# Customer engagement through omnichannel retailing: The effects of channel integration quality

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## ABSTRACT

While many retailers have turned to omnichannel retailing to remain competitive, engaging customers across channels has become one of the biggest challenges they face. Drawing on social exchange theory, we proposed and tested a research model of customer engagement in the context of omnichannel retailing. Structural equation modeling was employed to test the research model with customers of two emerging omnichannel retailers, Apple ($n = 269$) and Kroger ($n = 221$). The results showed that channel integration quality dimensions (including breadth of channel-service choice, transparency of channel-service configuration, content consistency, and process consistency) positively influenced customer engagement which in turn led to positive word-of-mouth and repurchase intention. The research model was examined using both high-involvement products (e.g., Apple) and low-involvement products (e.g., Kroger) despite the varying effects of channel integration quality on customer engagement. This study adds to the growing body of knowledge on customer engagement vis-à-vis omnichannel retailing and provides retailers with actionable insights into engaging customers across channels.

## 1. Introduction

Omnichannel retailing refers to retailing that involves a synergetic integration of channels for the purpose of creating a unified brand experience for customers, regardless of the channel or stage they are in during the purchasing process (Cummins et al., 2016). Nowadays, customers no longer purchase solely in-store or online; instead, they shop across channels. They do so, for example, by searching for information in one channel, and completing the purchase in another (Bang et al., 2013; Britt, 2016). As more and more customers demand an integrated purchasing experience across channels, many retailers have turned to omnichannel retailing to remain competitive (Melsted, 2015). IKEA (UK) reported that after making its products accessible across retailing channels, customers increasingly used both channels to complete their purchasing journey, which resulted in a 31% rise in online sales (Rigby, 2016). International Data Corporation (IDC) found that customers using both online and physical channels have 30% higher lifetime value than those purchasing from a single channel; that renders the former a valuable group of customers. Retailers, however, can only reap the revenue benefits if they know how to engage with these customers across channels (Krueger, 2015).

Customer engagement refers to the level of a customer's or prospective customer's interactions and connections with a brand's or firm's offerings and/or activities (Vivek et al., 2014). While omnichannel retailing presents numerous business opportunities, engaging customers across channels has been specifically regarded as one of the biggest challenges for omnichannel retailers (Blackmon, 2016). A study on omnichannel customer service gap revealed that only 7% of the respondents were extremely satisfied that brands provided a seamless, integrated, and consistent service experience across channels (Zendesk, 2013). Further, 73% thought that brands needed to pay more effort into providing a seamless experience and engaging customers across channels. Understanding customer engagement is important because it strengthens the bonding between the organization and customers, and subsequently leads to positive outcomes. For instance, retailers capable of engaging customers across channels retained on average 89% of their customers, whereas those who could not only retained 33% (Saleh, 2015).

Prior literature examining customer engagement through omnichannel retailing remains sparse, despite practitioners' consistent emphasis on the importance of engaging customers across channels. A review of the literature on omnichannel retailing suggested that the majority of studies were organizational-level and qualitative in nature,

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focusing on developing new approaches for fulfilling orders (e.g., Bell et al., 2015; Bell et al., 2014; Bernon et al., 2016; Chopra, 2016; Ishfaq et al., 2016) and marketing strategies (e.g., Cummins et al., 2016; Li et al., 2015; Melero et al., 2016). Individual-level studies on omnichannel retailing, however, have not received commensurate scholarly attention. Besides, we found that customer engagement has been investigated in a wide array of research contexts, such as online brand communities (e.g., Chan et al., 2014; Hammedi et al., 2015; Zhang et al., 2015), blogs (e.g., Verma, 2014) and online games (e.g., Cheung et al., 2015). As shown in these studies, customer engagement was found to be significantly influenced by context-specific variables, such as the effects of community characteristics on customer engagement in online brand communities (Chan et al., 2014). However, little has been found in the context of omnichannel retailing. Thus, there presents a research opportunity for examining the effects of context-specific variables on customer engagement in the context of omnichannel retailing.

Channel integration quality refers to a firm's ability to provide customers with a seamless purchasing experience across channels (Sousa & Voss, 2006). It is regarded as the key to managing customer relationship across channels (Payne & Frow, 2004), and lies at the heart of omnichannel retailing. According to a recent survey conducted by the International Council of Shopping Centers, omnichannel retailers should embrace both the click and the brick, and leverage on the benefits of the physical store network and utilize technologies to enhance customers' purchasing experience (BusinessWire, 2016). In other words, to make the most out of omnichannel retailing, retailers need to ensure the synergetic integration of channels which removes friction during the customer journey (Bianchi et al., 2016; BusinessWire, 2016). Kohl's and Wal-Mart, emerging omnichannel retailers, have implemented a "buy online, pick up in-store" service. This service has allowed customers to pick up online orders in the physical store spending 30% less time. Such moves have greatly enhanced customer engagement and stimulated sales (Lindner, 2016). Therefore, we contend that channel integration quality, a context-specific variable to omnichannel retailing, assumes a crucial role in shaping customer engagement in such settings.

Against this backdrop, this study aims to examine the effects of channel integration quality on customer engagement and positive outcomes resulting from such engagement. Examining the antecedents and outcomes of customer engagement adds to the growing body of knowledge on omnichannel retailing and customer engagement, and presents important implications for both research and practice. From the research perspective, this study corroborated the relationships among customer engagement, its antecedents and outcomes in the context of omnichannel retailing. The validated research model serves as an appropriate framework for future studies. In addition, the research model was substantiated with both high-involvement and low-involvement products, and will allow researchers to apply the model to test alternative product types in future studies. From the practical perspective, the results of this work provide retailers with actionable insights into engaging customers across channels.

The paper is organized as follows: we first summarize the extant literature on omnichannel retailing, customer engagement, and channel integration quality in Section 2. Then, we introduce the theoretical foundation and our research model in Section 3. In Sections 4 and 5, we present the research method, data analysis, and results. Finally, in Section 6, we discuss the results, highlight the implications for both research and practice, and point out potential areas for future research.

## 2. Literature review

### 2.1. Omnichannel retailing

Omnichannel retailing is characterized by an operation with continuous information exchange, joint operations, logistics, and inventories across channels, enabling a conflation of the order fulfillment process (Hübner et al., 2016). It allows retailers to stay competitive, given the increasing demand for integrated and seamless purchasing experiences from customers (Melsted, 2015). It has drawn significant attention from the academic community, as evident by a surge in omnichannel retailing research over the past few years.

Previous studies on omnichannel retailing can be classified into two types: organizational-level studies and individual-level studies. Organizational-level studies have two major foci. On the one hand, a significant number of researchers concentrated on examining product and order fulfillments (e.g., Bell et al., 2015; Bell et al., 2014; Bernon et al., 2016; Chopra, 2016; Hübner et al., 2016; Ishfaq et al., 2016). For instance, Bell et al. (2014) demonstrated how to excel in omnichannel retailing through innovations in information delivery and product fulfillment. Hübner et al. (2016) analyzed the logistic development options to provide insights into designing future product fulfillment and distribution structures for omnichannel retailing. On the other hand, several studies focused on marketing issues of omnichannel retailing (e.g., Cummins et al., 2016; Li et al., 2015; Melero et al., 2016). For instance, Melero et al. (2016) identified several key issues that firms must consider in devising a successful marketing strategy for omnichannel retailing, including integrating available channels, unifying touchpoints across channels, and delivering personalized customer experiences.

Individual-level studies on omnichannel retailing remain scant. The few existing studies focused on exploring antecedents to customers' purchases with omnichannel retailers (e.g., Cook, 2014; Juaneda-Ayensa et al., 2016). For instance, Cook (2014) suggested that customers demand seamless purchasing experiences and expect their needs or wants to be met in a way that is convenient, enjoyable, and valuable in terms of use of money and time. Juaneda-Ayensa et al. (2016) found that the key determinants of customers' purchase intention towards omnichannel retailers include personal innovativeness, effort expectancy, and performance expectancy.

To sum up, research on omnichannel retailing is still in its infancy. Most studies are at the organizational level and qualitative in nature, and there is a general lack of empirical studies examining omnichannel customer behaviors at the individual level. Despite practitioners' repeated emphasis on the importance of customer engagement across channels, research on customer engagement through omnichannel retailing remains sparse.

### 2.2. Customer engagement

Customer engagement has been extensively studied across academic disciplines and research contexts. We found that the effects of context-specific variables on customer engagement have been consistently examined. A majority of studies on customer engagement have been conducted in the context of online brand communities and examined how different community-specific characteristics shaped customer engagement in such landscapes (e.g., Chan et al., 2014; Hammedi et al., 2015; Li et al., 2014; Yi et al., 2015; Zhang et al., 2015). For instance, community-specific characteristics, such as community value (Chan et al., 2014), sense of community (Zhang et al., 2015), and trust in a community (Hammedi et al., 2015), were found to positively influence customer engagement in online brand communities.

Among the studies on customer engagement in other research contexts, such as online games (e.g., Cheung et al., 2015), websites (e.g., Demangeot & Broderick, 2016), and physical stores (e.g., Barth, 2007), similar research patterns could be observed that the effects of context-specific variables on customer engagement have been consistently revealed. For instance, game customization and in-game social interaction influenced gamers' engagement with online games (e.g., Cheung et al., 2015); and information exploration potential, experiential exploration potential, and sense-making potential afforded by different website attributes were found positively related to customer engagement (e.g., Demangeot & Broderick, 2016).

