the key roles of BODs in firm monitoring processes (S. Tuggle, Reutzel, Bierman, 2010). However, BODs can play an active role in other aspects such as strategy formulation and innovation also. Board members, through their extensive experience, are highly qualified to provide advice and counsel to CEOs and critique their strategic plans for

the firm (Hambrick et al., 2008). Heterogeneity in BODs usually possess higher breadth of knowledge, creativity, and experiences, and also can have access to valuable resources outside the firm. This also leads to higher allocation of attention towards strategies aligned with innovation oriented outcomes (Haynes & Hillman, 2010).

BODs, much like executives and top managers, can only dedicate their attention to a subset of issues and answers, and this attention is shaped by heterogeneity of director characteristics, including tenure heterogeneity and background heterogeneity (Cho & Hambrick, 2006). Bantel and Jackson (1989), Cho and Hambrick (2006) and C. S. Tuggle et al. (2010) show how BOD heterogeneity in functional backgrounds, output oriented backgrounds and outside industries have positive impacts on innovation. Functional heterogeneity of backgrounds brings greater breadth of knowledge and more creative problem solving in contexts of innovation. While overall functional heterogeneity can increase creativity, directors who have output oriented backgrounds help to focus on product market issues, relative to directors with other primary backgrounds. Lastly, directors who are from industries which are different to those of the focal firm bring awareness of new opportunities, question conventional wisdom of the focal firm industry and an awareness of expansion towards new markets/products and innovation.

2.2.4. Interactive Effects of Executive Attention and BOD Heterogeneity

Research regarding links between BODs and the CEO have highlighted the importance of collaborative relationships between the two entities in strategic decision making (Westphal, 1999). Healthy interactions between the BODs and CEO can lead to improved quality of strategic decisions, and conflicts can create the opposite effects of negative dynamics in decision making (Kor, 2006). As described by C. S. Tuggle et al. (2010), heterogeneity in BODs can generate a

diverse cognitive base, information sources and perspectives for decision making, and we use the key logic from their study. We discuss three dimensions of heterogeneity in contexts of omni-channel development. Functional background heterogeneity brings greater breadth of knowledge and creative thinking to problem solving in contexts of innovation. A higher proportion of directors with output-oriented backgrounds brings a specific focus on the market, and therefore bring an entrepreneurial mindset (Cho & Hambrick, 2006). A higher proportion of directors who belong to industries other than those the firm belongs to are likely to challenge conventional wisdom and bring awareness of innovations and opportunities. The extent of collaborative relationships between the CEO and heterogeneous BODs can also result in the former being more open to advice seeking, which further engenders open communication and development of collective mental models. Combined with a high external attention orientation of the CEO, such collaborative relationships lead to increased likelihood of the CEO seeking the board's inputs in strategic contexts (Sundaramurthy et al., 2014) including omni-channel development. Therefore, we hypothesize:

H1*: BOD heterogeneity in functional backgrounds has a positive interactive effect with CEO external focus on omni-channel strategy development speed. The effect is stronger and more positive for the external focus-functional background heterogeneity interaction than internal focus-functional background heterogeneity interaction.*

H2*: BOD heterogeneity in output directors has a positive interactive effect with CEO external focus on omni-channel strategy development speed. The effect is stronger and more positive for the external focus-output director heterogeneity interaction than internal focus-output director heterogeneity interaction.*

H3*: BOD heterogeneity in outside directors has a positive interactive effect with CEO external focus on omni-channel strategy development speed. The effect is stronger and more positive for the external focus-outside director heterogeneity interaction than internal focus- outside director heterogeneity interaction.*

<Insert Figure 1 here>

2.3. Data, Variables and Methods

We used data from multiple sources in this study, including firm annual 10-K reports, Standard and Poor (SP) and Compustat databases, from the years 2009 to 2018. The 10-K reports contain information about several aspects of firm operations, and gives stakeholders the means to evaluate the firm through the eyes of management (Nadkarni et al., 2016). The reports also contain detailed discussions of cross-channel capabilities and omni-channel strategies being pursued by the firm, and executive perspectives about these omni-channel strategies and their importance to the firm's strategic objectives. The 10-K reports also contain CEO information including age, tenure, gender, and background information. Firm performance information and information on firm size, advertising, sales and assets was obtained from the Compustat database. BOD level information was obtained from the Standard and Poor (SP) database, which contains information about the background and tenure of each director.

We wrote a python program to read the information contained in the annual report for each year. The Business section contains information regarding the extent of deployment of cross-channel capabilities and omni-channel strategy. We created a single text corpus for each firm across the years of our sample. We followed recent work in information systems literature and used the scikit-learn library in python and the term frequency-inverse document frequency (TF-

IDF) approach (Gunarathne, Rui, & Seidmann, 2018). This helps to scale the frequency of a word or phrase and reweight it over an entire text corpus, with a positive score indicating higher importance of the word. We created a binary variable called omni-channel and coded it as 1, if it generated a positive TF-IDF score, and 0 otherwise. We also read the annual reports to check for the various cross-channel capabilities that the firm implemented each year, given from the measure in Luo et al. (2015). We coded another binary variable called omni-channel-CC as 1 if the firm implemented all the cross-channel capabilities. The correlation between the two measures for omni-channel is high and significant (correlation coefficient = 0.88, $p < 0.01$), providing further evidence of validity. We use the TF-IDF based binary measure for all our analyses. The dictionaries provided by Yadav et al. (2007) were used for CEO attention foci and are given below in the appendix. The TF-IDF scores were calculated based on the words in the dictionary for each annual report. BOD heterogeneity measures were developed following C. S. Tuggle et al. (2010). Functional background heterogeneity was operationalized as the Blau heterogeneity index (Blau, 1977). We considered functional backgrounds production, operations, research and development and engineering, accounting, finance, management and administration, marketing and sales, information technology and e-commerce, law, personnel and labor, and other. Output oriented backgrounds included marketing and sales, research and development and engineering, and information technology and e-commerce, and was operationalized as the Blau index with these backgrounds, relative to other backgrounds. Outside director heterogeneity was the Blau index for outside directors from another industry compared to the focal firm, relative to directors from same industry and inside directors. We controlled for individual and firm level variables such as CEO Tenure, CEO Salary (Log), CEO Age, CEO Gender, CEO Change, Firm Size, Performance (ROS)

and Board Size. The intendent and control variables were lagged by two years relative to the dependent variable.

<Insert Table 1 here>

We used the Cox proportional hazards model to test our hypotheses, which can model hazard rates, and positive values of coefficients indicate that the hazard rate of the event, which is omni-channel, increases with changes in the covariates (Allison, 1984; Bakker, 2016). The descriptive statistics and correlations are given in Table 1, and preliminary results are given in Table 2 below. We briefly discuss them next.

2.4. Results

We refer to Table 2 below for the results. We see that the coefficients for the background heterogeneity and external focus interaction is negative and significant (coefficient = -0.223, $p < 0.05$), and the coefficient for the background heterogeneity and internal focus interaction is not significant. We expected the former interaction to be positive and significant, so H1 is not supported. The outside heterogeneity and external focus (coefficient = 0.361, $p < 0.05$), and output heterogeneity and external focus (coefficient = 0.433, $p < 0.05$) interactions are positive and significant, as hypothesized. This combined with the negative and non-significant coefficients for the corresponding outside heterogeneity and internal focus, and output heterogeneity and internal focus interactions show that H2 and H3 are supported. We discuss these results briefly in the next section.

<Insert Table 2 here>

2.5. Discussion

We demonstrate the interactive effects between BOD heterogeneity and CEO attention foci, and their associations with the speed of omni-channel strategy development in this study. Prior research often examines these two important factors separately in their associations with innovation. However, by examining the interactive effects between these factors, we bring together these often disconnected streams of literature on CEO attention processes and BOD heterogeneity in the context of omni-channel development. We make a key contribution to the attention theory by understanding the synergies between executive (individual) and board level impacts in shaping attention to both external and internal entities of a firm, and its impact on speed of omni-channel development.

Our results show that the interactive effects between CEO external focus and BOD heterogeneity that is associated with faster development of omni-channel strategy. We therefore examine the combined impacts of these phenomena on a specific instance of innovation in retailing. Specifically, our results indicate that heterogeneity in output backgrounds and outside directors enhance the effect of CEO external focus on omni-channel development speed. The negative and significant interaction of background heterogeneity and external focus on omni-channel development speed is a surprising result. This result can mean that highly heterogenous boards in terms of functional backgrounds dampen the effects of CEO external focus on omni-channel development. A possible reason for this finding is that functional background heterogeneity usually reflects skillsets that are learnt long ago and are not very changeable, which can lead to rigidities in the contexts of attention allocation (C. S. Tuggle et al., 2010). Another possible reason can be that the dynamics of power in highly heterogenous boards can cause rigidities with respect to the acceptance and pursuit of operational and marketing-based

innovations in retailing, such as the development of omni-channel strategies. Directors with functional backgrounds which are not output oriented might be skeptical about the success of these strategies, which can weaken CEO and other top management efforts to achieve success through development and implementation of these strategies (Sundaramurthy et al., 2014). This finding is important from a practical standpoint because appointing output background directors to boards might not generate the results expected in terms of omni-channel success, if there exist such rigidities within the firm and can have potential consequences to sustaining its competitive advantage.

