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## **Designing a seamless shopping journey through omnichannel retailer integration**

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### **Abstract**

Little is known about how omnichannel retailers should integrate their channels to provide their customers with seamless shopping journeys, or how this can impact desirable consumer behaviors. This gap in knowledge can be of significant concern for retailers due to the investment required in omnichannel and the potential negative impacts on their performance. This article explores the concept of the seamless shopping journey and proposes a valid and reliable measurement scale. By analyzing retailers' omnichannel strategies and their consumers' perceptions of seamless shopping, we show how retailer omnichannel integration strategies directly affect customers' seamless shopping journey perceptions. Customers who perceive shopping as seamless are more engaged, likely to buy more and less likely to switch to another retailer. Our work offers actionable guidance to retailers seeking to enhance their omnichannel strategies and to achieve a seamless shopping journey.

**Keywords:** Seamless shopping journey, omnichannel, retailer integration, customer engagement, retailer switching, basket size

## **Designing a seamless shopping journey through omnichannel retailer integration**

### **1. Introduction**

Nowadays, omnichannel consumers expect channels to be connected so that they can switch seamlessly from one channel to another (Bell et al., 2014). A *Harvard Business Review* study revealed that 73% of 46,000 global consumers use multiple channels throughout the shopping journey (Sopadjieva et al., 2017). In response to consumer expectations, 91% of leading global retailers focus their omnichannel strategies on achieving seamless shopping journeys (Brightpearl & Multichannel Merchant, 2017). Many retailers recognize that a seamless experience is critical to the success of their omnichannel strategies (Nordstrom Inc., 2018; Walmart, 2019). Nevertheless, only 8% believe that they are currently meeting customers' seamless omnichannel shopping journey expectations (Brightpearl & Multichannel Merchant, 2017) because omnichannel strategies are complex to implement and suffer from poor integration of data and IT systems (Saghiri et al., 2017; Zhang et al., 2010).

Literature on omnichannel retailing has traditionally focused on elements of retailer channel integration (Cao & Li, 2015; Oh et al., 2012) that impact firm performance regarding sales growth, such as integration of promotions, order fulfillment (Bell et al., 2014) and customer service (Brynjolfsson et al., 2013). Customer experience research has often concentrated on consumer reactions to channel integration (Grewal et al., 2016; Puccinelli et al., 2009; Verhoef et al., 2009) and its impact on channel loyalty (Frasquet & Miquel, 2017), omnichannel usage (Gao et al., 2021; Shen et al., 2018), consumer empowerment (Zhang et al., 2018) and customer engagement (Lee et al., 2019). Few studies have considered both retailer omnichannel strategies and the customer perceptions of these strategies. Yet, the use of the term omnichannel experience suggests a dual perspective on how customers experience companies' omnichannel strategies. Although the success of an omnichannel retailing strategy relies on the quality of channel integration (Saghiri et al.,

2017), there is limited knowledge about how to provide seamless shopping journeys so that customers will be engaged, avoid switching to another retailer and increase their basket size. To address this gap, we investigate the effect of retailer omnichannel strategies on seamless shopping journeys, and examine how they affect customer engagement, retailer switching and basket size.

This paper makes several contributions. First, it better conceptualizes the seamless shopping journey and empirically develops a seven-item scale to measure consumer perceptions of experiences with various omnichannel product categories. The scale is easy to administer, broadens the scope of the concept and clarifies the conceptualization (Brakus et al., 2009). Second, we investigate how retailers can provide customers with a seamless shopping journey. Whereas previous studies have asked customers to evaluate perceptions of channel integration (Bendoly et al., 2005; Frasquet & Miquel, 2017), we examine the extent to which retailers are integrated, updating existing channel integration measures (Cao & Li, 2015) to account for current initiatives. We also investigate the link between omnichannel integration and customer perceptions of the seamless shopping journey. Third, we explore empirically the mediating role that the seamless shopping journey plays in the relationship between omnichannel integration and consumer behaviors such as basket size, customer engagement and retailer switching. We thus develop a conceptual framework that enhances understanding of seamless shopping journey attainment.