To conclude, context-specific variables have been consistently examined to reveal their influence on customer engagement in the investigations of corresponding landscapes respectively. Due to the general lack of studies on customer engagement through omnichannel retailing, the effects of omnichannel-specific variables (e.g., channel integration quality) on customer engagement have been overlooked. With engaging customers being one of the emerging challenges to omnichannel retailers and an increasing demand for a seamless purchasing experience from customers, it is imperative to study what specifically influences customer engagement in the context of omnichannel retailing.

### 2.3. Channel integration quality

By integrating different channels, organizations are able to obtain competitive advantages over competitors (Wakolbinger & Stummer, 2013). The salience of channel integration quality has been demonstrated in existing literature. Prior studies have found that channel integration quality consistently influences customers' evaluations of a firm/brand, and this leads to positive outcomes valuable to retailers (e.g., Emrich et al., 2015; Herhausen et al., 2015; Seck, 2013; Seck & Philippe, 2013). For instance, channel integration quality exerted positive influences on customers' overall satisfaction (Seck & Philippe, 2013); full integration channel structure positively influenced customers' perception of shopping benefits, leading to a higher level of patronage intention (Emrich et al., 2015); channel integration enhanced customers' perceived service quality and reduced their perceived risks, leading to higher levels of search intention, purchase intention, and willingness to pay (Herhausen et al., 2015). The importance of channel integration quality for creating seamless purchasing experiences through omnichannel retailing has been consistently emphasized by practitioners (e.g., Bianchi et al., 2016; BusinessWire, 2016; Melsted, 2015). In particular, omnichannel retailing emphasizes the vanishing of boundaries among retailing channels, turning the retailing world into a showroom without walls beyond using a variety of channels to interact with customers and fulfilling their orders (Brynjolfsson et al., 2013; Chopra, 2016; Verhoef et al., 2015). Therefore, we contend that channel integration quality has a critical role to play in shaping customer engagement in the context of omnichannel retailing and warrants further investigation.

In this study, we derived the dimensions of channel integration quality based upon Sousa and Voss (2006). They put forward two dimensions of channel integration quality, including channel-service configuration (with the sub-dimensions of "breadth of channel-service choice" and "transparency of channel-service configuration") and integrated interactions (with the sub-dimensions of "content consistency" and "process consistency"). These four sub-dimensions of channel integration quality are conceptually distinct from one another as they tap into different elements of channel integration quality. Collectively, they represent a comprehensive yet parsimonious structure of channel integration quality and were therefore adopted for inquiry in this study. We conducted a preliminary study to verify the dimensions of channel integration quality in the context of omnichannel retailing. Details of the preliminary study can be found in Appendix A.

## 3. Research model and hypotheses

### 3.1. Social exchange theory

We drew on social exchange theory (SET) (Blau, 1964) and constructed a research model of customer engagement in the context of omnichannel retailing. SET is one of the most extensively adopted theoretical frameworks for explaining firm-customer relationships (Cropanzano & Mitchell, 2005). At the heart of SET are the principles of equity and reciprocity. It posits that exchange parties seek to derive mutual benefits (Weitz & Jap, 1995). In particular, when a party perceives that he/she has obtained benefits from another, he/she will feel indebted and will be obligated to reciprocate in kind (Blau, 1964).

Customer engagement has been studied predominantly from the relationship marketing perspective (Vivek et al., 2012) which aligns with the principles of SET. Such a perspective assumes that customers make proactive contributions to their relationships with firms rather than merely receive benefits (Grönroos, 1997). They devote personal resources (e.g., cognitive, emotional and physical resources) based on the benefits from their interactions with firms (Higgins & Scholer, 2009). Therefore, SET, which focuses on the principles of equity and reciprocity, represents an ideal theoretical framework for studying customer engagement. It has also been widely adopted in previous studies on customer engagement across different research contexts (e.g., Harrigan et al., 2018; Simon et al., 2016; Zainol et al., 2016). Subscribing to SET, we proposed that omnichannel retailers' initiatives on channel integration quality will be reciprocated with customers being engaged with the retailers, which in turn leads to desirable business outcomes. Fig. 1 depicts the research model.
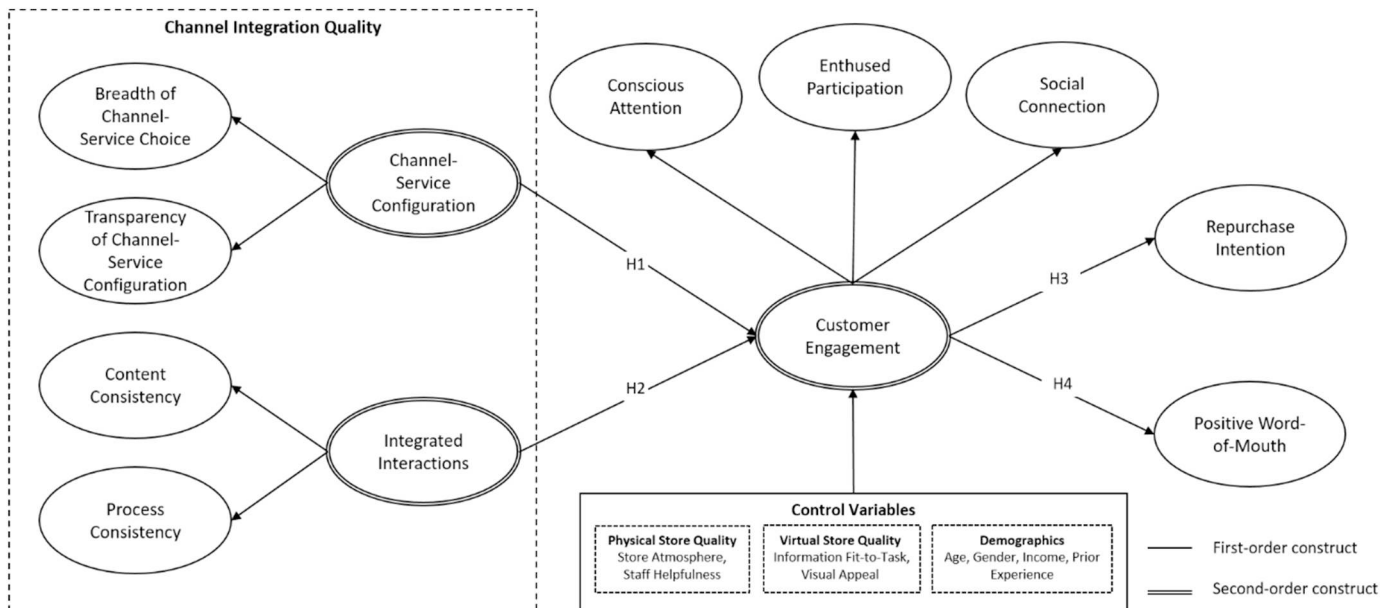


**Fig. 1.** Research model.

## 3.2. Customer engagement and channel integration quality

Customer engagement refers to the level of a customer's or prospective customer's interactions and connections with a brand's or firm's offerings and/or activities (Vivek et al., 2014). It consists of three dimensions, namely conscious attention, enthused participation, and social connection. Conscious attention refers to "*the degree of interest the person has or wishes to have in interacting with the focus of their engagement*"; enthused participation refers to "*the zealous reactions and feelings of a person related to using or interacting with the focus of their engagement*"; and social connection refers to "*the enhancement of the interaction based on the inclusion of others with the focus of engagement, indicating mutual or reciprocal action in the presence of others*" (Vivek et al., 2014, p. 407).

Subscribing to SET, a customer will develop and maintain a relationship with an omnichannel retailer based on his/her evaluation of the retailer's investment and the anticipated gains from their exchanges. In other words, the theory suggests that the customer will invest personal resources into the relationship when the retailer provides values (Foa & Foa, 1980). Following this notion, we proposed that when omnichannel retailers ensure channel integration quality throughout the purchasing journey, customers are more likely to engage with them and their offerings/activities. Channel integration quality in this study refers to the omnichannel retailer's ability to provide customers with seamless shopping experiences across channels (Sousa & Voss, 2006). It consists of two dimensions, channel-service configuration and integrated interactions.

### 3.2.1. Channel-service configuration

Channel-service configuration refers to the available combination of service components and their associated delivery channels (Sousa & Voss, 2006), manifesting through the "breadth of channel-service choice" and "transparency of channel-service configuration" sub-dimensions.

#### 3.2.1.1. Breadth of channel-service choice.
It refers to the degree to which customers can choose alternative channels for a given service or can accomplish preferred tasks through an individual channel. Specifically, retailers are able to show superiority in channel-service configuration by allowing customers to place orders both online and offline. Compared with those who only allow orders to be placed either online or offline, they offer a valued exchange to customers. For instance, customers who can purchase iPhones from either the online or physical Apple Stores will value the flexibility in choosing their preferred channels for a given shopping task and are likely to be displeased when forced to use only one particular channel (Bitner et al., 2002; Rackham, 2000).