2.6. Conclusions

Our key contribution in this study is to empirically demonstrate the interactive effects of the external focus of CEOs, and BOD heterogeneity in terms of outside directors and output oriented directors, that is associated with faster development of omni-channel strategy. While we could obtain data from multiple sources to build our models, our study has certain key limitations. First, we utilize firm level reports to understand cognitive frames and attention foci of the CEOs in this study. Even though the reports provide rich information about the implementation of IT based cross-channel capabilities and the ways in which they help in transacting with customers, this usually represents aggregate information and also information mainly from the perspective of the firm's internal stakeholders. The quality and success of these implementations cannot be completely discerned from these documents, as prior studies show (C. S. Tuggle et al., 2010). Second, future research is required to further assess customer level opinions and rankings regarding the success of the implementations, which are obtained through various other data sources, and to compare the data and perspectives obtained from these other data sources with the

information on the firm reports. Future research can also be initiated to further understand specific rigidities that can exist in information processing and knowledge sharing mechanisms in highly heterogenous boards, and can also study the impact of power dynamics of both the CEO and BODs in firm pursuits of innovation. Future research can also further expand the dictionaries for the attention foci to better reflect a broader set of entities that are associated with cognitive frames of CEOs. Studies can be initiated to understand how specific individual characteristics of CEOs (educational background, prior experience, tenure, gender etc.) can shape these cognitive frames.

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Tables

Table 1: Descriptive Statistics and Correlations

	Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	CEO Tenure	17.71	11.23	1.00													
2	CEO Salary	6.96	0.60	0.02	1.00												
3	CEO Age	56.28	6.63	0.12	0.27	1.00											
4	CEO Gender	0.04	0.20	-0.01	0.04	0.00	1.00										
5	CEO Change	0.09	0.26	-0.18	-0.06	-0.04	0.04	1.00									
6	Firm Size	11.19	1.12	0.09	0.23	0.06	0.06	0.14	1.00								
7	ROS	0.06	0.05	0.21	0.02	-0.23	-0.02	-0.13	-0.08	1.00							
8	Board Size	10.41	2.05	0.14	0.03	0.16	0.06	0.12	0.63	-0.13	1.00						
9	Cap Ex to Sales	0.03	0.02	0.17	-0.12	-0.14	0.17	-0.03	-0.18	0.26	-0.21	1.00					
10	BOD Background Heterogeneity	0.62	0.12	0.02	-0.06	0.09	-0.09	-0.02	-0.10	-0.24	0.02	-0.03	1.00				
11	BOD Outside Heterogeneity	0.37	0.11	-0.11	-0.04	-0.07	0.03	-0.06	-0.13	0.19	-0.21	0.27	-0.03	1.00			
12	BOD Output Heterogeneity	0.39	0.11	-0.03	-0.09	-0.13	0.05	0.09	0.21	0.01	0.30	0.03	0.11	-0.29	1.00		
13	Internal Focus	0.01	0.01	0.09	0.09	0.13	-0.04	0.05	0.07	-0.08	0.10	0.15	-0.06	-0.09	0.06	1.00	
14	External Focus	0.01	0.01	-0.03	-0.15	-0.29	-0.03	-0.11	-0.21	0.31	-0.19	0.11	-0.10	0.12	-0.15	-0.38	1.00
N=394, correlations with magnitude greater than 0.08 are significant at the $p < 0.10$ level.																	

Table 2: Results

DV: Omni-Channel			
Variable	**Estimate**	**Chi-Square**	**Prob > Chi Square**
CEO Tenure	-0.309** (0.133)	5.397	0.020
CEO Salary (Log)	0.015 (0.064)	0.054	0.817
CEO Age	-0.023 (0.103)	0.051	0.822
CEO Gender	0.024 (0.069)	0.12	0.729
CEO Change	-0.166 (0.271)	0.373	0.542
Firm Size (Log Employees)	-0.171 (0.129)	1.752	0.186
ROS	0.204* (0.116)	3.099	0.078
Board Size	-0.101 (0.065)	2.435	0.119
Capital Expenses to Sales	-0.135 (0.131)	1.069	0.301
BOD Background Heterogeneity	-0.022 (0.097)	0.049	0.824
BOD Outside Heterogeneity	0.542*** (0.137)	15.591	0.000
BOD Output Heterogeneity	0.226* (0.119)	3.63	0.057
Internal Focus	-0.001 (0.128)	0	0.994
External Focus	-0.420*** (0.132)	10.147	0.001
Background Heterogeneity X External Focus (H1)	-0.223** (0.095)	5.464	0.019
Outside Heterogeneity X External Focus (H2)	0.361** (0.179)	4.043	0.044
Output Heterogeneity X External Focus (H3)	0.433** (0.198)	4.783	0.029
Background Heterogeneity X Internal Focus	-0.024 (0.108)	0.051	0.821
Outside Heterogeneity X Internal Focus	-0.055 (0.147)	0.139	0.709
Output Heterogeneity X Internal Focus	-0.112 (0.126)	0.792	0.374
Standardized coefficients are shown above, standard errors in parentheses.			
*p < 0.10; **p < 0.05; ***p < 0.01			

Figures

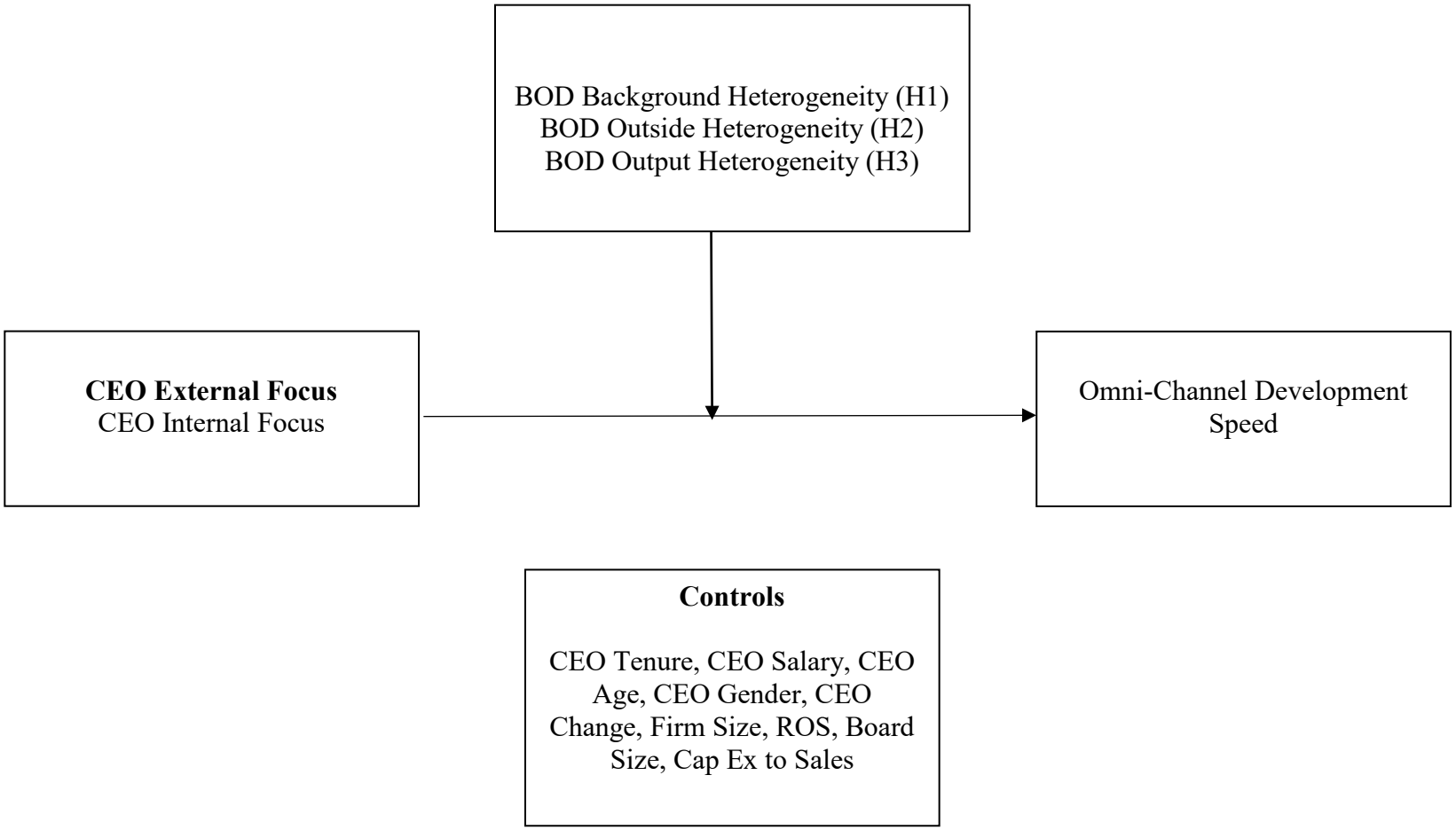

Figure 1 – Research Framework

Appendix

Attention Dictionaries in Yadav, Prabhu and Chandy (2007):

External Focus Dictionary	
Customers	**Competitors**
Customer	Competitive
Customers	Competitiveness
Consumer	Competitor
Consumers	Competitors
Buyer	Compete
Buyers	Competition
Market	Peer
Markets	Peers
Market-place	Companies
Marketplace	Firms
Communities	Position
	Positioning
	Positioned

Internal Focus Dictionary	
Organizational	
Organization	CEO
Organizational	President
Reorganization	Vice-president
Management	Vice-presidents
Retire	Director
Retired	Directors
Retirement	Officer
Employee	Officers
Employees	Subsidiary
Staff	Subsidiaries
Stakeholder	Diversification
Stakeholders	Diversify
Board	Diversified
Manager	
Managers	

Cross-Channel Capability Measure

1. The retailer has a website to provide company and product information.
2. The retailer has an online store that conducts transactions.
3. Customers can order online and return goods to physical stores.
4. The retailer has in-store kiosks or other systems that allow online ordering and searching.
5. The retailer allows online orders and in-store pick up.
6. The retailer does product and price coordination among channels.
7. The retailer conducts joint-channel promotions.