We begin by introducing the conceptual background and underlying theories. We then present a conceptual framework linking omnichannel integration strategies, the seamless shopping journey and behavioral consequences. We develop a measurement scale for seamless shopping journeys and test our conceptual framework empirically. After analyzing the findings, research and managerial implications are outlined.

## **2. Conceptual background**

The influence of online and offline retail environments on consumer behavioral responses is grounded in servicescape theory (Bitner, 1992; Harris & Goode, 2010), based on the stimulus–organism–response (SOR) framework (Mehrabian & Russell, 1974). A retailer’s environment and

consumer response are causally linked, such that the retailer environment (S) generates consumers' cognitive and affective responses (O), which affect their behavior (R). The servicescape perspective identifies that managers continually "plan, build and change" the retail environment to control consumer responses (Bitner, 1992, p. 57). We therefore propose that managers develop the shopping environment across channels and touchpoints (S) to create seamless customer shopping journeys (O) (Hilken et al., 2017), and that this influences customer behavior (R). This theoretical perspective suggests that consumers are influenced by the retail environment to the extent that behaviors can be predicted, enabling retailers to achieve their marketing objectives (Bitner, 1992; Mari & Poggesi, 2013).

### *2.1. Conceptualizing the seamless shopping journey*

The customer journey is a process a customer undergoes to access or use a company's offering (Følstad & Kvale, 2018). During their journey, customers use multiple touchpoint elements that impact their experience (Tueanrat et al., 2021). Customers' evaluation of their journey differs from the sum of the evaluation at each touchpoint interaction, as explained by gestalt theory, wherein perceptual wholes differ from collections of their parts, and the whole is greater than the sum of its parts (Wertheimer, 1938). People perceive the whole of an object (i.e., the gestalt) rather than analyzing its separate constitutive elements (i.e., the parts). These perceptions are called holistic or gestalt processing at the gestalt level and atomistic processing at the parts level (Koffka, 1935). Therefore, from a customer shopping journey perspective, customers perceive the whole shopping experience as one unit rather than analyzing each element in isolation. Gestalt theory acknowledges that seamless shopping journeys comprise several elements, including interactions with channels, devices and touchpoints, and that evaluation of the seamless shopping journey differs from the sum of the evaluation of each interaction in isolation. This suggests that measuring the sum of customers' perceptions of each interaction with channels or touchpoints is futile, as the whole is more than the sum of its parts. Therefore, gestalt theory contributes to the underlying concept of a

seamless shopping journey by emphasizing that the overall evaluation of the shopping journey differs from the sum of evaluations of each interaction with channels and devices.

The seamless shopping journey is characterized by consistent and continuous shopping interactions with the retailer across channels. Interactions occur over the whole customer journey, allowing customers to smoothly move between channels. First, the seamless shopping journey includes the similarity of each interaction with a touchpoint, as the consumer switches across several channels (Schmitt, 2010; Verhoef et al., 2015). When channels of a single retailer are perceived as one brand (e.g., same information, look and feel), transitions are seamless between them (Hakanen & Jaakkola, 2012; Homburg et al., 2017). Conversely, if the store price is different to the online price, for example, congruency is lacking and the shopping journey is inconsistent; thus, the consumer will deliberate over the next step to continue the journey. Similarity of channels and touchpoints therefore provides consistency in shopping across channels (Sousa & Voss, 2006).

Second, “customers derive a seamless experience when they switch channels during their interaction with the retailer” (Goersch, 2002, p. 749). The seamless shopping journey identifies movement between channels and touchpoints that promotes continuity of the customer journey (Lemon & Verhoef, 2016). When switching channels is difficult, the shopping task is perceived as problematic, prompting the customer to exert perceived unnecessary effort, which affects journey progression. Suppose, for example, that a consumer places an item in their basket on the retailer website and continues their shopping journey on the mobile app, but then find that the item is not in their basket and have to search for it again (Homburg et al., 2017). This adds complexity to the switch between channels and inhibits a continuous shopping journey. Therefore, we define the seamless shopping journey as *the customer perception of a continuous and consistent shopping journey across multiple channels with a single retailer*.