#### 3.2.1.2. Transparency of channel-service configuration.
It refers to the degree to which customers are aware of the available channels and services as well as the differences between such service attributes across channels. When retailers are unable to properly integrate their channels, customers are confused with the availability and difference of services across channels; such confusion imposes difficulties in their purchasing journey (Bitner et al., 2002). Compared with those who do not clearly show the options for channel-service configuration, retailers who do are able to offer a valued exchange to the customers. For instance, Apple makes it transparent to customers the availability of its channels as well as the complementariness of services across channels. The complementary roles of the online and physical stores have been constantly highlighted. For instance, customers can research products online, but go in-store to try the merchandise and solicit additional advice from sales representatives. The two channels complement each other and create a complete end-to-end experience for customers in each purchase (Loras, 2016).

According to SET, if customers perceive the flexibility of selecting from alternative retailing channels for a given shopping task, they are more likely to make reciprocated attempts and become more engaged with omnichannel retailers (Hollebeek, 2011; Pervan et al., 2009). Therefore, we posit that a higher level of channel-service configuration (consisting of breadth of channel-service choice and transparency of channel-service configuration) will lead to a higher level of customer engagement.

**Hypothesis 1.** Channel-service configuration is positively related to customer engagement.

### 3.2.2. Integrated interactions

Integrated interactions refer to the consistency of interactions across channels (Sousa & Voss, 2006), manifesting through the "content consistency" and "process consistency" sub-dimensions.

#### 3.2.2.1. Content consistency.
It refers to the consistency of content provided by retailers across channels (Sousa & Voss, 2006). Content consistency allows customers to receive similar responses to an enquiry posted in either online or physical channels. Compared with those who do not provide consistent content (e.g., contents of prices, product specifications and warrant services) across channels, retailers who do are able to provide a valued exchange to customers. For instance, Apple provides consistent product specifications in both the online and physical stores and customers also receive similar responses towards their enquiries across channels. Content consistency is crucial in shaping a seamless shopping experience (Cox, 2016). Without consistent content available across channels, customers would easily get frustrated as they moved from channel to channel (Matt, 2016). In other words, since content consistency helps remove friction in customers' shopping journey and shorten the transaction process, they will value it and become more engaged (Lexmark, 2016).

#### 3.2.2.2. Process consistency.
It refers to the degree of consistency of relevant and comparable process attributes across channels, such as the feel, image, and delivery speed of services (Sousa & Voss, 2006). A recent market research study showed that 59% of the respondents reported an inconsistent shopping experience while moving from one channel to another left them annoyed (Gilles, 2015). Hence, compared with those who do not maintain process consistency across channels, retailers who do will provide a valued exchange to customers (Gilles, 2015). For instance, Kroger maintains the similar store design and atmosphere across channels to reduce a need for second guesses. Boudine (2016) contended that a consistent visual aesthetic and unwavering experience across channels is the key to effective customer engagement because it offers instantly identifiable continuity.

According to SET, if customers value the content and process consistency across channels which are brought about by the retailers, they will reciprocate with personal resources and become more engaged with the firms and their offerings/activities (Hollebeek, 2011; Pervan et al., 2009). The importance of consistency in engaging customers across channels has been echoed time and again (e.g., Boudine, 2016; Matt, 2016), and has been regarded as key to the provision of satisfactory customer experiences (e.g., Ganesh, 2004; Montoya-Weiss et al., 2003). Therefore, we posit that a higher level of integrated interactions (consisting of content consistency and process consistency sub-dimensions) will lead to a higher level of customer engagement.

**Hypothesis 2.** Integrated interactions are positively related to customer engagement.

### 3.3. Customer engagement, repurchase intention, and positive word-of-mouth

Customer engagement has been recognized as an ongoing firm-customer exchange that fosters positive transactional and non-

transactional outcomes (Cambra-Fierro et al., 2013). In this study, we examined the effects of customer engagement on both repurchase intention (i.e., a transactional outcome) and positive word-of-mouth (i.e., a non-transactional outcome). Repurchase intention refers to the extent to which a customer will continue to purchase products from a firm (Chiu et al., 2009); whereas positive word-of-mouth refers to the extent to which a customer will communicate with other parties concerning the positive evaluations of products from a firm (Anderson, 1998).

The positive relationships between customer engagement and a wide array of transactional and non-transactional outcomes have been validated (e.g., Bitter & Grabner-kräuter, 2016; Chan et al., 2014; Cheung et al., 2015; Chu & Kim, 2011). Previous literature specifically bears testimony to the positive relationships among customer engagement, repurchase intention and positive word-of-mouth (e.g., Chan et al., 2014; Islam & Rahman, 2016). Applying such a notion to omnichannel retailers, we posit that highly engaged customers would be more willing to repurchase products from and spread positive word-of-mouth for them.

**Hypothesis 3.** Customer engagement is positively related to repurchase intention.

**Hypothesis 4.** Customer engagement is positively related to positive word-of-mouth.

### 3.4. Control variables

Physical store quality (e.g., store atmosphere and staff helpfulness) and virtual store quality (e.g., information fit-to-task and visual appeal) might influence customers' evaluation towards retailers (Sousa & Voss, 2006). Furthermore, previous studies suggested that customer demographics (e.g., age, gender, income, and prior experience) might influence their attitudes and behaviors towards retailers (e.g., Mittal & Kamakura, 2001). Therefore, physical store quality, virtual store quality, and customer demographics were included as control variables in the research model.

## 4. Research method

### 4.1. Research context

This study targets customers from Apple and Kroger. Apple is a technology company that designs, develops, and sells electronics and computer software, while Kroger is a retail chain that sells groceries. These two retailers were selected because they are emerging omnichannel retailers (Loras, 2016; Melton, 2017). The two also represented high-involvement products (i.e., Apple) and low-involvement products (i.e., Kroger) contexts respectively.

### 4.2. Data collection and procedure

Data were collected via online survey. The survey consisted of two parts. Part 1 contained screening questions for identifying eligible respondents. Part 2 listed questions for dependent variables, independent variables, and control variables. Demographics of respondents were recorded at the end of the survey. A pretest of the survey questionnaire was conducted among 20 graduate students. Following the guidelines for survey method (Fowler, 2009), the pretest assessed six aspects of the questionnaire, (1) the clarity of instructions, (2) the clarity of wording, (3) the relevance of items, (4) the absence of biased words and phrases, (5) the use of standard English, and (6) the questionnaire format. Comments and feedback were taken into consideration in the preparation of the final version of the questionnaire.

We employed a market research firm in the U.S. for distributing the questionnaire and collecting data. The sampling frame for the study was the list of registers of the market research firm. Screening questions

were put forward at the beginning of the survey to identify respondents meeting the sampling criteria. Participants were selected based on two criteria: (1) he/she needed to have visited both the online and physical Apple/Kroger Stores, and (2) he/she needed to have made at least one purchase at either the online or physical Apple/Kroger Stores. Participants were rewarded with points that could be accumulated and exchanged for gifts.

### 4.3. Measures

Measurement items for breadth of channel-service choice, transparency of channel-service configuration, content consistency and process consistency were adopted from Sousa and Voss (2006) and Oh and Teo (2010). Measurement items for customer engagement were adopted from Vivek et al. (2014), repurchase intention from Khalifa and Liu (2007) and Zhou et al. (2009), positive word-of-mouth from Srinivasan et al. (2002), physical store quality from Sherman et al. (1997), and virtual store quality from Loiacono et al. (2007). We made minor modifications to the measurement items to fit the current research context. All constructs were assessed using perceptual scales with responses measured on a 7-point Likert scale, and multiple items were used to ensure construct validity and reliability. The complete list of measurement items for focal constructs is summarized in Appendix B.

### 4.4. Respondent profile

For the data collection with Apple, a total of 1124 respondents attempted the survey and 281 surveys submitted, yielding a conservative estimate of the response rate of 25%. Twelve responses were deleted due to incompletion, yielding a final sample of 269 responses for subsequent analyses. Of the 269 respondents, 138 were male and 131 were female. A majority of the respondents were young adults, with 52.8% aged between 25 and 34. For the data collection with Kroger, a total of 1390 respondents attempted the survey and 278 of them submitted, yielding a conservative estimate of the response rate of 20%. Fifty-seven responses were deleted due to incompletion, yielding a final sample of 221 responses for subsequent analyses. Of the 221 respondents, 77 were male and 144 were female. A majority of the respondents were young adults, with 63.8% aged between 25 and 34. To detect the potential non-response bias, *t*-tests were conducted to compare the mean values between the early and late respondents for demographics. No significant differences were found, suggesting that non-response bias was not a threat in this study. Table 1 presents the respondent profile.

## 5. Data analyses and results

We validated the measurement and structural models using partial least squares (PLS) analysis, which uses a component-based approach for estimation and imposes minimal restrictions on data distribution. The use of PLS is also appropriate due to the exploratory nature of the research objective (Hair et al., 2014). Following the two-step analytical approach, we performed a psychometric assessment of the measurement model, followed by an evaluation of the structural model. This approach ensures that the conclusions of the structural model are drawn from a set of measures with desirable psychometric properties (Hair et al., 2009; Wixom & Watson, 2001). Since channel-service configuration, integrated interactions, and customer engagement were conceptualized as second-order constructs, we measured each of their constituent dimensions reflectively, which in turn reflected the overall second-order constructs. Following Hair et al. (2014), these second-order constructs were modeled as hierarchical elements using repeated indicators from their respective constituent dimensions.