Essay Three: Channel Capabilities, Media Attention and Performance of Corporate Social Responsibility Initiatives

Abstract

Literature on corporate social responsibility has demonstrated the roles of firm size and advertising intensity on media attention of corporate social responsibility initiatives. In this study, we empirically demonstrate the impacts of cross-channel capability, firm size and advertising intensity, on media attention to firm cause-related marketing initiatives, which are a type of corporate social responsibility initiatives. We also demonstrate the impact of media attention on the performance of these initiatives through studying its impact on cause-related marketing donations, the dollar amounts raised and donated by the firm for the cause-related marketing initiative. We show that there are mediating effects of media attention in the cross-channel capabilities to firm cause-related marketing performance, and firm size plays a moderating role in this mediated relationship. Our study provides a nuanced understanding of the roles played by cross-channel capabilities in increased engagement by stakeholders such as customers and media to cause-related marketing initiatives, thereby contributing to the success of such initiatives. We find broad support for our hypotheses by performing empirical tests on a sample of 322 observations between the years 2009 and 2017 from 44 unique firms featured in the Fortune list.

Keywords: Cause-Related Marketing, Corporate Social Responsibility, Channel Capabilities, Media Attention

3.1. Introduction

Over the last few decades, there has been a considerable increase in firms creating and sustaining several cause-related marketing (CM hereafter) initiatives. CM initiatives are marketing processes by which a firm offers to contribute a specified amount to a designated cause when customers engage in revenue-providing exchanges that satisfy organizational and individual objectives (Varadarajan & Menon, 1988). Varadarajan and Menon (1988) and other recent studies show that such CM initiatives are one type of corporate social responsibility (CSR) initiatives. Examples of such CM initiatives include the Domino's Pizza's Thanks and Giving donation campaign for St. Jude Children's Research Hospital, and Dollar General Literacy Foundation's fundraising campaigns to aid local schools and other non-profits (https://www.dgliteracy.org). A number of academic research studies on such CM initiatives have also been published in the last few years (Barone, Norman, & Miyazaki, 2007; Folse, Niedrich, & Grau, 2010).

CM initiatives also receive considerable attention from the business media, which plays a key role in monitoring and reporting on corporate behavior (Nikolaeva & Bicho, 2011). Media coverage prevents the generation of an 'ethically glossy corporate image' of the firm and alleviates concerns of customers and other stakeholders regarding CM information published on firm websites (Jahdi & Acikdilli, 2009). However, the media cannot attend to all events that occur which are related to a focal firm. Research shows that individuals, firms and industries attend only to some events and ignore certain others, and this is decided by certain social and cultural processes. Non-routine, salient events such as firm CM initiatives have a higher probability of being attended to by outside entities such as the media and this attention can be sustained based on certain factors related to the event, the firm and the individuals involved (Hoffman & Ocasio, 2001). Studies have shown that firm size and advertising are positively associated with corporate

social responsibility (CSR) initiatives. Larger firms and firms that advertise more increase awareness about the company, leading to higher media attention to firm CSR initiatives (Servaes & Tamayo, 2013).

Customer transactions with the focal firm are the key drivers of CM initiative success, as per the definition given by Varadarajan and Menon (1988). These customer transactions can originate from a specific channel and can terminate in a totally different channel. The ability of the firm to identify and tailor its offerings to satisfy customer demands through any channel that customers prefer is called its cross-channel capability (Luo et al., 2015). Designing efficient cross-channel capabilities can lead the firm towards a state of being omni-channel capable, wherein customers can experience seamless transactions with the firm, regardless of their location (Cao & Li, 2018; Verhoef et al., 2015). It is imperative for firms to design advanced channel integration capabilities to facilitate such seamlessness in transaction processing (Gallino & Moreno, 2014).

In one of the early studies on firm CM performance in terms of dollars donated (firm CM donations hereafter), Lichtenstein, Drumwright, and Braig (2004) showed that customers identify with firm CM initiatives and involve themselves in donating higher dollar amounts towards a specific cause. The authors however, tested the effects based on customer responses from a single channel. Even though the literature on cross-channel and omni-channel capabilities has grown significantly in the last few years, no study exists, to the best of our knowledge, which shows the roles of such advanced channel capabilities in increased media attention of firm CM initiatives and therefore increased firm CM donations. We aim to address this gap in this study. Cross-channel and omni-channel capabilities can ensure the CM initiatives reach a wider range of customers across multiple channels through their involvement from a preferred channel (in-store, online, mobile and others), thereby increasing the probability of media attention to such initiatives and higher firm CM donations.

We use the theoretical lenses of the attention-based-view (ABV) (Ocasio, 1997) and event-based attention (Hoffman & Ocasio, 2001) and hypothesize that advertising intensity and cross-channel capabilities are positively associated with media attention of firm CM initiatives. We replicate the findings of Servaes and Tamayo (2013) and show that advertising intensity is positively associated with media attention of firm CM initiatives. This result provides further evidence of the key roles played by these variables on CM initiatives, a specific type of CSR initiative. We also hypothesize that firm size moderates the relationships between advertising intensity and media attention of firm CM initiatives, and cross-channel capabilities and media attention of firm CM initiatives. Through empirical results across a sample of 322 observations between years 2009 and 2017, from 44 unique companies in the Fortune list, we show that advertising intensity is positively associated with media attention of firm CM initiatives. We do not find direct effects of firm cross-channel capabilities on media attention of firm CM initiatives. However, we show that larger firms which develop higher cross-channel capabilities are more likely to be associated with increased media attention of firm CM initiatives. Larger firms can advertise their CM initiatives much more aggressively, and therefore are more likely to achieve increased media attention of firm CM initiatives. We also show that cross-channel capability is positively associated with firm CM donations. More interestingly, we show that media attention of firm CM initiatives mediates the relationship between cross-channel capabilities and the performance of CM in terms of dollar donations to the cause.

We make the following key contributions in this study. First, we empirically demonstrate the roles of cross-channel capability, firm size and advertising intensity, on both media attention of firm CM initiatives and firm CM donations. We specifically show that firm size moderates the relationships between cross-channel capability and media attention of firm CM initiatives, and advertising intensity and media attention of firm CM initiatives. We also show that the effect of

cross-channel capabilities on firm CM donations is mediated through media attention of firm CM initiatives, and firm size plays a moderating role in this mediating relationship. Second, firms design complex cross-channel capabilities as a competitive necessity to increase customer transaction volumes (Gallino & Moreno, 2014). However, our results show that developing these capabilities can facilitate increased customer participation in firm CM initiatives. This leads to higher media attention of such initiatives, and therefore increased firm CM donations to a specific cause. Overall, customers who extensively use firm cross-channel capabilities for their primary purchase transactions are also more likely to get involved with firm CM initiatives through the same channel(s), thereby contributing to the success of these initiatives in terms of dollar amounts raised for the cause. We discuss the theoretical framework and our hypotheses in the next section, followed by the methods used and the results obtained. We then provide a discussion of the results, along with key implications for theory and practice of CSR.

3.2. Theoretical Framework and Hypotheses

3.2.1. CM Initiatives and Media Attention

The World Business Council for Sustainable Development defines CSR as the ethical behavior of a company and its management towards society in efforts to contribute to sustainable economic development and improve quality of life (WBCSD, 1999). CM initiatives are marketing processes characterized by an offer from the firm to contribute a specified amount to a designated cause when customers engage in revenue-providing exchanges that satisfy organizational and individual objectives (Varadarajan & Menon, 1988). CM conceptually represents a specificity towards a cause, thereby making it easier to communicate and tailor to specific customer segments, who are the intended targets of the initiative (Sheikh & Beise-Zee, 2011). CM initiatives can engender customers' participation towards the cause through the firm, thereby invoking a sense of involvement towards improving the society (Andrews, Luo, Fang, & Aspara, 2014).

The business media provides a key role in scrutinizing and publicizing firm CM initiatives. This helps in providing customers with potentially new information regarding the firm's reasons and duration of affiliation with the cause, thereby enhancing their likelihood of participation (McWilliams & Siegel, 2001). In their reporting of CSR initiatives, the media not only acts as a gatekeeper, but also acts as an active secondary claims-maker in sharing the claims made by the firm with a bigger audience (Dickson & Eckman, 2008). As Dickson and Eckman (2008) detail, the media also elaborately interview primary claims-makers (the firm and its executives) and question them actively on CM initiatives, thereby providing support or bringing into question prior available information on these initiatives. This can help customers further in making decisions on their involvement with the initiatives.