In line with our definition, two dimensions are significant to customers’ ability to switch seamlessly across channels when shopping: continuity and consistency (see Table 1). Both

dimensions are pivotal to creating a seamless shopping journey (Banerjee, 2014; Grenha Teixeira et al., 2017). Next, we describe these dimensions in detail.

***-Insert Table 1 here-***

### *2.1.1. Continuity*

Continuity is physical simultaneous progression of a seamless shopping journey across channels throughout the search, purchase and aftersales phases (Verhoef et al., 2015). Shopping journeys often occur over several channels, and switches between them can be constant, interchangeable or simultaneous (Verhoef et al., 2015). Customers achieve seamlessness when they can transition across channels (Kumar, 2018, Piotrowicz & Cuthbertson, 2014) that retailers have made significant efforts to integrate (Banerjee, 2014; Hakanen & Jaakkola, 2012; Payne & Frow, 2004). For example, if the retailer's physical store does not allow a customer to place an online order in store, the customer cannot connect their experience between channels, which creates a barrier to simultaneous movement from one channel to the next. Therefore, we define *continuity* as the customer journey progression across channels.

### *2.1.2. Consistency*

Consistency is the cognitive judgment of perceiving the same benefits across channels used during the shopping journey. When customers perceive such consistent value, it facilitates a seamless shopping journey (Piotrowicz & Cuthbertson, 2014). In an omnichannel context, Cao and Li (2015) identified benefits including aligned product assortment, price and promotion. Customers recognize homogeneity of these benefits on each channel they interact with, fostering a harmonious customer journey with the brand. For example, if a customer sees a EUR 50 price for a product on the website but finds the same product in store is EUR 60, this is inconsistent price information. Therefore, we define *consistency* as the perception of benefits such as same product assortment, price, and offers redeemable across channels (Cao & Li 2015; Grewal et al., 1998).

Accordingly, we propose that customers perceive continuity and consistency across all channels while switching among them (*continuity*) and receiving the same benefits of product availability, prices and offers on every channel (*consistency*). These two dimensions combine to explain the seamless shopping journey.

## 2.2. Omnichannel integration

As the number of channels increases, retailers have sought to coordinate processes across them (Neslin et al., 2006). As such, channel integration encompasses the employment of more than one channel (Payne & Frow, 2004) and refers to the extent to which channels are strategically designed, managed, coordinated and operationalized (Neslin et al., 2006). As channel integration has developed in retailing over time, literature has examined various levels of operations; cross-channel integration, which is the partial integration of service operations across channels (Bendoly et al., 2005; Cao & Li, 2015; Herhausen et al., 2015; Li et al., 2018; Zhang et al., 2010); integration of marketing mix elements (Frasquet & Miquel, 2017; Lee & Kim, 2010); integration quality, which refers to the breadth of channel choice and channel-service configurations (Hossain et al., 2019; Lee et al., 2019; Shen et al., 2018; Sousa & Voss, 2006); and integration of logistics, fulfillment, IT planning, and data (Mirzabeiki & Saghiri, 2020; Oh et al., 2012; Saghiri et al., 2017). Given these varying levels, omnichannel emphasizes an optimized level of channel integration that creates synergies between all channels and touchpoints (Verhoef et al., 2015). Cao and Li (2015, p. 200) provided the most wholesome and comprehensive definition of channel integration; “the degree to which a firm coordinates the objectives, design, and deployment of its channels to create synergies for the firm and offer particular benefits for its consumers.” A benefit of firm-controlled omnichannel integration is the provision of seamless shopping experience across channels for customers (Sousa & Voss, 2006; Lee et al., 2019). First, this identifies integration as a firm-controlled set of activities to which the consumer can respond by evaluating the seamlessness of their shopping journey. Second, it suggests a cause–effect relationship between firm-controlled channel integration and the delivery of beneficial outcomes for the consumer. Third, omnichannel