**Table 1**
The demographic profile of the respondents.

| | | Apple no. [%] | Kroger no. [%] |
|---|---|---|---|
| Gender | Male | 138 [51.3] | 77 [34.8] |
| | Female | 131 [48.7] | 144 [65.2] |
| Age | 18--24 | 46 [17.1] | 23 [10.4] |
| | 25--34 | 142 [52.8] | 141 [63.8] |
| | 35--44 | 58 [21.6] | 44 [19.9] |
| | 45--54 | 13 [4.8] | 6 [2.7] |
| | 55--64 | 8 [3.0] | 5 [2.3] |
| | 65 ≥ | 2 [0.7] | 2 [0.9] |
| Type of product purchased | 1 | 55 [20.4] | 46 [20.8] |
| | 2 | 70 [26.0] | 12 [5.4] |
| | 3 | 75 [27.9] | 24 [10.9] |
| | 4 | 43 [16.0] | 34 [15.4] |
| | 5 | 21 [7.8] | 26 [11.8] |
| | 6 | 3 [1.1] | 15 [6.8] |
| | 7 ≥ | 2 [0.7] | 64 [29.0] |
| Education | Below high school | 1 [0.4] | 1 [0.5] |
| | High school | 44 [16.4] | 28 [12.7] |
| | College degree | 50 [18.6] | 41 [18.6] |
| | Bachelor"s degree | 91 [33.8] | 109 [49.3] |
| | Master"s degree | 75 [27.9] | 36 [16.3] |
| | Doctoral degree | 3 [1.1] | 0 [0] |
| | Professional degree | 5 [1.9] | 6 [2.7] |
| Annual income (USD) | ≤ $19,999 | 47 [17.5] | 26 [16.3] |
| | $20,000 – $29,999 | 50 [18.6] | 29 [13.1] |
| | $30,000 – $39,999 | 31 [11.5] | 33 [14.9] |
| | $40,000 – $49,999 | 48 [17.8] | 46 [20.8] |
| | $50,000 – $59,999 | 24 [8.9] | 25 [11.3] |
| | $60,000 – $69,999 | 20 [7.4] | 7 [3.2] |
| | $70,000 – $79,999 | 16 [5.9] | 15 [6.8] |
| | $80,000 – $89,999 | 10 [3.7] | 8 [3.6] |
| | $90,000 ≥ | 23 [8.6] | 22 [10.0] |

## 5.1. Preliminary analysis

In order to ensure that there are no common method bias issues, we conducted three tests to assess its potential threat on the two datasets (i.e., Apple and Kroger). First, we conducted Harman's single-factor test using principal component analysis. The first factor accounted for < 50% of the variance (i.e., Apple: 45.3%; Kroger: 33.9%). In other words, the items in the datasets loaded significantly onto more than one principal component, indicating no single dominant factor (Harman, 1976). Second, as suggested by Pavlou et al. (2007), we examined the correlation matrix. Extremely high correlations (e.g., $r > 0.90$) typically indicated the threat of common method bias. There were no extremely high correlations. In addition, the presence of low correlations (see Table 3) indicated that no single factor was influencing all of the constructs. Finally, we conducted a marker variable test (Lindell & Whitney, 2001) by entering a theoretically unrelated variable (i.e., jogging habit) into the research model. The marker variable exerted no significant effect on customer engagement, indicating that common method bias was not a threat in the datasets.

## 5.2. Assessment of the measurement model

The test of the measurement model involved estimations of the internal consistency, convergent validity, and discriminant validity of the measurement items. Table 2 shows the psychometric properties of the measurement items. Internal consistency was assessed using Cronbach's Alpha (α). As illustrated in Table 2, all the measurements are highly reliable, exceeding the recommended threshold of 0.7. Convergent validity was assessed using three criteria: (1) the composite reliability (CR) should be at least 0.70 (Chin, 1998); (2) the average variance extracted (AVE) should be at least 0.50; and (3) all of the item loadings should exceed 0.70 (Fornell & Larcker, 1981; Hair et al., 2009). As illustrated in Table 2, all of the latent constructs in both datasets exceed

the recommended thresholds. Discriminant validity was indicated by small correlations between the measures of interest and the measures of other constructs (Fornell & Larcker, 1981), and was demonstrated when the square root of the AVE for each construct is greater than the correlations between it and all of the other constructs. As illustrated in Table 3, the square roots of all of the AVEs are larger than all of the cross-correlations. The above results indicated that the psychometric properties of the measurement model were satisfactory in both datasets.

## 5.3. Assessment of the structural model

We performed bootstrapping with 5000 sub-samples to test the significance levels of the path coefficients in the proposed research model in both the Apple and Kroger contexts (Hair et al., 2014). Fig. 2 illustrates the PLS analysis results for the structural model, including path coefficients, statistical significance levels, and variance explained.

The reflective paths of the second-order constructs channel-service configuration, integrated interactions, and customer engagement to their corresponding first-order constructs were all found significant. The validity of these second-order constructs offered support for the interpretation of empirical findings from hypotheses testing (Hair et al., 2014). The effects of channel-service configuration and integrated interactions on customer engagement were upheld by empirical evidence, explaining 42% (Apple) and 33% (Kroger) of the variance in the latter respectively. Channel-service configuration ($\beta = 0.17$, $p < .05$; $\beta = 0.35$, $p < .01$)[1] and integrated interactions ($\beta = 0.33$, $p < .001$; $\beta = 0.21$, $p < .05$) exerted positive and significant effects on customer engagement in both samples of Apple and Kroger, supporting hypothesis 1 and 2. Customer engagement exerted a positive and significant effect on repurchase intention ($\beta = 0.62$, $p < .001$; $\beta = 0.54$, $p < .001$), explaining 39% (Apple) and 29% (Kroger) of the variance in repurchase intention and supporting hypothesis 3. Customer engagement also exerted a positive and significant effect on positive word-of-mouth ($\beta = 0.72$, $p < .001$; $\beta = 0.77$, $p < .001$), explaining 51% (Apple) and 60% (Kroger) of the variance in positive word-of-mouth and supporting hypothesis 4. The majority of control variables exhibited no significant effect on customer engagement, except age in the Kroger's sample ($\beta = -0.17$, $p < .01$).

# 6. Discussions and conclusions

## 6.1. Discussions of results

All proposed hypotheses were supported in this study. The findings of our study provide strong evidence that channel integration quality positively influences customer engagement which in turn leads to higher levels of repurchase intention and positive word-of-mouth. However, the effects of channel integration quality dimensions on customer engagement vary with high-involvement and low-involvement products. In particular, integrated interactions, compared with channel-service configuration, were found to exert a stronger influence on customer engagement for high-involvement products (i.e., Apple), but vice versa for low-involvement products (i.e., Kroger). One possible explanation is that purchasing high-involvement products (e.g., Apple's iPhones) demands a relatively high-level information search and evaluation of alternatives in which content consistency across channels is crucial. On the contrary, purchasing low-involvement products (e.g., Kroger's groceries) involves a relatively low-level information search and evaluation of alternatives. In such cases, the convenience of purchasing (e.g., the breadth of channel-service choice or the "click and collect in-store" service configuration) appears to be more important and appealing to customers.

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[1] The former statistics are for the Apple's sample and the latter statistics are for the Kroger's sample. This rule applies to the subsequent reporting of results.

**Table 2**
Psychometric properties of the measurement items.

| Construct | Apple (Kroger) | | | | | |
|---|---|---|---|---|---|---|
| | Cronbach's Alpha | Composite reliability | Average variance extracted | Item | Loading | t-Statistic |
| Conscious attention | 0.92 (0.94) | 0.94 (0.95) | 0.72 (0.77) | CA01 | 0.84 (0.84) | 37.38 (33.82) |
| | | | | CA02 | 0.83 (0.88) | 35.81 (48.49) |
| | | | | CA03 | 0.89 (0.88) | 63.14 (52.75) |
| | | | | CA04 | 0.87 (0.88) | 46.52 (49.87) |
| | | | | CA05 | 0.85 (0.89) | 44.54 (57.05) |
| | | | | CA06 | 0.83 (0.89) | 38.06 (60.00) |
| Enthused participation | 0.89 (0.93) | 0.92 (0.94) | 0.69 (0.73) | EP01 | 0.83 (0.91) | 41.24 (74.03) |
| | | | | EP02 | 0.87 (0.91) | 55.64 (73.06) |
| | | | | EP03 | 0.81 (0.82) | 34.23 (29.67) |
| | | | | EP04 | 0.85 (0.89) | 45.61 (66.75) |
| | | | | EP05 | 0.77 (0.88) | 30.78 (47.67) |
| Social connection | 0.88 (0.91) | 0.93 (0.95) | 0.81 (0.85) | SC01 | 0.87 (0.91) | 51.50 (67.13) |
| | | | | SC02 | 0.92 (0.94) | 90.56 (105.69) |
| | | | | SC03 | 0.91 (0.92) | 68.66 (74.11) |
| Breadth of channel-service choice | 0.84 (0.80) | 0.89 (0.87) | 0.68 (0.63) | BCC01 | 0.84 (0.78) | 36.76 (27.97) |
| | | | | BCC02 | 0.82 (0.76) | 28.58 (25.52) |
| | | | | BCC03 | 0.75 (0.83) | 16.34 (31.66) |
| | | | | BCC04 | 0.88 (0.80) | 40.42 (25.95) |
| Transparency of channel-service configuration | 0.91 (0.88) | 0.94 (0.92) | 0.80 (0.73) | TCSC01 | 0.91 (0.85) | 64.60 (41.59) |
| | | | | TCSC02 | 0.92 (0.86) | 85.58 (45.96) |
| | | | | TCSC03 | 0.88 (0.84) | 42.70 (41.69) |
| | | | | TCSC04 | 0.85 (0.87) | 33.69 (40.66) |
| Content consistency | 0.86 (0.85) | 0.91 (0.90) | 0.70 (0.69) | CC01 | 0.83 (0.85) | 34.96 (42.46) |
| | | | | CC02 | 0.86 (0.81) | 32.38 (33.05) |
| | | | | CC03 | 0.66 (0.84) | 40.21 (38.28) |
| | | | | CC04 | 0.81 (0.82) | 30.79 (29.23) |
| Process consistency | 0.87 (0.87) | 0.91 (0.91) | 0.73 (0.71) | PC01 | 0.75 (0.80) | 20.61 (30.38) |
| | | | | PC02 | 0.88 (0.85) | 39.78 (43.88) |
| | | | | PC03 | 0.91 (0.86) | 77.88 (47.41) |
| | | | | PC04 | 0.86 (0.86) | 39.22 (39.72) |
| Repurchase intention | 0.93 (0.87) | 0.95 (0.91) | 0.83 (0.72) | RI01 | 0.92 (0.83) | 83.98 (24.07) |
| | | | | RI02 | 0.91 (0.85) | 40.22 (33.90) |
| | | | | RI03 | 0.91 (0.85) | 74.95 (41.74) |
| | | | | RI04 | 0.90 (0.86) | 43.79 (30.20) |
| Positive word-of-mouth | 0.93 (0.91) | 0.95 (0.93) | 0.83 (0.78) | PW01 | 0.88 (0.84) | 37.49 (26.83) |
| | | | | PW02 | 0.91 (0.86) | 49.05 (32.25) |
| | | | | PW03 | 0.94 (0.92) | 121.00 (59.41) |
| | | | | PW04 | 0.91 (0.91) | 60.92 (56.56) |