3.2.2. Advertising Intensity, Cross-Channel Capability and Media Attention

Advertising of CM initiatives involving a good fit between the firm and a cause has been shown to enhance customer favorability towards the firm in prior studies (Nan & Heo, 2007). Advertising can convey important information about the products and the cause(s) involved in CM initiatives. The intensity of advertising can provide such underlying information to stakeholders such as the media and other customers, and therefore lead to higher success of CM initiatives (McWilliams & Siegel, 2001), even in highly competitive industries (Zhang, Zhu, Yue, & Zhu, 2010). The media can play an active role in enhancing the claims made by the firm and its executives regarding CM initiatives, further enabling the information of the initiatives to reach a wider range of customers (Dickson & Eckman, 2008).

A channel is a customer contact point or a medium through which the firm and the customer interact (Neslin et al., 2006). Avery et al. (2012) further define channel capability as an enabling characteristic of a channel that allows customers to accomplish their shopping goals. They posit that multiple channels are necessary for customer transactions because each channel can provide

complementary capabilities that attract new customers to existing channels or cause existing customers to purchase more. Cross-channel capability is defined as the increased effectiveness of a new channel to interact with a customer, given that the customer has already used an existing channel from the same firm (Neslin & Shankar, 2009). Firms need to create channel capabilities that are not quickly apparent to the customer and they need to be learned through experience (Avery et al., 2012). Gallino and Moreno (2014) propose that it is almost inevitable for traditional retailers to undertake advanced integration capabilities between multiple channels, including 'buy-online, pick-up-in-store' (BOPS), 'buy-online, return-to-store' (BORTS) and order-from-store (OFS). Such advanced channel capabilities enable customers to use multiple channels for information search and purchase of products. We posit that more importantly, they also facilitate information search and involvement opportunities with CM initiatives.

As seen from the examples shown in Table 2 below, firms invite their customers to get involved in various CM initiatives through channels of their choice. It is important for a firm to project the same message regarding its CM initiatives across all of its channels, including its stores, website, social media, digital and print media, and mobile channels. Du, Bhattacharya, and Sen (2010) posit that communicating a consistent message across multiple channels can foster higher customer involvement in the initiative. Customers can interact with a firm's salespeople before making purchases (Avery et al., 2012). They can also obtain information on CM initiatives by interacting with the same salespeople and then take the necessary steps to becoming involved with the initiatives, including performing online research and then finally donating. Thus, it is imperative for firms to provide consistent information across multiple channels. Many studies also support the findings of higher customer 'take-ups' of CM initiatives which are detailed in multiple channels. Weblogs which describe CSR and CM oriented efforts taken up by McDonald's, written

by senior managers of the firm, engaged a higher number of customers (Fieseler, Fleck, & Meckel, 2010). Firm communication of CM initiatives on the social media channel, in addition to the store channel, was shown to attract media attention, in addition to improved customer engagement with the initiatives (Lyon & Montgomery, 2013).

<Insert Table 2 here>

3.2.3. Event-Based Attention and Hypotheses

3.2.3.1. Direct Effects on Media Attention

CM initiatives and the associated firm CM donations raised can potentially have an impact on not only immediate constituents of the firm's environment, but also on the surrounding community and sections of the society. These initiatives are typically championed by the highest ranking officials of the firm and their networks, and such involvement of key 'players' of the firm and its environment attract media attention (Hoffman & Ocasio, 2001; Ocasio, 1997). Another important characteristic of these initiatives is that they are non-routine and salient, because individuals, firms, and even industries can be impacted by them. Some of these initiatives spawn multiple years of commitment to a cause with millions of dollars raised. Therefore, outside entities such as the media can enact these events as attributable even to the broader industry that the firm is part of, thereby creating sustained levels of media attention for these events (Hoffman & Ocasio, 2001; Nigam & Ocasio, 2010). Advertising intensity and cross channel capability are specific aspects of the rules of the game (or guiding principles of decision makers) and technological complexity, both of which are structural determinants of event attention (Hoffman & Ocasio, 2001). Thus, based on the discussion so far, we hypothesize:

H1*: Firm advertising intensity is positively associated with media attention of firm CM initiatives.*

***H2**: Firm cross-channel capability is positively associated with media attention of firm CM initiatives.*

3.2.3.2. Moderating Effects of Firm Size on Media Attention

The principle of structural determination of attention states that how individuals attend to an event is a social and cultural process, shaped by the group, organization and the industry. Claims made by a CM initiative which are supported by social structures of attention such as the rules of the game, status of the players and organizations, play a key role in determining public attention from outside entities (Ocasio, 1997). Large firms, with the achievement of scale economies, can utilize their resources towards enhancing the scale of CM initiatives (McWilliams & Siegel, 2001). Larger firms usually advertise their CM initiatives more extensively in an effort to send the media and other stakeholders positive signals of brand equity and corporate reputation (Hsu, 2012). These actions can deflect the impression of the firm being a profit maximizer to more of an endearing entity of the community, thereby encouraging future customer affinity (Ballings, McCullough, & Bharadwaj, 2018), and also eliciting increased media attention. Larger firms also usually have higher slack resources (Shaukat, Qiu, & Trojanowski, 2016) and can commit these resources for more effective advertising. Therefore, we hypothesize:

***H3**: Firm size positively moderates the relationship between advertising intensity and media attention of firm CM initiatives.*

Bell, Gallino, and Moreno (2015) show that there is heterogeneity in customer information assimilation prior to completing purchase transactions from online and offline channels. Some customers prefer the ease of online shopping whereas others prefer to physically sample products in the store before buying. Firms which provide such robust cross-channel capabilities generate

loyalty among their customers and these firms can provide several value-added services to them (Cao & Li, 2015). Much like product/service transactions, information search about the firm's CSR initiatives can also be channel agnostic. Many public relations studies have shown that CSR initiatives can attract media attention (Lunenberg, Gosselt, & De Jong, 2016; van den Heijkant & Vliegenthart, 2018), which can amplify the reach of the initiatives to even more customers. Firms which provide sufficient information on their websites regarding their CM initiatives in an interactive manner are shown to engage more customers (Capriotti & Moreno, 2007). More recent studies show that companies with a good fit between their core business and CM initiatives generated higher customer engagement on social media channel as well (Uzunoğlu, Türkel, & Akyar, 2017). Such CM initiatives which have a tight fit are shown to also be more likely to be reported positively by the media (Lunenberg et al., 2016).

Linking back to event-based attention, larger firms which portray consistent information of their CM initiatives across all of their channels invoke two key components that can lead to sustained media attention: higher status of the players, and core technology implications. Cross-channel integration is becoming a competitive necessity and operating standard (Verhoef et al., 2015) and it requires firms to invest in complex information systems with integrated data and order repositories (Luo et al., 2015). Larger firms typically have more slack resources, as discussed previously, and they can invest these resources in developing more advanced cross-channel capabilities. Given that there is consistent information about the firm's CM initiatives across multiple channels, and given that there is a sufficient fit between the firm's core business and these initiatives, we expect larger firms with higher cross-channel capabilities to also engage more customers and therefore lead to increased media attention of these initiatives. Therefore, we have the below hypothesis and Figure 1 below shows our hypothesized model structure:

***H4**: Firm size positively moderates the relationship between cross-channel capability and media attention of firm CM initiatives.*

<Figure 1 to be inserted here>

3.2.3.3. Direct Effects on Firm CM Donation

Firms develop CM initiatives in order to raise maximum funds for a certain cause, represented most often by nonprofit entities which have an affiliation with the firms (Lichtenstein et al., 2004). Firms which advertise more and which develop cross-channel capabilities can ensure that CM initiatives reach a higher number of customers, along with improved buy-ins of these initiatives. As previous studies show, this in turn also leads to increased firm CM donations towards the cause (Lichtenstein et al., 2004; Servaes & Tamayo, 2013). Therefore, we hypothesize:

***H5:** Firm advertising intensity is positively associated with firm CM donations.*

***H6:** Firm cross-channel capability is positively associated with firm CM donations.*

3.2.3.4. Mediating Effects of Media Attention Moderated by Firm Size

There can exist direct effects of cross-channel capability and advertising intensity on firm CM donations, as we have posited previously. More importantly, the effects of these variables can occur through active external communicators and claims makers of CSR and CM activities, which include the business media. As Dickson and Eckman (2008) describe, the media, as secondary claims makers, can transform the claims made by firms' primary claims makers regarding CM initiatives and facilitate CM information to reach a wide range of stakeholders. Advertising intensity and cross-channel capabilities provide information to the media (Servaes & Tamayo, 2013) and customers (Du et al., 2010) about firm CM initiatives. Larger firms can leverage their advertising campaigns and develop advanced cross-channel capabilities to increase customer buy-ins of the initiatives and leads to increased media attention of CM initiatives. Such media attention

leads to further increase of the reach of CM initiatives to a wider set of stakeholders, ultimately leading to increased firm CM donations:

H7: *Media attention of firm CM initiatives mediates the relationship between advertising intensity, cross-channel capabilities, and firm CM donations, and this mediating relationship depends on the levels of firm size.*

3.3. Data, Variable Operationalization and Methods

3.3.1. Data and Sample

The data required for this study was obtained from multiple sources. Firm-level data was obtained from the Compustat database, along with annual reports and the Standard & Poor Database. Articles which appeared in the following media outlets covering the firm's CM initiatives were accessed from the Factiva database: The Wall Street Journal, The New York Times, The Washington Post, USA Today, The Atlanta Journal-Constitution, St. Louis Post-Dispatch, Barron's, Forbes, Business Wire and PR Newswire. We chose firms in the Fortune list between the years 2009 to 2017 belonging to industry groups G, D and I, as shown in Table 1. Representing the industry groups of Retail, Manufacturing and Services, these firms developed major channel-related capabilities, and had both offline (retail) and online channel presence within this timeframe. The final sample consisted of 322 firm-year observations from 44 unique firms. The firms had mean total assets of about 31 billion USD. There were about four articles written about the CM initiatives on average and it was found that the firms generated, on average, about 39 million USD for the causes they were associated with. Table 2 provides examples of the sections of media articles which cover the firm CM initiatives. Table 3 specifies the variables used in the study, their operationalization and the sources from which the variables were measured.