integration can exist to varying degrees, which implies that firms can be integrated to a greater or lesser extent and that consumer reactions to channel integration can be more or less favorable. When an omnichannel retailer implements click-and-pick up instore, has aligned prices and loyalty programs across channels, and operates buy online and return in store, this leads consumers to continue their shopping experience on every channel and view consistent offers and prices across channels, which make their shopping journey seamless. On the other hand, if a retailer's physical store does not allow customers to check product availability online via a kiosk or a mobile app; does not allow customers to buy online while being in the store; and does not allow in-store customers to use their loyalty program online, customers are not able to continue their shopping journey on another channel, which does not lead to a seamless shopping journey. Contributing to servicescape theory (Bitner, 1992), we propose that retailer channel integration be considered a company strategy or environmental dimension that influences the internal customers response, that is, the customers' perception of the shopping journey seamlessness. Seamlessness identifies customers' perception of their shopping journey regardless of channels used and retailer initiatives observed during the shopping journey. Companies put in place several strategies striving to integrate channels, which will create more efficient shopping environments, prompting customers to perceive their shopping journey as seamless. Thus:

H1. The more retailers integrate their channels, the more customers evaluate their shopping as seamless.

### *2.3. Consequences of omnichannel integration*

We propose (following Bitner, 1992; see Figure 1) that the seamless shopping journey is an internal response that stimulates behavioral consequences, such as customer engagement, retailer switching and basket size (Hansen & Sia, 2015; Stone et al., 2002; Wallace et al., 2004).

***-Insert Figure 1 here-***

### 2.3.1. *Customer engagement*

Most definitions of customer engagement agree that it entails customer–firm interactions that go beyond purchase (Brodie et al., 2011; Jaakkola & Alexander, 2014; Van Doorn et al., 2010). Customers are not passive entities but are viewed as constructive contributors to interactions that can shape firms’ offerings and co-create value (Hollebeek et al., 2018). For example, engaged customers might voluntarily leave product reviews or provide assistance to other customers (Carlson et al., 2018). Engagement requires resource investments of time, energy and effort (Alexander et al., 2018). As seamless shopping journeys encompass continuity and consistency between channels, this can engender trust in the brand (Payne & Frow, 2004), which should result in higher commitment and motivation (Jaakkola & Alexander, 2014; Van Doorn et al., 2010). Furthermore, seamless shopping journeys can be perceived as convenient, since consumers avoid shopping problems that require more time and effort during the experience (Lemon & Verhoef, 2016); this may promote positive opportunities to engage during the experience, or it may free up time to engage post-purchase (e.g., publish an online review). Interaction with shopping channels has been discussed as a connected and engaging experience (Hansen & Sia, 2015; Kumar, 2018) and integrated interaction (i.e., consistency of interactions across channels increases customer engagement; Lee et al., 2019). Thus:

**H2A.** Seamless shopping journeys increase customer engagement.

**H2B.** Seamless shopping journeys mediate the relationship between omnichannel integration and customer engagement.

### 2.3.2. *Retailer switching*

Retailer switching is the termination of a relationship with the service provider and the switch to an alternative provider (Zeelenberg & Pieters, 2004). As a shopping journey may occur over several channels, problems that inhibit continuity can cause customers to search for a better experience elsewhere. Customer journeys that are repeatedly negative lead to customers disengaging from the brand and seeking other solutions (Zarantonello et al., 2018). Furthermore,

cross-channel failures in multichannel retailing prompt customers to switch to another retailer (Wallace et al., 2004). Therefore, as customers move simultaneously among channels, a lack of integration may decrease perceptions of seamlessness, resulting in a switch to a competing retailer.

Thus:

**H3A.** Seamless shopping journeys decrease the likelihood of switching to other retailers.

**H3B.** Seamless shopping journeys mediate the relationship between omnichannel integration and retailer switching.

### 2.3.3. *Basket size*

Basket size is the total number of items in the shopping basket (Desai & Talukdar, 2003).