**Table 3**
The inter-construct correlation matrix.

| Construct | Apple (Kroger) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 1. Conscious attention | 0.85 (0.88) | | | | | | | | |
| 2. Enthused participation | 0.70 (0.83) | 0.83 (0.88) | | | | | | | |
| 3. Social connection | 0.68 (0.75) | 0.73 (0.84) | 0.90 (0.92) | | | | | | |
| 4. Breadth of channel-service choice | 0.43 (0.46) | 0.19 (0.38) | 0.25 (0.33) | 0.82 (0.79) | | | | | |
| 5. Transparency of channel-service configuration | 0.57 (0.52) | 0.40 (0.47) | 0.41 (0.39) | 0.60 (0.79) | 0.89 (0.86) | | | | |
| 6. Content consistency | 0.56 (0.48) | 0.42 (0.39) | 0.44 (0.31) | 0.70 (0.80) | 0.62 (0.83) | 0.84 (0.83) | | | |
| 7. Process consistency | 0.55 (0.52) | 0.43 (0.44) | 0.53 (0.35) | 0.48 (0.76) | 0.51 (0.77) | 0.76 (0.81) | 0.85 (0.84) | | |
| 8. Repurchase intention | 0.62 (0.53) | 0.50 (0.54) | 0.51 (0.43) | 0.48 (0.58) | 0.43 (0.57) | 0.57 (0.58) | 0.52 (0.57) | 0.91 (0.85) | |
| 9. Positive word-of-mouth | 0.71 (0.72) | 0.59 (0.77) | 0.57 (0.71) | 0.40 (0.48) | 0.45 (0.54) | 0.56 (0.50) | 0.58 (0.53) | 0.81 (0.76) | 0.91 (0.88) |

*Note*: Items on the diagonal represent the square roots of AVEs.

Control variables, namely physical store quality (i.e., store atmosphere and staff helpfulness) and virtual store quality (i.e., information fit-to-task and visual appeal) have no effect on customer engagement. The results imply that although previous studies on multichannel retailing revealed the salience of physical store quality and virtual store quality on influencing customers' evaluation of the firm in the physical and online channels separately (Sousa & Voss, 2006), such qualities exhibited no significant effect on customer engagement with omnichannel retailers. These findings could be attributed to the inherent differences among single-channel, multichannel, and omnichannel retailing contexts. Specifically, single-channel retailing operates either online or offline; multichannel retailing operates both online and offline with little or no operational coordination between the entities; omnichannel retailing operates both online and offline with continuous information exchange, joint operations, logistics, and inventories across channels, the enabling conflation of the order fulfillment processes (Hübner et al., 2016). Therefore, it is plausible that while physical store quality and virtual store quality have critical roles to play in influencing customer engagement with retailers in the physical and online channels separately; their role in influencing customer engagement with omnichannel retailers is less salient.

Age exerts a negative and significant effect on customer engagement. Omnichannel retailers engage customers through providing
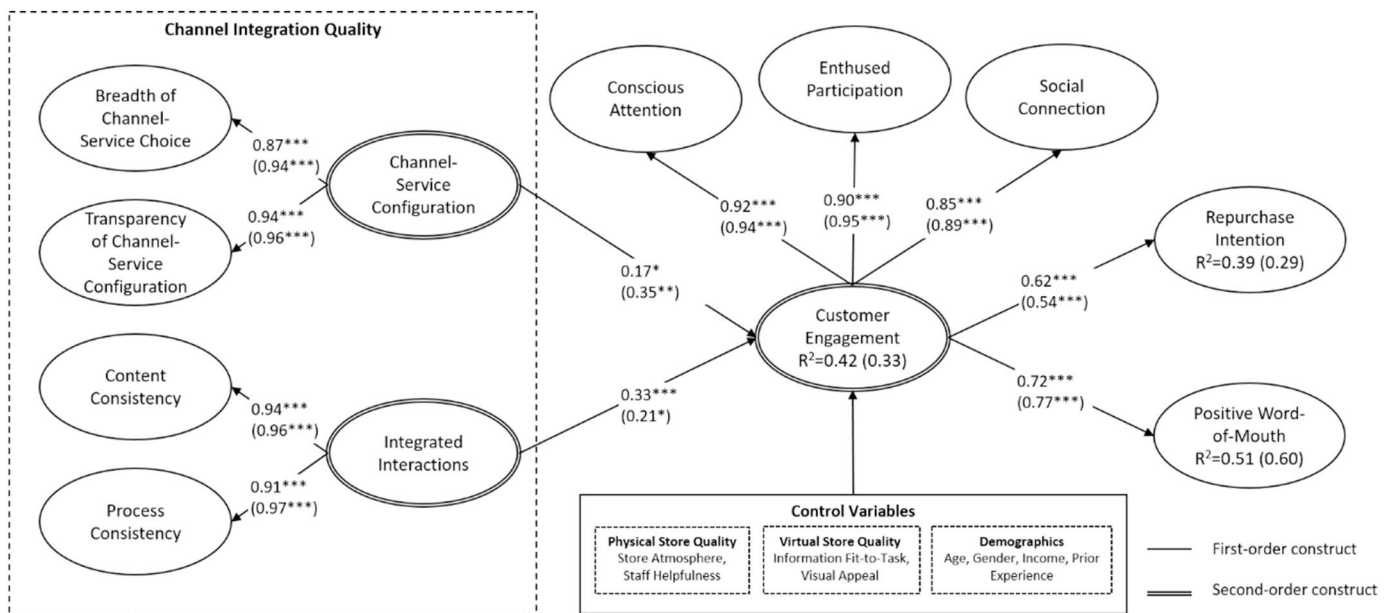
Note: *p<0.05, **p<0.01, ***p<0.001, n.s.non-significant; Results of Kroger's sample are presented in parentheses.

**Fig. 2.** PLS results.

seamless shopping experiences across both physical and online channels. In other words, customers have ample opportunities to interact with omnichannel retailers through different online channels. In particular, the younger generation has been well-regarded as tech-savvy that they use a greater breadth of technologies than older adults. When presented with more opportunities to interact with omnichannel retailers through different online channels, younger customers, compared with the older customers, are more likely to engage with omnichannel retailers.

### 6.2. Implications for research

This study expands the literature on omnichannel retailing and customer engagement in two aspects. First, most of the previous studies on omnichannel retailing clustered at the organizational level and were qualitative in nature, focusing on devising new order fulfillment models (e.g., Bell et al., 2014) and marketing strategies (e.g., Cummins et al., 2016; Li et al., 2015). This study adds to the growing body of knowledge on omnichannel retailing by empirically validating the research model of customer engagement in the context of omnichannel retailing and at the individual level. In particular, it corroborated that channel integration quality leads to customer engagement which in turn results in repurchase intention and positive word-of-mouth. The testified research model serves as an appropriate framework for future research investigating the antecedents and outcomes of customer engagement. In addition, the research model was substantiated with both high-involvement and low-involvement products, and allows researchers to apply such model to alternative product types with confidence.

Furthermore, while previous studies on multichannel retailing tested the effects of physical store quality (e.g., store atmosphere and staff helpfulness) and virtual store quality (e.g., information fit-to-task and visual appeal) on customers' evaluation of the firm in the contexts of physical and online channels separately, such qualities exhibited no significant effect on customer engagement in the context of omnichannel retailing. We contend the salient role of channel integration quality in influencing customer engagement with omnichannel retailers and suggest future research incorporate context-specific variables into the study of customer engagement in alternative settings. This study takes a concrete step towards advancing the research of the customer

engagement domain.