<Tables 1, 2 and 3 to be inserted here>

3.3.2. Dependent Variables

We use media attention of firm CM initiatives as the first dependent variable in this study. We conducted a search on the Factiva database for the chief executive officer (CEO) names of the firm from the annual reports. We then downloaded all articles from the aforementioned media outlets related to these CEOs and identified the articles which describe the firm's associations with various causes and other CSR initiatives. For our sample, the CEO was the individual from the executive team who was interviewed by the media regarding these initiatives, even though other executives were also associated with them. Table 2 gives examples of the articles we considered as cause related. We followed all articles associated with the CEO published from the year 2006 onwards. This was to ensure that for each year, we factored prior articles which traced the origin of some of the CM initiatives, including those which started as multi-year commitments prior to our initial fiscal year of 2009. Considering the articles which were written for the same year, the total media attention related to CM initiatives for the year is the sum of these prior articles and articles written during the current year. The dollar amounts raised by the CM initiatives towards the respective cause(s), as detailed in the articles, provided a measure of the firm CM donations. The natural logarithm of the dollar amounts was used as the final outcome variable of interest in this study.

3.3.3. Independent Variables

Firm size was operationalized as the natural logarithm of the number of employees of the firm, as detailed in the firm's annual report. We followed prior studies which have used this measure of firm size (Baumann-Pauly, Wickert, Spence, & Scherer, 2013). We measured advertising intensity as the ratio of advertising expenses to total sales, as followed by other studies (Lee, Oh, & Kim, 2013). We followed Luo et al. (2015) and operationalized cross-channel capabilities related to the functional areas mentioned below, consistent with Bendoly, Blocher, Bretthauer, Krishnan, and Venkataramanan (2005):

1. The retailer has a website to provide company and product information.
2. The retailer has an online store that conducts transactions.
3. Customers can order online and return goods to physical stores.
4. The retailer has in-store kiosks or other systems that allow online ordering and searching.
5. The retailer allows online orders and in-store pick up.
6. The retailer does product and price coordination among channels.
7. The retailer conducts joint-channel promotions.

The firm's annual report was checked to determine whether the capability was implemented and used by its customers. We used binary responses to indicate whether the firm had developed the specific capability for each year, with a value of 1 indicating availability of the capability and 0 otherwise. The overall cross-channel capability was then measured as the sum of these capabilities divided by the number of areas, on a scale between 0 and 1 (Luo et al., 2015). We mean-centered these variables and created interaction terms between firm size and advertising intensity, and firm size and cross-channel capability after mean centering (Aiken et al., 1991).

3.3.4. Control Variables

We controlled for several individual and firm-level characteristics in the regression models. First, following recent studies which examine the impact of CEO characteristics on CSR (Yuan, Tian, Lu, & Yu, 2019), we control for CEO-level characteristics such as CEO tenure in years, CEO pay, measured as base salary in million USD (natural log), CEO Age in years, and CEO Gender. We also controlled for accounting performance of the firm, measured as return on sales (ROS) and also for CEO change in the year. CEO change was coded as a binary variable which was 1 if there was a change in CEO, and 0 otherwise. We lastly controlled for certain board-level characteristics such as board size, background heterogeneity, outside director heterogeneity, female director heterogeneity and output director heterogeneity (Harjoto, Laksmana, & Lee, 2015; Shaukat et al.,

2016). We utilized the Blau index of heterogeneity (Blau, 1977) to construct the heterogeneity measures. We classified directors as having expertise in finance, general management, operations, healthcare, law, human resources, information technology, e-commerce and marketing and sales for the background heterogeneity variable. We used the percentage of outside directors and women directors to construct the outside director heterogeneity and female director heterogeneity, respectively. Lastly, we considered directors who have expertise in information technology, e-commerce and marketing and sales as output-oriented directors (C. S. Tuggle et al., 2010). All the independent and control variables were lagged by two years relative to the dependent variable, as a preliminary measure to address issues of reverse causality (Mithas et al., 2016).

3.3.5. Model Specifications

The first dependent variable, media attention of firm CM initiatives, is a count variable which has its variance higher than the mean, as seen from the descriptive statistics in Table 4. Prior research, along with more recent studies, have used the negative binomial (NB) or Poisson models for modeling count variables (Allison & Waterman, 2002; Delmas & Kohli, 2019). The dispersion tests indicated over-dispersion in the media attention variable. Hence the NB model was used for the regressions (Allison & Waterman, 2002). We included year and standard-industry-classification (SIC) industry group fixed effects in our models. Several robustness tests were conducted using other distributional assumptions of the media attention of firm CM initiatives, and the results were found to remain quantitatively similar to those obtained using the NB model. For testing the impact of media attention of firm CM initiatives on firm CM donations, the final outcome variable, and to incorporate the tests of the moderated mediation model, a fixed effects regression model was performed with year and industry group effects. The controls and the main effects of firm size, advertising intensity, cross-channel capability and media attention of firm CM initiatives were present in the model. In addition, interactions terms between firm size and cross-

channel capability, firm size and advertising intensity, and firm size and media attention of firm CM were also present, as detailed by Muller, Judd, and Yzerbyt (2005). All data analyses were conducted using SAS 9.4 version.

<Table 4 to be inserted here>

3.4. Results

3.4.1. Main Results

Table 5 below gives the correlation matrix of the variables in the study. Three separate models for the NB regressions are shown in Table 6. Model 1 represents the controls-only model, Model 2 adds the main effects, and Model 3 is the hypothesized full model with the main effects and the two interactions. Referring to Model 3, it can be stated that there is support for H1. The coefficient of advertising intensity (coefficient = 7.618, $p < 0.05$) is positive and significant as hypothesized. Advertising intensity has a maximum value of 0.117 in the sample, so a one-unit increase from the mean is hypothetical and would lead to a very high increase in media attention. Contrary to our expectations, we find that the coefficient for cross-channel capability is negative, and therefore H2 is not supported. Looking at the estimates and signs of the interactions, it is seen that there is strong support for H3 and H4. The interactive effects of firm size and advertising intensity (coefficient = 9.261, $p < 0.01$), and firm size and cross-channel capability (coefficient = 0.769, $p < 0.01$) are positive and significant, as hypothesized.

<Tables 5 & 6 to be inserted here>

3.4.2. Robustness Tests

We performed several robustness tests to test H1-H4, and we discuss a subset of the results here. The value of media attention of firm CM initiatives was zero (i.e. no media articles) for about one quarter of our observations. We therefore also tested our results using the zero-inflated negative

binomial (ZINB) model. We modeled the zeroes with firm-level factors we considered in our previous regressions including CEO tenure, ROS, CEO gender, CEO change, firm size cross-channel capability, advertising intensity and also the presence of a marketing-oriented officer in the executive team. We checked for designations including Chief Marketing Officer, Chief Digital Officer and Chief Omnichannel Officer. Such executives have the potential to create performance impacts (Nath & Mahajan, 2008), and therefore can act as a predictor of media attention. Table 7, Model 4 shows the results of the model. The coefficients for the main effect of advertising intensity (coefficient = 5.780, $p < 0.05$), and the interactions of firm size and advertising intensity (coefficient = 8.234, $p < 0.01$), firm size and cross-channel capability (coefficient = 0.555, $p < 0.05$) are all similar to the main model results.

<Table 7 to be inserted here>

We also ran a Poisson model and these results are shown in Table 7, Model 5. The coefficients for advertising intensity (coefficient = 7.710, $p < 0.01$), firm size and advertising intensity interaction (coefficient = 8.155, $p < 0.01$), firm size and cross-channel capability interaction (coefficient = 0.120, $p < 0.05$) are positive and significant as seen in the main model results. We also ran a negative binomial generalized estimating equation (GEE) model. This model is used for modeling panel data with count-dependent variables and this model addresses concerns with autocorrelation and unobserved heterogeneity (Hofer, Cantor, & Dai, 2012; Woolridge, 2003). The results are shown in Table 7, Model 6 and these results are similar to the main results as well. In addition to these tests, we ran other models as well, although the results are not shown for brevity. We also tested a multinomial model for the media attention of CM initiatives, and we could replicate our main results. We also added 2-digit SIC fixed effects instead of SIC group fixed effects and were able to obtain similar results. Lastly, although we showed results using a two-

year lag between the independent, control and dependent variables, the results were seen to hold even with a one-year lag.

3.4.3. Moderated Mediation Results for Firm CM Donations

To perform the tests for H5, H6 and H7, we used fixed effects models with firm CM donations as the outcome, and also the statistical tests suggested by Muller et al. (2005) for moderated mediation. Referring to Table 8 and Model 7, we see that the direct effect of cross-channel capability is positive and significant, providing support for H6. We do not find support for H5.