Consumers who shop across multiple channels purchase up to four times more than those who shop in a single channel (Stone et al., 2002). Seamless shopping journeys spanning several channels have been linked to more efficient product flows, better convenience for customers (Bijmolt et al., 2021) and access to a larger assortment and availability of information, all of which reduces uncertainty in purchases (Kalyanam et al., 2017). Shopping over several channels reduces the risks of buying products that are unsuitable, thus increasing the likelihood of customers finding what they are looking for. As shopping over several channels is more convenient and can reduce purchase uncertainty, consumers who perceive a shopping journey as seamless are likely to put more items in their basket. Thus:

**H4A.** Seamless shopping journeys increase basket size.

**H4B.** Seamless shopping journeys mediate the relationship between omnichannel integration and basket size.

## 3. Scale development and validation

To develop the seamless shopping journey scale, we followed established scale development procedures (Churchill, 1979, 2012) and prior studies (Böttger et al., 2017; Brakus et al., 2009; Homburg et al., 2015; Kuehnl et al., 2019). The process is described in Table 2.

***-Insert Table 2 here-***

We first reviewed all existing scales linked to seamless shopping journey to check whether they met our objectives. We found a lack of strong customer experience measures in general. According to Lemon and Verhoef (2016), customer experience is entrenched in concepts including service quality (Cronin et al., 1997), customer satisfaction (Oliver, 1980), shopping value (Sirdeshmukh et al., 2002) and loyalty (Pappu et al., 2006; Yoo & Donthu, 2001). More recent measures are linked to the customer experience, such as the brand experience scale (Brakus et al., 2009) and the customer experience quality scale (Klaus & Maklan, 2012). Many such scales were developed when customers used only one channel, and are inappropriate here; they measure the overall experience, are responses to the customer journey, or do not consider customer interactions with each channel along shopping stages or movement between channels. We also reviewed multiple-channel integration scales (Bendoly et al., 2005; Cao & Li, 2015; Frassetto & Miquel, 2017; Lee & Kim, 2010), but these were unsuitable because of their focus on internal retailer elements of channels rather than customer perceptions. For example, they include items for integrated marketing communications, inventory and substitute products, and they make few references to consistency or continuity of experience.

### *3.1. Item generation*

We created a large pool of items from our literature review and exploratory research. When little knowledge is available about a phenomenon, field research is recommended for conceptual development and cross-validation (Edmondson & McManus, 2007). Therefore, we conducted 20 exploratory interviews (65% female, average age 33, average duration 1 hour) with respondents in the UK to identify the topic in the current environment, thereby confirming the construct and its dimensions and determining relevancy from the consumer perspective. Respondents were asked what they considered to be a seamless shopping journey in terms of good and bad aspects of recent shopping experiences with brands. The interviewer then probed the construct's content and related dimensional considerations, querying any missing dimensions (affective, physical or social). The

customer data were transcribed and analyzed, and several items generated. Items were also drawn from the literature and existing scales (Babin et al., 1994; Brakus et al., 2009; Cao & Li, 2015; Klaus & Maklan, 2012), yielding 29 items.

### 3.2. Scale purification

Nine marketing professors conducted an item-purification task in the form of a content validity assessment (Bearden et al., 2011; Blumberg et al., 2005; DeVellis, 2012). They categorized the items into three groups: essential to the scale, useful but not essential, and not essential. A content validity ratio (CVR) statistical test (Lawshe, 1975) was implemented to substantiate the observed judgments. The CVR is a linear transformation of a proportional level of agreement regarding how many experts within a panel rate an item as essential, calculated as:

$$\text{CVR} = \frac{\text{NE} - (\text{N}/2)}{\text{N}/2}$$

where NE is the number of panel members indicating an item as essential, and N is the number of panel members. As there were nine judges in this case, a  $\text{CVR}_{\text{critical}}$  of .778 or above is required (Ayre & Scally, 2014) for an item to be retained. Of the 29 items, 21 were retained in two dimensions, nine for *continuity* and 12 for *consistency*.