### 6.3. Implications for practice

This study has significant implications for practitioners. Specifically, two decisive managerial actions could be derived from our findings. First, integrated interactions, compared with channel-service configuration, were found to exert a stronger influence on customer engagement in the case of high-involvement products (e.g., Apple's digital products). Purchasing high-involvement products requires a high-level of information search and evaluation of alternatives, and thus more interactions with the retailers across channels. Without consistent contents and processes, customers will get frustrated when they move from one channel to another (Matt, 2016) and will likely switch to other retailers (Boudine, 2016). Omnichannel retailers of high-involvement products are advised to maintain the consistency of content and process across channels to avoid any potential confusion for customers. For instance, product and marketing information should be synchronized across channels; staff should be instructed to follow standardized business steps and procedures to ensure consistent and professional responses regarding enquiries from customers.

Alternatively, in the case of low-involvement products (e.g., Kroger's groceries), channel-service configuration, compared with integrated interactions, was found to exert a stronger influence on customer engagement. Omnichannel retailers of low-involvement products are advised to provide customers with flexibility in channel choices and allow them to complete a given shopping task with a personally preferred yet convenient channel (i.e., the breadth of channel-service choice). Besides, the availability of complementary services among channels (i.e., the transparency of channel-service configuration) should be made clear to customers. For instance, Kroger has kept customers aware of its ClickList® (a buy online and collect in-store service) and provided them with a well-integrated purchasing experience across channels.

### 6.4. Limitations and directions for future research

When interpreting the results of this study, a few limitations should be acknowledged which may lead to several avenues for further research.

### 6.4.1. Alternative methods

The assessment of the effects of channel integration quality on customer engagement was based on the survey method. Efforts to refine the assessment of effects of channel integration quality and other focal constructs would certainly be worthwhile. Future research can adopt alternative methods, such as field or laboratory experiments in which the degree of channel integration quality dimensions could be manipulated to reveal their effects on cultivating customer engagement. Consequently, potential biases inherent in the survey design, such confirmation bias induced by the recall of prior experiences, as well as other potential confounds could be minimized and better controlled for.

### 6.4.2. Alternative variables

There might be alternative variables affecting customer engagement with omnichannel retailers, such as customers' familiarity with online purchases and their perception of empowerment resulted from the channel integration quality. Future studies should incorporate those potential variables into the research model for yielding a rigorous interpretation of the effects of channel integration quality on customer engagement with omnichannel retailers.

### 6.5. Conclusions

The study examines the antecedents and outcomes of customer engagement in the context of omnichannel retailing. Drawing on social exchange theory (Blau, 1964), we proposed and tested a research model explaining the interplays among channel integration quality, customer engagement, and the positive outcomes. The findings offer tremendous insights into how channel integration quality enhances customer engagement with omnichannel retailers along with the varying effects in the cases of high-involvement and low-involvement products. The study serves as a foundation for future research and encourages further theoretical and empirical exploration in the realm of customer engagement and omnichannel retailing.

## Appendix A. A preliminary study

A preliminary study was conducted to verify the dimensions of channel integration quality in the context of omnichannel retailing. Specifically, we conducted an online and open-ended survey to solicit customers' responses, based on their prior purchasing experience with omnichannel retailers (i.e., Apple/Kroger), on what channel integration quality is comprised of.

Data collection and procedures

The online survey consisted of two parts. Part 1 presented screening questions for identifying eligible participants (e.g., Have you browsed the online Apple/Kroger Store prior to your purchase?). Part 2 listed an open-ended question (i.e., Please describe in detail the instance(s) of Apple's/Kroger's channel integration that you have experienced.) for soliciting participants' perceptions of channel integration quality of the retailers. They were first presented with the definition of channel integration quality and provided with one example (e.g., I can choose to buy an iPhone either from the online or physical Apple Stores; I can order groceries in the Kroger's website and collect the items in-store). They were then required to describe *at least one instance* and up to three instances about Apple's/Kroger's channel integration quality. Demographic information was recorded at the end of the survey. A pretest of the survey was conducted among 10 graduate students. No major issues surfaced during the pretest. Table A1 presents the demographic profile of the respondents. A total of 154 channel integration quality instances were obtained.

Data analyses and results

A deductive thematic analysis was performed to map the instances into the dimensions of channel integration quality. Following the procedures suggested by (Boyatzis, 1998), we developed themes using the prior-research-driven method and performed the thematic analysis following the work of Sousa and Voss (2006). Instances were not forced to be mapped into the existing framework, and new dimensions could be developed. Two judges (i.e., research assistants who had no prior knowledge with respect to channel integration quality) mapped the 154 instances into the proposed framework based on the definitions provided. The mapping exercise was semi-structured, where the two judges were asked to place each instance into one of the pre-determined dimensions of channel integration quality, or to create a new dimension if they were unsure of its placement. The mapping exercise eventually led to the consolidation of four sub-dimensions of channel integration quality with an inter-judge Kappa value of 0.84, exceeding the recommended threshold of 0.70 (Boudreau et al., 2001). The four sub-dimensions included "breadth of channel-service choice" and "transparency of channel-service configuration" (constituting the "channel-service configuration" dimension), and "content consistency" and "process consistency" (constituting the "integrated interactions" dimension). The judges were subsequently interviewed to solicit feedback regarding the mapping exercise; no new channel integration quality dimension was proposed.

Table A1
The demographic profile of the respondents.

| | | | Apple no. [%] | Kroger no. [%] |
|---|---|---|---|---|
| Gender | | Male | 33 [64.7] | 26 [38.8] |
| | | Female | 18 [35.3] | 41 [61.2] |
| Age | | 18–24 | 8 [15.7] | 12 [17.9] |
| | | 25–34 | 27 [52.9] | 35 [52.2] |
| | | 35–44 | 11 [21.6] | 14 [20.9] |
| | | 45–54 | 5 [9.8] | 3 [4.5] |
| | | 55–64 | 0 [0] | 2 [3.0] |
| | | 65 ≥ | 0 [0] | 1 [1.5] |

Table A1 (*continued*)

| | | Apple no. [%] | Kroger no. [%] |
|---|---|---|---|
| Education | Below high school | 0 [0] | 0 [0] |
| | High school | 5 [9.8] | 11 [16.4] |
| | College degree | 4 [7.8] | 12 [17.9] |
| | Bachelor's degree | 24 [47.1] | 27 [40.3] |
| | Master's degree | 14 [27.5] | 16 [23.9] |
| | Doctoral degree | 1 [1.9] | 0 [0] |
| | Professional degree | 3 [5.9] | 1 [1.5] |
| Annual income (USD) | ≤$19,999 | 7 [13.7%] | 10 [14.9] |
| | $20,000–$29,999 | 7 [13.7%] | 4 [6.0] |
| | $30,000–$39,999 | 8 [15.7%] | 9 [13.4] |
| | $40,000–$49,999 | 10 [19.6%] | 17 [25.4] |
| | $50,000–$59,999 | 3 [5.9%] | 7 [10.4] |
| | $60,000–$69,999 | 7 [13.7%] | 5 [7.5] |
| | $70,000–$79,999 | 3 [5.9%] | 5 [7.5] |
| | $80,000–$89,999 | 2 [3.9%] | 3 [4.5] |
| | $90,000≥ | 4 [7.8%] | 7 [10.4] |

Table A2
Definitions and examples of the dimensions of channel integration quality.

| Dimension | Sub-dimension | Definition | Example (Apple) | Example (Kroger) |
|---|---|---|---|---|
| Channel-service configuration | Breadth of channel-service choice | The degree to which customers can choose alternative channels for a given service, or can accomplish preferred tasks through individual channels | • It is very easy to know the product details such as hardware specifications and software specifications both online and offline. | • You order your groceries then you pick them up or have them delivered. |
| | Transparency of channel-service configuration | The degree to which customers are aware of the existence of all available channels and associated services as well as the differences of such service attributes | • Purchase an Apple product from the online store and collect the item in the physical store. | • I can choose and download coupons online to my card and use [them] in store. |
| Integrated interactions | Content consistency | The degree to which a customer receives the same response to an enquiry posted through different channels | • Price information is consistent for both online and offline apple stores. | • Promotions, discounts, [and] stores' atmosphere are the same across all channels. |
| | Process consistency | The degree of consistency in relevant and comparable process attributes across channels | • Both stores provide great customer service, whether it involves a complaint or an order. | • I have had to call the call center before, and the customer service experience is always pleasant. Call center, online, and in-store everyone is nice. |

*Note:* The examples are summarized based on the preliminary study with customers from two emerging omnichannel retailers, Apple and Kroger. This list is not exhaustive. We provide a set of typical instances for each sub-dimension for illustrative purpose. The complete list is available upon request.