We have already seen through our results that the mediator media attention of firm CM has a positive interaction between firm size (the moderator) and cross-channel capabilities, and firm size and advertising intensity. This satisfies one set of conditions required for moderated mediation. The additional conditions are that there should be overall treatment effects of advertising intensity and cross-channel capability on firm CM donations, and an effect of the media attention of firm CM on firm CM donations (Muller et al., 2005). Table 8 below gives the results of the test. Following Muller et al. (2005), we see in our fixed effects model that there is an overall effect of cross-channel capabilities on firm CM donations (coefficient = 0.701, $p < 0.05$). We do not observe a similar effect with advertising intensity. We saw that the interaction between cross-channel capabilities and firm size, and advertising intensity and firm size were positive and significant on media attention of firm CM initiatives. This result, combined with the positive and significant coefficients for media attention of firm CM (coefficient = 0.180, $p < 0.01$) and the interaction between firm size and media attention of firm CM (coefficient = 0.021, $p < 0.10$), means that all the conditions for moderated mediation are satisfied for the effect of cross-channel capabilities, and we obtain partial support for H7. We can say that media attention of firm CM initiatives mediates the relationship between firm cross-channel capability and firm CM donations,

and the strength of this mediated relationship depends on the level of firm size. We did not find similar results for advertising intensity, the other main effect in our model. We discuss this unexpected finding in the next section. We also performed the test by removing the advertising intensity and the advertising intensity-firm size interaction terms, and we obtained similar results as seen in Table 8, Model 7.

<Table 8 to be inserted here>

3.4.4. Omni-Channel and Firm CM Donations

Many studies show that firms which develop advanced cross-channel capabilities can become omni-channel capable through combining multiple channels (Cao & Li, 2018; Luo et al., 2015). Luo et al. (2015) further show that cross-channel capabilities have three underlying dimensions: e-commerce capabilities which measure the ability to provide functional websites and online transactions, cross-channel fulfillment capabilities which show fulfilment capability through customer channels of choice, and multi-channel cross selling capabilities which demonstrate price and promotion coordination across channels. Firms which develop these underlying capabilities along all the three dimensions can enable customers to experience seamless transactions across channels, thereby reaching a state of being omni-channel.

Following Luo et al. (2015), we create a binary variable called Omni-Channel in our model. This variable is set to a value of 1 if the firm developed all the capabilities along the three underlying dimensions in the cross-channel capability measure described in section 3.3 above. We then use this variable and its interactions with firm size in the same fixed effects model having firm CM donations as the outcome. We obtained quantitatively similar estimates for the omni-channel firm size interaction and the advertising intensity firm size interaction in the media attention of firm CM model. For the sake of brevity, we do not show the results. The results on firm CM donations as the outcome are shown in Table 8, Model 8. The effect of Omni-Channel

on firm CM donation is positive and significant (coefficient = 0.168, $p < 0.05$), and the positive and significant coefficient for media attention of firm CM (coefficient = 0.176, $p < 0.01$) replicate the previous moderated mediation results obtained with the cross-channel measure.

3.5. Discussion and Conclusions

Our key objectives in this study were to demonstrate the effects of advertising intensity, firm cross-channel capabilities, the interactions between firm size and advertising intensity, and firm size and cross-channel capabilities on media attention of firm CM initiatives, and firm CM donations raised for the causes. The results indicate that advertising intensity and the two interactions are positively associated with media attention of firm CM initiatives, providing strong empirical support for our first three hypotheses. Our results also showed that media attention of firm CM initiatives mediates the relationship between firm cross-channel capabilities and firm CM donations measured as the natural logarithm of dollar amounts raised for the causes, and the strength of this mediating relationship depends on the level of firm size. We did not observe a similar moderated mediation result for advertising intensity. Therefore, there was partial support for H7. This somewhat unexpected finding can be explained as follows. We see that the main effect of advertising intensity and the interactive effect of advertising intensity and firm size, have negative effects on firm CM donations as seen in Table 8. We showed that larger firms which spend a higher percentage of their sales revenue on advertising are likely to obtain increased media attention. However, prior studies show that customer perception of fit between the firm and the cause is important in CM success (Nan & Heo, 2007). So, increasing advertising spending alone might not lead to positive perception of CM initiatives. Customers might require additional more information about the products/services associated with the CM initiatives (McWilliams & Siegel, 2001), or advertising messages might not alleviate customer concerns regarding the fit between the firm and the cause.

We also used a binary measure for omni-channel strategy based on firm implementation of all the types of cross-channel capabilities. Our results demonstrate that the effects of omni-channel are mediated by media attention of firm CM, and the strength of this mediating relationship depends on the levels of firm size. This result is quantitatively similar to the moderated mediation relationship obtained for cross-channel capabilities. Through our results, we see that the direct effects of cross-channel and omni-channel capabilities on firm CM donations remain positive and significant. This shows evidence of partial mediating effects of media attention of firm CM in the relationship between cross-channel and omni-channel capabilities, and firm CM donations.

We also saw that larger firms which develop more sophisticated cross-channel capabilities are more likely to be successful in raising higher dollar amounts from CM initiatives because of increased awareness generated by the media attention of the initiatives. Firm cross-channel capability has a negative relationship with media attention of firm CM initiatives across all models, and is positively associated with firm CM donations raised.

We make two key contributions to the literature on CSR initiatives through this study. We empirically demonstrate that the interactive relationships between cross-channel capabilities and firm size, and advertising intensity and firm size, are positively associated with media attention of firm CM initiatives. While prior literature has shown the direct effects of these variables on media attention, we show that these interactive effects also have a positive impact on media attention of firm CM. This leads to a more refined understanding of the impact of these firm-level factors on MC of firm CM. Another key contribution we provide is that complex cross-channel capabilities can increase customer engagement with the firm through continued transactions and improve performance (Verhoef et al., 2015), these capabilities can also help firms to engage customers in CM initiatives and improve CSR performance through increased firm CM donations. Customers who extensively use cross-channel capabilities for their purchase transactions are likely to be more

receptive to firm CM initiatives. They can use these cross-channel capabilities for information search (from a specific channel) on CM initiatives and also utilize the information contained in media articles as part of this information search, and thereby they can become involved in the initiatives through the channel(s) of their choice.

This study has certain limitations which can be addressed in future research. First, this study is restricted to public firms and their associated CM initiatives. Smaller firms might have other idiosyncratic factors driving their CSR actions. Second, we do not factor the relationships between the firms and media entities. Several unobserved factors can exist that explain why these entities focus on the specific firms we considered, and not others. In addition, some firms might receive better media attention than others. Third, we do not account for the necessary back-end information technology (IT) capabilities and their interactions required to facilitate robust cross-channel capabilities. Lastly, we also do not consider the impact of employee skills, hiring and training in our models. As Oh et al. (2012) demonstrate, IT-enabled channel integration and availability of expertise related to cross-channel capabilities are important factors that affect firm performance, and they can also be important in CSR settings.

The findings of this study have several implications for research and practice. We expand the application of attention-based view and event-based attention (Hoffman & Ocasio, 2001; Ocasio, 1997) to the firm CSR context through this study. We provide a more refined understanding of the relationships between firm size, advertising intensity and cross-channel capabilities on both media attention of firm CM, and firm CM donations. These firm-specific factors are theorized to be important elements that can lead to sustained attention towards salient and non-routine events such as CM initiatives. From a practical standpoint, firms develop cross-channel and omni-channel capabilities as a competitive necessity (Gallino & Moreno, 2014). These capabilities confer an important additional advantage for firms in that they aid in increased

customer engagement towards CM initiatives because of the flexibility provided, wherein customers can participate in the initiatives through any channels of their choice. Advanced channel capabilities are designed to blur the boundaries between physical and online stores in terms of product and information flows, and ease the completion of customer transactions (Brynjolfsson et al., 2013). This channel agnosticism for customers becomes even more relevant in the context of CSR initiatives because CSR information is mapped to aspects of corporate identity which are fundamental, enduring and often idiosyncratic (Du et al., 2010). Seamless integration between online and retail channels in terms of a consistent message regarding CM, and a strong connection of CM initiatives to the core business of the firm can engender increased customer participation. Top executives can invite such participation by creating robust support structures for CSR initiatives in the firm, and they can call on their ability to champion the initiation of such initiatives as 'investments', even though they can span multiple years and are fraught with unpredictability (Yuan et al., 2019). These actions together can ensure firms maintain their reputation in their communities as entities that customers can trust to do the right 'thing' for the environment, employees, customers and society, whenever the situation arises.