Data were collected from 301 consumers in the UK (Study 1, 57% female, median age 30–39) via a reputable data collection agency. Respondents were asked to recall a shopping experience within the last three months. To verify that they met the conditions for shopping over several channels, we stipulated that the recalled experience contain at least two channels, and they were asked to indicate the channels used (Internet, telephone, mobile phone, app, tablet, store and in-store interactive kiosk/tablet). To ensure relevance to the majority of omnichannel shopping experiences, the recalled purchase experience had to involve a product in the top-cited omnichannel shopping product categories as defined in recent research (Saleh, 2016): consumer electronics, clothing/apparel, toys, home appliances, automotive and home improvements. Respondents rated each item on a seven-point Likert scale. An instructional check, which requested the participant to

click on the “strongly disagree” option, was included to ensure that they had read the items carefully. Fifteen participants were excluded from the study upon failing this instructional check. Descriptive statistics of the samples are given in Appendix A.

The data were analyzed using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). An EFA with varimax rotation identified two factors with eigenvalues greater than 1, and these factors explained 67% of the variance. The EFA results are given in Appendix B.

We inspected loadings with low individual reliabilities, removing 14 items. Of the remainder, four items on the continuity dimension loaded onto the first factor, and three on the consistency dimension loaded onto the second factor. We then ran CFA using Stata 12 statistical software. A model containing two latent factors, with the two dimensions as per the definition, showed excellent model fit (comparative fit index (CFI) = 0.992, Tucker–Lewis index (TLI) = 0.987, root mean square error of approximation (RMSEA) = 0.040, squared mean squared residual (SRMR) = 0.026, chi-squared ( $\chi^2$ ) = 19.387, degrees of freedom (df) = 13). All standardized loadings ranged between 0.71 and 0.76. The average variances extracted (AVE) and composite reliabilities (CR) were above the recommended thresholds (Hu & Bentler, 1995): for the continuity dimension, AVE = 0.63 and CR = 0.87; for the consistency dimension, AVE = 0.55 and CR = 0.78. The coefficient alpha values for the continuity and consistency dimensions were 0.81 and 0.78, respectively, and thus above the recommended thresholds (Fornell & Larcker, 1981) and providing evidence of convergent validity. These results are presented in Table 3.

***-Insert Table 3 here-***

### 3.3. Scale dimensionality

Two tests were used to investigate independence between the two dimensions of the scale: discriminant validity between dimensions and analysis of alternative models. Discriminant validity between factors in a model was first assessed using the Fornell and Larcker (1981) criterion, according to which the AVEs for each dimension should be higher than the squared correlation between them. The AVEs (*continuity* = 0.63 and *consistency* = 0.55) were higher than the squared

correlation (0.33) between variables, thus confirming discriminant validity between the two dimensions. To further clarify independence, an analysis of alternative models with CFA was carried out. A null model, which assumed correlations of 0 between variables, was compared with a one-factor model, where all latent variables were loaded onto one factor, and the two-factor model. The two-factor model provided a considerably better fit (CFI = 0.888, TLI = 0.832, RMSEA = 0.143, SRMR = 0.062,  $\chi^2 = 100.263$ ,  $df = 14$ ) than the one-factor model or null models.

### 3.4. Scale validation

To ensure that the scale was replicable and generalizable, we applied it to a second population. Study 2 (n = 322, 32.4% female, median age 18–29) was conducted with consumers in the United States recruited via a reputable data collection agency. As in Study 1, a questionnaire was administered and the items were assessed using a seven-point Likert scale.

The same analysis procedures were used. The EFA and CFA produced similar results, confirming the two factors identified in Study 1. The replication study produced a model with excellent fit (CFI = 0.994, TLI = 0.991, RMSEA = 0.041, SRMR = 0.022,  $\chi^2 = 20.045$ ,  $df = 13$ ). All indicators were between 0.71 and 0.85, and model comparison showed that the two-factor model was superior to the null and one-factor models. Table 3 shows the validated scale and standardized loadings. The AVEs (*continuity* = 0.65 and *consistency* = 0.59) and CR values (*continuity* = .88 and *consistency* = 0.81) were above the recommended thresholds (Hu & Bentler, 1995), which confirmed convergent validity. The squared correlation between the dimensions (0.50) was below the AVE values, which confirmed discriminant validity at the dimensional level (Fornell & Larcker, 1981).