## Appendix B. Measures

Table B1
Measurement items.

| Construct | Item |
|---|---|
| Breadth of channel-service choice | BCC01: I can purchase Apple products via the online or physical Apple Stores. |
| | BCC02: I can get technical support through the online or physical Apple Stores. |
| | BCC03: I can give feedback about the products through the online or physical Apple Stores. |
| | BCC04: I can get detailed product description from the online or physical Apple Stores. |
| Transparency of channel-service configuration | TCSC01: I am aware of available services of the online and physical Apple Stores. |
| | TCSC02: I am familiar with available services of both the online and physical Apple Stores. |
| | TCSC03: I know how to utilize available services of the online and physical Apple Stores. |
| | TCSC04: I know the differences of available services between the online and physical Apple Stores. |
| Content consistency | CC01: Apple provides consistent product information across the online and physical Apple Stores. |
| | CC02: The product prices are consistent across the online and physical Apple Stores. |
| | CC03: Apple provides consistent promotion information across the online and physical Apple Stores. |
| | CC04: Apple provides consistent stock availability across the online and physical Apple Stores. |
| Process consistency | PC01: The service images are consistent across the online and physical Apple Stores. |
| | PC02: The levels of customer service are consistent across the online and physical Apple Stores. |
| | PC03: The feelings of service are consistent across the online and physical Apple Stores. |
| | PC04: The online and physical Apple Stores have consistent performance in the speed of service delivery. |
| Conscious attention | CA01: I like to know more about Apple. |
| | CA02: I like events that are related to Apple. |
| | CA03: I like to learn more about Apple. |
| | CA04: I pay a lot of attention to anything about Apple. |
| | CA05: I keep up with things related to Apple. |
| | CA06: Anything related to Apple grabs my attention. |

**Table B1** (*continued*)

| Construct | Item |
| --- | --- |
| Enthused participation | EP01: I spend a lot of my discretionary time visiting Apple Stores. |
|  | EP02: I am heavily into Apple. |
|  | EP03: Visiting Apple Stores is part of my schedule. |
|  | EP04: I am passionate about Apple. |
|  | EP05: My days would not be the same without Apple. |
| Social connection | SC01: I love talking about Apple with my friends. |
|  | SC02: I enjoy visiting Apple Stores more when I am with my friends. |
|  | SC03: Visiting Apple Stores with my friend is more fun. |
| Repurchase intention | RI01: I intend to continue to purchase from Apple. |
|  | RI02: I intend to acquire products and services from Apple. |
|  | RI03: I intend to choose Apple as the preferred brand for my future purchases. |
|  | RI04: Except for any unanticipated reasons, I intend to continue to purchase from Apple as usual. |
| Positive word-of-mouth | PW01: I say positive things about Apple to other people. |
|  | PW02: I recommend Apple to anyone who seeks my advice. |
|  | PW03: I encourage friends to purchase from Apple. |
|  | PW04: I refer my acquaintances to Apple. |

*Note:* The items were slightly modified to fit the context of Kroger in the data collection with customers from Kroger.

## References

Anderson, E. W. (1998). Customer satisfaction and word of mouth. *Journal of Service Research, 1*(1), 5–17.

Bang, Y., Lee, D.-j., Han, K., Hwang, M., & Ahn, J.-h. (2013). Channel capabilities, product characteristics, and the impacts of mobile channel introduction. *Journal of Management Information Systems, 30*(2), 101–126.

Barth, J. E. (2007). Customer engagement and the operational efficiency of wine retail stores. *International Journal of Wine Business Research, 19*(3), 207–215.

Bell, D., Gallino, S., & Moreno, A. (2015). Showrooms and information provision in omni-channel retail. *Production and Operations Management, 24*(3), 360–362.

Bell, D. R., Gallino, S., & Moreno, A. (2014). How to win in an omnichannel world. *MIT Sloan Management Review, 56*(1), 45–53.

Bernon, M., Cullen, J., & Gorst, J. (2016). Online retail returns management. *International Journal of Physical Distribution & Logistics Management, 46*(6/7), 584–605.

Bianchi, R., Cermak, M., & Dusek, O. (2016). More than digital plus traditional: A truly omnichannel customer experience. Retrieved from http://www.mckinsey.com/business-functions/operations/our-insights/more-than-digital-plus-traditional-a-truly-omnichannel-customer.

Bitner, M., Ostrom, A., & Meuter, M. (2002). Implementing successful self-service technologies. *Academy of Management Executive, 16*(4), 96–108.

Bitter, S., & Grabner-Kräuter, S. (2016). Consequences of customer engagement behavior: When negative facebook posts have positive effects. *Electronic Markets, 26*(3), 219–231.

Blackmon, K. (2016). Latest ovum report shows businesses eager to invest in digital. *transformation.* Retrieved from http://thevarguy.com/var-guy/latest-ovum-report-shows-businesses-eager-invest-digital-transformation 9 December 2016 .

Blau, P. M. (1964). *Exchange and power in social life.* Transaction Publishers.

Boudine, T. (2016). Consistency is the key to effective customer engagement. Retrieved from http://www.cmswire.com/digital-marketing/consistency-is-the-key-to-effective-customer-engagement/.

Boudreau, M.-C., Gefen, D., & Straub, D. W. (2001). Validation in information systems research: A state-of-the-art assessment. *MIS Quarterly, 25*(1), 1–16.

Boyatzis, R. E. (1998). *Transforming qualitative information: Thematic analysis and code development.* Sage.

Britt, P. (2016). Successful multichannel retailing depends on technology. *strategy.* Retrieved from https://insights.samsung.com/2016/08/09/successful-multichannel-retailing-depends-on-technology-strategy/ 9 August 2016 .

Brynjolfsson, E., Hu, Y. J., & Rahman, M. S. (2013). Competing in the age of omnichannel retailing. *MIT Sloan Management Review, 54*(4), 23–29.

BusinessWire (2016). ICSC survey: In-store to beat out online over thanksgiving shopping weekend. Retrieved from http://sports.yahoo.com/news/icsc-survey-store-beat-online-140000813.html.

Cambra-Fierro, J. J., Melero-Polo, I., & Vázquez-Carrasco, R. (2013). Customer engagement: Innovation in non-technical marketing processes. *Innovation, 15*(3), 326–336.

Chan, T. K. H., Zheng, X., Cheung, C. M. K., Lee, M. K. O., & Lee, Z. W. Y. (2014). Antecedents and consequences of customer engagement in online brand communities. *Journal of Marketing Analytics, 2*(2), 81–97.

Cheung, C. M. K., Shen, X.-L., Lee, Z. W. Y., & Chan, T. K. H. (2015). Promoting sales of online games through customer engagement. *Electronic Commerce Research and Applications, 14*(4), 241–250.

Chin, W. W. (1998). The partial least square approach to structural equation modeling. In G. A. Marcoulides (Ed.). *Modern methods for business research* (pp. 295–336). Mahwah, NJ: Lawrence Erlbaum Associates.

Chiu, C.-M., Chang, C.-C., Cheng, H.-L., & Fang, Y.-H. (2009). Determinants of customer repurchase intention in online shopping. *Online Information Review, 33*(4), 761–784.

Chopra, S. (2016). How omni-channel can be the future of retailing. *Decision, 43*(2), 135–144.

Chu, S.-C., & Kim, Y. (2011). Determinants of consumer engagement in electronic word-of-mouth (eWOM) in social networking sites. *International Journal of Advertising, 30*(1), 47–75.

Cook, G. (2014). Customer experience in the omni-channel world and the challenges and opportunities this presents. *Journal of Direct, Data and Digital Marketing Practice, 15*(4), 262–266.

Cox, N. (2016). Is a lack of consistency letting your customer service down? Retrieved from http://www.eptica.com/blog/lack-consistency-letting-your-customer-service-down-0.

Cropanzano, R., & Mitchell, M. S. (2005). Social exchange theory: An interdisciplinary review. *Journal of Management, 31*(6), 874–900.

Cummins, S., Peltier, J. W., & Dixon, A. (2016). Omni-channel research framework in the context of personal selling and sales management. *Journal of Research in Interactive Marketing, 10*(1), 2–16.

Demangeot, C., & Broderick, A. J. (2016). Engaging customers during a website visit: A model of website customer engagement. *International Journal of Retail & Distribution Management, 44*(8), 814–839.

Emrich, O., Paul, M., & Rudolph, T. (2015). Shopping benefits of multichannel assortment integration and the moderating role of retailer type. *Journal of Retailing, 91*(2), 326–342.

Foa, E. B., & Foa, U. G. (1980). Resource theory. *Social exchange* (pp. 77–94). Springer.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39–50.

Fowler, F. J. (2009). *Survey research methods. Vol. 1.* Thousand Oaks: Sage Publications.

Ganesh, J. (2004). Managing customer preferences in a multi-channel environment using web services. *International Journal of Retail & Distribution Management, 32*(3), 140–146.

Gilles, S. (2015). The 5 biggest challenges facing omnichannel retailers in 2015. Retrieved from http://www.applianceretailer.com.au/2015/03/oped-the-5-biggest-challenges-facing-omnichannel-retailers-in-2015/#.WFA32XecZSw.

Grönroos, C. (1997). Value-driven relational marketing: From products to resources and competencies. *Journal of Marketing Management, 13*(5), 407–419.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2009). *Multivariate data analysis* (7th ed). Upper Saddle River: NJ: Prentice-Hall International.

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2014). *A primer on partial least squares structural equation modeling (PLS-SEM).* Thousand Oaks: Sage.

Hammedi, W., Kandampully, J., Zhang, T. T., & Bouquiaux, L. (2015). Online customer engagement. *Journal of Service Management, 26*(5), 777–806.

Harman, H. H. (1976). *Modern factor analysis* (3rd ed.). Chicago: The University of Chicago Press.

Harrigan, P., Evers, U., Miles, M. P., & Daly, T. (2018). Customer engagement and the relationship between involvement, engagement, self-brand connection and brand usage intent. *Journal of Business Research, 88*, 388–396.