Tables

Table 1. Industries considered in sample

2 Digit SIC Code	SIC Group
23	Apparel and Other Finished Products Made from Fabrics and Similar Materials
28	Chemicals and Allied Products
30	Rubber and Miscellaneous Plastics Products
31	Leather and Leather Products
36	Electronic and Other Electrical Equipment and Components, Except Computer Equipment
37	Transportation Equipment
52	Building Materials, Hardware, Garden Supply, And Mobile Home Dealers
53	General Merchandise Stores
54	Food Stores
55	Automotive Dealers and Gasoline Service Stations
56	Apparel and Accessory Stores
57	Home Furniture, Furnishings, And Equipment Stores
59	Miscellaneous Retail
73	Business Services

Table 2. Examples of Firm CM

Year	Firm Name	CM Article Text
2013	Advance Auto Parts	Advance Auto Parts, Inc., (NYSE: AAP) …. launch of its 2013 sneaker sales campaign. This year marks Advance's 20(th) consecutive year of support for JDRF…. Advance has raised more than $35 million for JDRF, including over $4.3 million for diabetes research in 2012…. *Customers can purchase paper sneakers* that benefit the charity including $1, $5, $25 or $50 sneakers….
2016	Carter's	For the seventh straight year, Carter's is partnering with Pajama Program to help further its mission of delivering new, warm pajamas to children in need. For every Carter's *pajama purchase at one of Carter's 664 U.S. retail stores or online at www.Carters.com on Giving Tuesday*... This year's campaign aims to surpass $2 million worth of pajama donations.
2015	Dollar General	…Dollar General Literacy Foundation awarded more than $5.8 million in grants…to approximately 720 schools, nonprofits and literacy organizations across the 43 states… "the impact grants from the Dollar General Literacy Foundation make throughout the country, especially as we cross the $100 million threshold in overall donations..." The Dollar General Literacy Foundation is also currently accepting applications for youth literacy grants…. Applications *are available online at www.dgliteracy.org.*
2015	Home Depot	…*Customers Invited* to Join in the Service Campaign through Social Media - The Home Depot Foundation to Donate $1 to Veterans' Causes for Each Tweet, Instagram and Facebook Share, Up to $1 Million…
2017	Microsoft Corp	A year after the formation of Microsoft Philanthropies, Microsoft Corp. and its employees have donated more than $650 million in cash, cloud services and software to nonprofits around the world… *details can be found* at: https://www.microsoft.com/en-us/philanthropies
2017	Domino's Pizza	Domino's Pizza (NYSE: DPZ) is launching its 14th annual St. Jude Thanks and Giving(R) campaign to raise "dough" for the kids of St. Jude Children's Research Hospital(R) … *Domino's will ask customers online, over the phone and in stores to support* St. Jude by adding a donation to their order or rounding up their order total to donate the change.
2013	Walmart	Walmart and the Walmart Foundation are committed to helping people live better through philanthropic efforts…make a significant social impact within its core areas of giving: Hunger Relief & Healthy Eating, Sustainability, Career Opportunity and Women's Economic Empowerment…Walmart Foundation are leading the fight against hunger in the United States with a $2 billion commitment through 2015…*learn more about Walmart's giving, visit foundation.walmart.com.*

Table 3. Variables and Operationalization

Variable	Operationalization	Source
CEO Tenure	Length of CEO stay in years	Annual Report
CEO Pay	CEO Pay in thousands, log	Annual Report
Prior Performance	ROS	Compustat
CEO Age	Age in years	Annual Report
CEO Gender	Gender of CEO	Annual Report
CEO Change	Did CEO change?	Annual Report
Board Size	Number of directors	Annual Report, S&P
BOD Background Heterogeneity	Blau Index of background heterogeneity	Annual Report, S&P
BOD Outside Director Heterogeneity	Blau Index of percent outside directors	Annual Report, S&P
BOD Gender Heterogeneity	Blau Index of percent female directors	Annual Report, S&P
BOD Output Director Heterogeneity	Blau Index of output-oriented directors	Annual Report, S&P
Firm Size	Log of Number of Employees	Annual Report
Advertising Intensity	Advertising Expenses to Sales Ratio	Compustat
Cross-Channel Capability	Score of overall cross channel capabilities of the firm	Annual Report
Media Attention of Firm Cause-Related Marketing (CM)	Number of articles published regarding CM initiatives in business press	Factiva
Firm CM Donation	Log of the dollar amounts donated as reported in the media article	Factiva

Table 4. Descriptive Statistics

Variable	Mean	Std. Dev	Minimum	Maximum
CEO Tenure	17.861	11.077	0.000	41.000
CEO Pay (Log)	6.911	0.800	0.000	8.286
ROS	0.059	0.053	-0.117	0.331
CEO Age	56.523	6.630	39.000	75.000
CEO Change	0.102	0.265	0.000	1.000
CEO Gender	0.037	0.176	0.000	1.000
Board Size	10.384	2.130	6.000	17.000
BOD Gender Heterogeneity	0.292	0.109	0.000	0.500
BOD Background Heterogeneity	0.619	0.100	0.219	0.806
BOD Outside Director Heterogeneity	0.374	0.109	0.133	0.500
BOD Output Director Heterogeneity	0.391	0.112	0.000	0.500
Firm Size	11.146	1.148	8.594	14.604
Advertising Intensity	0.024	0.024	0.000	0.117
Cross-Channel Capability	0.585	0.227	0.143	1.000
Media Attention of Firm CM	3.994	4.858	0.000	30.000
Firm CM Donation	1.242	2.038	-2.996	7.435

Table 5. Correlation Matrix

	CM Donation	Media Attention CM	Advert Intensity	Cross-Channel Capability	Firm Size	CEO Tenure	ROS	CEO Pay	CEO Age	CEO Change	CEO Gender	Board Size	BOD Background Het	BOD Outside Dir Het	BOD Gender Het	BOD Output Het
CM Donation	1.00															
Media Attention CM	0.53	1.00														
Advert Intensity	-0.08	-0.08	1.00													
Cross-Channel Capability	0.15	-0.07	0.03	1.00												
Firm Size	0.42	0.25	-0.26	0.09	1.00											
CEO Tenure	0.05	-0.10	0.04	0.05	0.10	1.00										
ROS	0.27	0.02	-0.03	-0.01	-0.06	0.21	1.00									
CEO Pay	-0.15	0.00	-0.14	-0.12	0.13	0.04	0.06	1.00								
CEO Age	0.00	0.11	0.01	-0.13	0.10	0.09	-0.25	0.14	1.00							
CEO Change	0.05	0.08	-0.02	0.05	0.16	-0.23	-0.14	-0.14	-0.04	1.00						
CEO Gender	-0.08	-0.05	0.05	-0.17	0.08	0.07	0.02	0.04	-0.02	0.09	1.00					
Board Size	0.19	0.05	0.04	0.02	0.63	0.14	-0.14	-0.06	0.18	0.12	0.10	1.00				
BOD Background Het	-0.10	0.17	-0.02	-0.14	-0.13	-0.03	-0.30	0.02	0.03	-0.02	-0.11	0.00	1.00			
BOD Outside Dir Het	0.14	-0.12	-0.12	0.08	-0.09	-0.06	0.23	-0.06	-0.12	-0.12	-0.01	-0.21	0.00	1.00		
BOD Gender Het	0.12	0.15	-0.06	0.23	0.45	-0.10	-0.02	0.08	-0.17	0.14	0.28	0.30	-0.19	-0.34	1.00	
BOD Output Het	0.06	-0.01	0.07	0.17	0.22	-0.07	-0.01	-0.09	-0.12	0.13	0.13	0.32	0.00	-0.26	0.39	1.00

N=322, correlations with magnitude greater than 0.09 are significant at the $p < .10$ level.

Table 6. NB Regressions for Media Attention of Firm CM Initiatives

	Model 1 – Controls Only	Model 2 – Main Effects	Model 3 – Full Model
Variable	**Estimate (SE)**	**Estimate (SE)**	**Estimate (SE)**
CEO Tenure	-0.013** (0.006)	-0.012* (0.006)	-0.011* (0.006)
CEO Pay (Log)	-0.008 (0.082)	-0.089 (0.080)	-0.183** (0.087)
ROS	3.027 (2.010)	1.467 (1.945)	0.825 (1.905)
CEO Age	0.034*** (0.011)	0.021** (0.010)	0.018* (0.010)
CEO Gender	-0.198 (0.408)	-0.233 (0.413)	-0.003 (0.400)
CEO Change	0.024 (0.261)	-0.152 (0.245)	-0.202 (0.237)
BOD Size	0.041 (0.035)	-0.109** (0.044)	-0.137*** (0.043)
BOD Background Heterogeneity	2.856*** (0.654)	3.371*** (0.676)	3.997*** (0.668)
BOD Outside Director Heterogeneity	-1.852*** (0.707)	-2.038*** (0.681)	-1.768*** (0.667)
BOD Gender Heterogeneity	2.057*** (0.698)	0.893 (0.737)	0.436 (0.733)
BOD Output Director Heterogeneity	-2.151*** (0.663)	-1.898*** (0.638)	-1.917** (0.625)
Firm Size		0.479*** (0.087)	0.551*** (0.090)
Advert Intensity		3.550 (3.064)	7.618** (3.201)
Cross-Channel Capability		-0.060 (0.377)	-0.100 (0.372)
Firm Size X Advert Int			9.261*** (2.655)
Firm Size X Cross-Channel Capability			0.769*** (0.273)
Constant	2.310*** (0.541)	2.692*** (0.518)	2.891*** (0.507)
Log Likelihood	949.082	963.766***	972.374**
N	322	322	322
Max VIF	2.847	2.847	2.847
All models include year and SIC industry group fixed effects. *p < 0.10, **p < 0.05, ***p < 0.01.			