### 3.5. Discriminant validity

Study 3 (n = 323, 68.7% female, median age 30–39) was carried out with consumers in the US to assess whether the seamless shopping journey construct was distinct from related constructs. The purpose of discriminant validity is to ensure that newly developed scales are not related to existing scales, and are indeed original (Campbell & Fiske, 1959). The two seamless shopping

journey dimensions were assessed for distinctiveness against four other closely related constructs established in marketing research. We asked respondents to rate our seven-item scale for a third time along with satisfaction (Oliver, 1980), shopping value (Sirdeshmukh et al., 2002), loyalty (Pappu et al., 2006; Yoo & Donthu, 2001) and service quality (Cronin et al., 1997).

We then validated the seamless shopping journey scale for a third time (see Table 3). First, correlations between the two seamless shopping journey dimensions and the four related constructs were squared and compared to their AVEs for each construct (Fornell & Larcker, 1981). All AVE values were higher than the squared correlation between each pair of dimensions (see Appendix C). Second, the seamless shopping journey scale was set as an independent construct, and each related construct as a dependent dimension, which provided several two-dimensional models. The two-factor models were compared to one-factor models where both seamless shopping journey and the other construct items featured on one factor. The two-factor models consistently provided a better model fit than the single-factor models, indicating discriminant validity.

### *3.6. Nomological validity*

To assess nomological validity, we examined correlations between the seamless shopping journey dimensions and satisfaction (four items; Oliver, 1980), shopping value (three items; Sirdeshmukh et al., 2002), service quality (five items; Cronin et al., 1997), loyalty (four items; Pappu et al., 2006; Yoo & Donthu, 2001) and switching intention (three items; Jones & Taylor, 2007; Romani et al., 2012). We administered these scales alongside the seamless shopping journey dimensions in the questionnaires for Studies 2, 3 and 4. In Study 2, we considered satisfaction, shopping value and service quality; in Study 3, we added loyalty; in Study 4, we replaced service quality with switching intention. All correlations were significant, ranging from -0.25 to 0.65 (see Appendix D). The seamless shopping dimensions are therefore correlated with theoretically related marketing concepts, providing support for nomological validity. To further demonstrate theoretical relationships between SSJ and other constructs, we include a full predictive validity model containing satisfaction (Oliver, 1980), shopping value (Sirdeshmukh et al., 2002) and loyalty



(Pappu et al., 2006; Yoo & Donthu, 2001). This model supports effects of the previously untested seamless shopping construct on satisfaction and shopping value, leading to loyalty. Further explanation of this model is provided in appendix E.

### 3.7. *Cross-national invariance*

As the scale was tested using population samples in the UK and the US, we followed a standardized procedure for assessing validity and reliability across multiple groups (Hair et al., 2010). Measuring invariance determines whether, under different conditions of observation and study phenomena, measurements are measuring the same representations of a construct (Hair et al., 2010). To enhance scale validity, we assessed whether the measure meets configural, metric and factor variance measurement-invariance requirements. The principle of configural invariance is that the patterns of salient and nonsalient factor loadings should have the same configuration across different populations. First, by comparing two-group data from Studies 1, 2 and 3 across the two populations, we found support for configural invariance by achieving an excellent fit (CFI = 0.992, TLI = 0.987, RMSEA = 0.045, SRMR = 0.023,  $\chi^2 = 51.350$ ,  $df = 26$ ). Second, metric invariance involves assessing equivalent scale metrics by constraining all factor loadings to be equal across populations. The chi-square value increased from the configural model to the metric invariance model (CFI = 0.993, TLI = 0.990, RMSEA = 0.040, SRMR = 0.029,  $\chi^2 = 53.937$ ,  $df = 31$ ); however, as there was no substantial change in fit, full metric invariance is supported. Factor variance invariance indicates the mean scores of latent factor variance across populations by constraining factor variances to be equal. There was no significant increase in the chi-square value (CFI = 0.993, TLI = 0.993, RMSEA = 0.035, SRMR = 0.043,  $\chi^2 = 61.290$ ,  $df = 39$ ). After releasing the variances of each factor simultaneously, the fit of the model was essentially the same. Error variance invariance specifies that the degree of measurement error is invariant across countries. Partial invariance of error variance was rejected, with a highly significant chi-square. After relaxing the invariance constraints on all items on the continuity dimension, this resulted in adequate model