Herhausen, D., Binder, J., Schoegel, M., & Herrmann, A. (2015). Integrating bricks with clicks: Retailer-level and channel-level outcomes of online-offline channel integration. *Journal of Retailing, 91*(2), 309–325.

Higgins, E. T., & Scholer, A. A. (2009). Engaging the consumer: The science and art of the value creation process. *Journal of Consumer Psychology, 19*(2), 100–114.

Hollebeek, L. D. (2011). Demystifying customer brand engagement: Exploring the loyalty nexus. *Journal of Marketing Management, 27*(7–8), 785–807.

Hübner, A., Wollenburg, J., & Holzapfel, A. (2016). Retail logistics in the transition from multi-channel to omni-channel. *International Journal of Physical Distribution & Logistics Management, 46*(6/7), 562–583.

Ishfaq, R., Defee, C. C., Gibson, B. J., & Raja, U. (2016). Realignment of the physical distribution process in omni-channel fulfillment. *International Journal of Physical Distribution & Logistics Management, 46*(6/7), 543–561.

Islam, J. U., & Rahman, Z. (2016). The transpiring journey of customer engagement research in marketing. *Management Decision, 54*(8), 2008–2034.

Juaneda-Ayensa, E., Mosquera, A., & Murillo, Y. S. (2016). Omnichannel customer behavior: Key drivers of technology acceptance and use and their effects on purchase intention. *Frontiers in Psychology, 7,* 1117 Article.

Khalifa, M., & Liu, V. (2007). Online consumer retention: Contingent effects of online shopping habit and online shopping experience. *European Journal of Information Systems, 16*(6), 780–792.

Krueger, J. (2015). Omnichannel shoppers: An emerging retail reality. Retrieved from https://www.thinkwithgoogle.com/marketing-resources/omnichannel/omni-channel-shoppers-an-emerging-retail-reality/.

Lexmark (2016). Customer engagement for trailblazers. Retrieved from http://www.kofax.com/~/media/Files/Kofax/Go/customer-engagement-for-trailblazers-en.pdf.

Li, M., Jiang, Q., Tan, C.-H., & Wei, K.-K. (2014). Enhancing user-game engagement through software gaming elements. *Journal of Management Information Systems, 30*(4), 115–150.

Li, Q., Luo, H., Xie, P.-X., Feng, X.-Q., & Du, R.-Y. (2015). Product whole life-cycle and omnichannel data convergence oriented enterprise networks integration in a sensing environment. *Computer in Industry, 70 (c),* 23–45.

Lindell, M. K., & Whitney, D. J. (2001). Accounting for common method variance in cross-sectional research designs. *Journal of Applied Psychology, 86*(1), 114–121.

Lindner, M. (2016). Thanksgiving weekend shoppers like omnichannel. *options.* Retrieved from https://www.internetretailer.com/2016/11/29/thanksgiving-weekend-shoppers-omnichannel-options 29 November 2016 .

Loiacono, E. T., Watson, R. T., & Goodhue, D. L. (2007). Webqual: An instrument for consumer evaluation of web sites. *International Journal of Electronic Commerce, 11*(3), 51–87.

Loras, S. (2016). Four brands leading the way in multichannel marketing. Retrieved from https://www.clickz.com/four-brands-leading-the-way-in-multichannel-marketing/91969/.

Matt, B. (2016). Bring communities into your customer engagement management. *strategy.* Retrieved from https://mindtouch.com/resources/bringing-communities-into-your-customer-engagement-management-strategy 4 June 2015 .

Melero, I., Sese, F. J., & Verhoef, P. C. (2016). Recasting the customer experience in today's omni-channel environment. *Universia Business Review, 50,* 18–37.

Melsted, L. R. (2015). Retailers turn to omnichannel strategies to remain competitive. Retrieved from http://www.forbes.com/sites/samsungbusiness/2015/02/09/retailers-turn-to-omnichannel-strategies-to-remain-competitive/#4c5312ff448d.

Melton, J. (2017). Kroger ramps up its omnichannel strategy. Retrieved from https://www.digitalcommerce360.com/2017/10/16/kroger-future-data-digital-customers-omnichannel-personalization/.

Mittal, V., & Kamakura, W. A. (2001). Satisfaction, repurchase intent, and repurchase behavior: Investigating the moderating effect of customer characteristics. *Journal of Marketing Research, 38*(1), 131–142.

Montoya-Weiss, M. G., Voss, G., & Grewal, D. (2003). Determinants of online channel use and overall satisfaction with a relational, multi-channel service provider. *Journal of the Academy of Marketing Science, 31*(4), 448–458.

Oh, L.-B., & Teo, H.-H. (2010). Consumer value co-creation in a hybrid commerce service-delivery system. *International Journal of Electronic Commerce, 14*(3), 35–62.

Pavlou, P. A., Liang, H. G., & Xue, Y. J. (2007). Understanding and mitigating uncertainty in online exchange relationships: A principal-agent perspective. *MIS Quarterly, 31*(1), 105–136.

Payne, A., & Frow, P. (2004). The role of multichannel integration in customer relationship management. *Industrial Marketing Management, 33*(6), 527–538.

Pervan, S. J., Bove, L. L., & Johnson, L. W. (2009). Reciprocity as a key stabilizing norm of interpersonal marketing relationships: Scale development and validation. *Industrial Marketing Management, 38*(1), 60–70.

Rackham, N. (2000). Channel strategy: The next generation. *Sales & Marketing Management, 152*(9), 40–42.

Rigby, C. (2016). Ikea posts 31% rise in online sales as it makes products more accessible across sales. *channels.* Retrieved from http://internetretailing.net/2016/11/ikea-posts-31-rise-online-sales-makes-products-accessible-across-sales-channels/ 29 November 2016 .

Saleh, K. (2015). The state of omnichannel shopping – statistics and trends. Retrieved from https://www.invespcro.com/blog/state-of-omnichannel-shopping/

Seck, A. M. (2013). The issue of multichannel integration, a key challenge for service firms in a context of multichannel services distribution. *International Business Research, 6*(2), 160–167.

Seck, A. M., & Philippe, J. (2013). Service encounter in multi-channel distribution context: Virtual and face-to-face interactions and consumer satisfaction. *The Service Industries Journal, 33*(6), 565–579.

Sherman, E., Mathur, A., & Smith, R. B. (1997). Store environment and consumer purchase behavior: Mediating role of consumer emotions. *Psychology & Marketing, 14*(4), 361–378.

Simon, C., Brexendorf, T. O., & Fassnacht, M. (2016). The impact of external social and internal personal forces on consumers' brand community engagement on facebook.

*Journal of Product & Brand Management, 25*(5), 409–423.

Sousa, R., & Voss, C. A. (2006). Service quality in multichannel services employing virtual channels. *Journal of Service Research, 8*(4), 356–371.

Srinivasan, S. S., Anderson, R., & Ponnavolu, K. (2002). Customer loyalty in e-commerce: An exploration of its antecedents and consequences. *Journal of Retailing, 78*(1), 41–50.

Verhoef, P. C., Kannan, P. K., & Inman, J. J. (2015). From multi-channel retailing to omni-channel retailing introduction to the special issue on multi-channel retailing. *Journal of Retailing, 91*(2), 174–181.

Verma, S. (2014). Online customer engagement through blogs in India. *Journal of Internet Commerce, 13*(3–4), 282–301.

Vivek, S. D., Beatty, S. E., Dalela, V., & Morgan, R. M. (2014). A generalized multi-dimensional scale for measuring customer engagement. *Journal of Marketing Theory and Practice, 22*(4), 401–420.

Vivek, S. D., Beatty, S. E., & Morgan, R. M. (2012). Customer engagement: Exploring customer relationships beyond purchase. *Journal of Marketing Theory and Practice, 20*(2), 127–145.

Wakolbinger, L. M., & Stummer, C. (2013). Multi-channel management: An exploratory study of current practices. *International Journal of Services, Economics and Management, 5*(1–2), 112–124.

Weitz, B. A., & Jap, S. D. (1995). Relationship marketing and distribution channels. *Journal of the Academy of Marketing Science, 23*(4), 305–320.

Wixom, B. H., & Watson, H. J. (2001). An empirical investigation of the factors affecting data warehousing success. *MIS Quarterly, 25*(1), 17–41.

Yi, C., Jiang, Z. J., & Benbasat, I. (2015). Enticing and engaging consumers via online product presentations: The effects of restricted interaction design. *Journal of Management Information Systems, 31*(4), 213–242.

Zainol, Z., Omar, N. A., Osman, J., & Habidin, N. F. (2016). The effect of customer–brand relationship investments' dimensions on customer engagement in emerging markets. *Journal of Relationship Marketing, 15*(3), 172–199.

Zendesk (2013). The omnichannel customer service gap. Retrieved from http://d16cvnquvjw7pr.cloudfront.net/resources/whitepapers/Omnichannel-Customer-Service-Gap.pdf.

Zhang, T., Kandampully, J., & Bilgihan, A. (2015). Motivations for customer engagement in online co-innovation communities (OCCS). *Journal of Hospitality and Tourism Technology, 6*(3), 311–328.

Zhou, T., Lu, Y., & Wang, B. (2009). The relative importance of website design quality and service quality in determining consumers' online repurchase behavior. *Information Systems Management, 26*(4), 327–337.

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