Table 7. Robustness Tests for Media Attention of Firm CM Initiatives

	Model 4 – ZINB Model	Model 5 – Poisson Model	Model 6 – NB GEE Model
Variable	**Estimate (SE)**	**Estimate (SE)**	**Estimate (SE)**
CEO Tenure	-0.007 (0.006)	-0.011*** (0.003)	-0.011 (0.010)
CEO Pay (Log)	-0.122* (0.069)	-0.215*** (0.036)	-0.183** (0.086)
ROS	4.075** (1.762)	2.468*** (0.859)	0.825 (2.352)
CEO Age	0.012* (0.010)	0.019* (0.005)	0.018 (0.017)
CEO Gender	-0.190 (0.382)	0.088 (0.204)	-0.003 (0.600)
CEO Change	-0.100 (0.202)	-0.192* (0.107)	-0.202 (0.213)
BOD Size	-0.082* (0.048)	-0.155*** (0.020)	-0.137 (0.110)
BOD Background Heterogeneity	4.364*** (0.676)	4.393*** (0.363)	3.997*** (1.446)
BOD Outside Director Heterogeneity	-1.345** (0.638)	-1.687*** (0.322)	-1.768*** (1.578)
BOD Gender Heterogeneity	0.080 (0.623)	0.530 (0.353)	0.436 (0.926)
BOD Output Director Heterogeneity	-1.682** (0.662)	-1.570*** (0.319)	-1.917** (0.990)
Firm Size	0.496*** (0.086)	0.576*** (0.047)	0.551*** (0.186)
Advertising Intensity	5.780** (2.727)	7.710*** (1.689)	7.620* (4.740)
Cross-Channel Capability	-0.332 (0.522)	-0.098*** (0.024)	-0.099 (0.424)
Firm Size X Advert Int	8.234*** (2.341)	8.155*** (1.493)	9.261*** (3.106)
Firm Size X Cross-Channel Capability	0.555** (0.236)	0.120** (0.019)	0.770** (0.380)
Constant	2.261*** (0.457)	2.752*** (0.227)	2.891*** (0.608)
N	322	322	322
All models include year and SIC industry group fixed effects. * p < 0.10, ** p < 0.05, *** p < 0.01			

Table 8. Moderated Mediation Model for Firm CM Donation

	Model 7 Fixed Effects Cross-Channel Model	Model 8 Fixed Effects Omni-Channel Model
Variable	**Estimate (SE)**	**Estimate (SE)**
CEO Tenure	-0.001 (0.008)	-0.003 (0.002)
CEO Pay (Log)	-0.218*** (0.112)	-0.020 (0.060)
ROS	3.183 (2.116)	3.421* (2.076)
CEO Age	-0.001 (0.013)	-0.008* (0.004)
CEO Gender	-0.906* (0.479)	-0.110 (0.098)
CEO Change	-0.272 (0.301)	-0.107 (0.075)
BOD Size	-0.046 (0.054)	0.048 (0.046)
BOD Background Heterogeneity	-1.381 (0.906)	-0.242 (0.478)
BOD Outside Director Heterogeneity	2.085** (0.835)	0.619** (0.284)
BOD Gender Heterogeneity	-0.474 (0.999)	-0.907** (0.400)
BOD Output Director Heterogeneity	0.434 (0.779)	0.146 (0.290)
Firm Size	0.565** (0.130)	0.584** (0.135)
Advert Intensity	-1.911 (4.092)	-5.290 (4.100)
Cross-Channel Capability	0.701** (0.419)	
Omni-Channel Capability		0.168** (0.075)
Firm Size X Cross-Channel	-0.531* (0.334)	
Firm Size X Omni-Channel		0.010 (0.060)
Firm Size X Advert Int	-10.805*** (3.326)	-5.002* (2.740)
Media Attention Firm CM	0.180*** (0.019)	0.176*** (0.020)
Firm Size X Media Attention	0.021* (0.013)	0.020 (0.015)
N	322	322
Max VIF	2.847	2.847
R Square	0.365	0.357
All models include year and SIC industry group fixed effects. * p < 0.10, ** p < 0.05, *** p < 0.01		

Figures

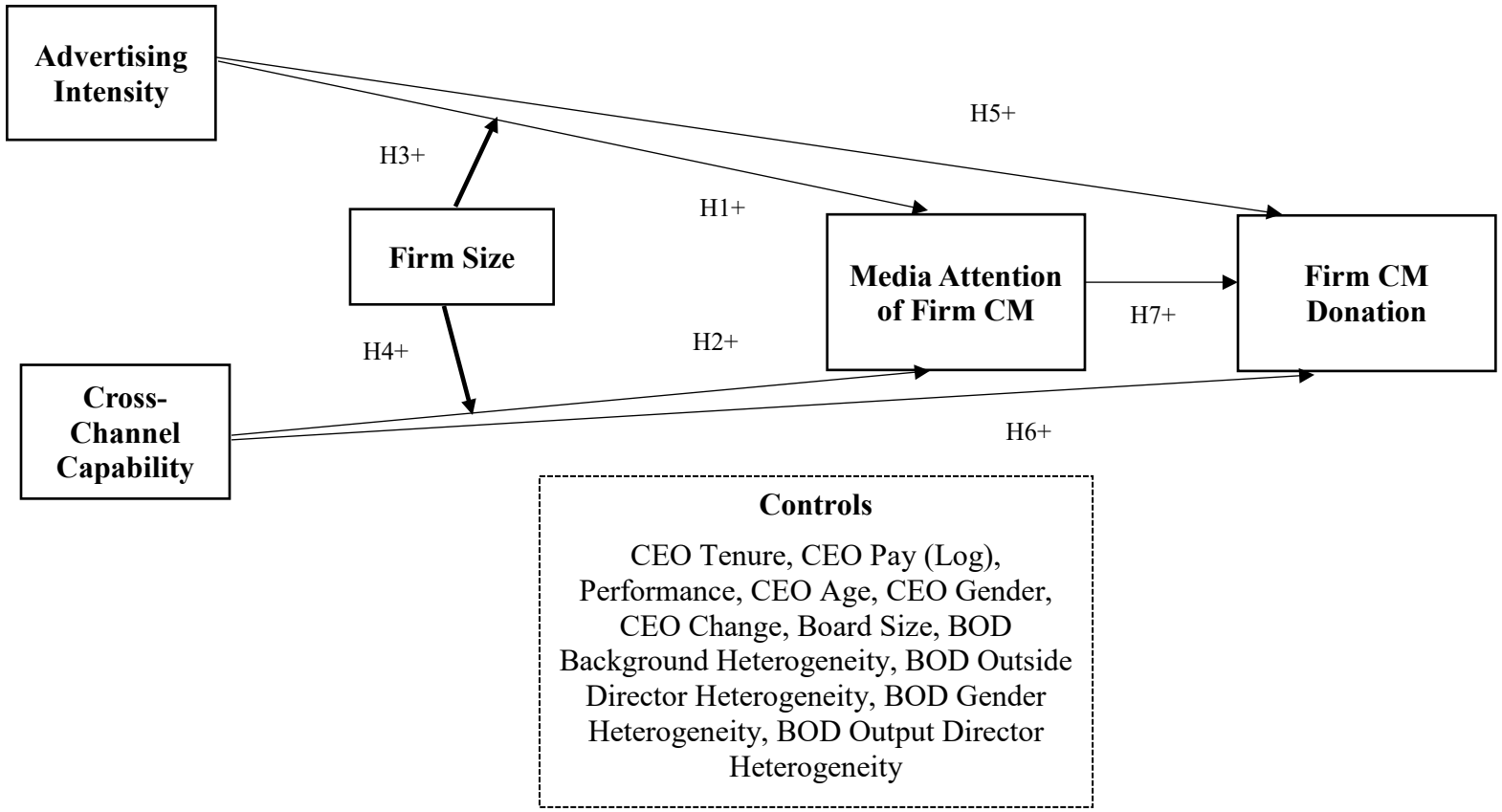

Figure 1. Research Framework

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Conclusions

The goal of this dissertation was to develop a nuanced understanding of attention processes shaped within and outside firm boundaries, by studying their relationships with IT based capabilities and distinct dimensions of performance. We empirically demonstrate how attention processes can leverage IT based e-Business and channel capabilities, and aid in attending to distinct dimensions of strategy including maintaining sustained competitive advantage, developing retail innovation and generating CSR performance. Therefore, we validate the key propositions of the ABV and event based attention theories (Hoffman & Ocasio, 2001; Ocasio, 1997, 2011) in these contexts.

Our research contexts are based in downstream operations of a firm, and therefore also are linked to managerial cognition research on how attention processes become critical in formulation of strategies to address customer demands in the face of changing environmental conditions (Shepherd et al., 2017). IT capabilities can capture customer information and demands, and help in creating customized offerings and providing seamless experiences, and there is further scope to examine how these capabilities can be utilized to increase customer satisfaction (Mithas et al., 2016). However, it is the extent to which executives attend to the information and demands which are contained in these IT capabilities that become important in strategy formulation (Li et al., 2013) and the predicted success of pursuing various action alternatives. IT based capabilities can also maintain information on customer channel preferences and utilization, which help in creating customized offerings in channels of their choice.

Our research examines the impacts of attention processes in multiple industries, and in medium and large-sized firms. The availability of data in the form of IW surveys and annual reports enables us to develop the constructs for executive attention for such firms. Future research can examine the mechanisms of attention in smaller firms, which might be very different compared to the firm sizes that we have considered in our research. We have also not explicity studied the interrelationships between different attention processes in terms of the sequence of their development in firms, which can provide further interesting results and scope for future research streams. Lastly, we have not studied how specific firm resources and resource networks, other than IT resources, can shape attention processes within a firm. Future research can also study the roles of these resources in the shaping of attention processes, and multiple levels at which they originate within he firm to have lasting impacts on competitive advantage.