fit (CFI = 0.970, TLI = 0.970, RMSEA = 0.071, SRMR = 0.062,  $\chi^2 = 140.88$ ,  $df = 42$ ). Only items for the consistency dimension were error-invariant across both populations, and the continuity dimension exhibited a 0.04 difference. This could be explained by general differences in the strength of opinions between consumers in the US versus the UK. For example, 15% of the former chose the strongest statement (“strongly agree”) for items in the continuity dimension, compared to 10% of the latter. Items on the continuity dimension are more subjective than the more factual consistency items (concerning prices and offers), which explains why variance occurred in the continuity dimension only.

#### **4. Testing the conceptual framework**

##### *4.1. Methodology and measures*

We conducted a survey with consumers in the UK (Study 4:  $n = 344$ , 67.7% female, average age 37). As in the previous studies, respondents were asked to recall a shopping experience within the last three months where they had used at least two channels, and to specify the retailer. Following clarification of the recalled experience, respondents were asked to rate it on the seamless shopping journey scale and outcomes. An instructional check was included to ensure that participants had read the items carefully. All consumer studies were carried out using reputable data collection agencies.

To measure omnichannel integration, we assessed several scales from the literature. As we found no single channel integration scale that was adequate for modern-day omnichannel demands, we developed a new measure. We reviewed all channel integration scales in the literature (Bendoly et al., 2005; Cao & Li, 2015; Frassetto & Miquel, 2017; Lee & Kim, 2010), considering 63 items: eight from Bendoly et al. (2005), 27 from Cao and Li (2015) organized into four evolutionary levels, 17 from Frassetto and Miquel (2017) in two dimensions (reciprocity and coordination), and 19 from Lee and Kim (2010) in five dimensions (information consistency, freedom in channel selection, email marketing effectiveness, channel reciprocity and appreciation of store-based

customer service). Our assessment identified limitations. First, several scales cover various aspects of integration (Bendoly et al., 2005; Frassetto & Miquel, 2017; Lee & Kim, 2010) but fail to outline the degree of integration (Cao & Li, 2015), since they were developed at various stages over the last 20 years. Second, due to the pace of evolution in channel integration (Verhoef et al., 2015), scales quickly become outdated. To address these limitations, and utilizing our review of channel integration literature and current retail practices (e.g., Amazon Go), we created seven additional items to cover integration activities between mobile and store, including a barcode scanner on an app and integration between online devices, such as basket storage across online channels.

We added the new items to the 63 established items, giving a total of 70 items. We then assessed content validity and removed all duplicate, ambiguous or inappropriate items, yielding 34 items. As we were reviewing the integration of several retailers from outside the firm, a further 10 items relating to internal operations were removed, as they could not be measured objectively from outside the firm and had indirect impacts on the customer experience. We removed a further three items because there was little evidence of their relevance to retailers involved in the study. Thus, the final integration measure comprised 21 items (Table 4).

***-Insert Table 4 here-***

***-Insert Table 5 here-***

To establish the order, pattern and hierarchy of omnichannel integration, we used Guttman scalogram analysis (Guttman, 1944, 1950). This hierarchical approach has been used to identify the ordering of marketing decision support systems (Wierenga et al., 1994), consumption response (Ganglmair-Wooliscroft & Wooliscroft, 2013), customer services (Domegan, 1996) and loyalty programs (Bruneau et al., 2018). The Guttman scalogram analysis (1944, 1950) makes it possible to determine whether a set of objects can be ordered into an internally consistent, unidimensional hierarchical scale. Thus, it affords a procedure for ranking objects (i.e., retailers) along a single dimension (i.e., the degree of omnichannel integration). Initially developed for dichotomous responses, the technique develops a probabilistic approach to increasing levels of difficulty, such

that a positive response to a more complex item implies positive responses to less complex items. For example, given two questions where the second is more difficult than the first, if the respondent answers the more difficult question, it is assumed that they will also answer the easier question.

To construct the scalogram, we observed 17 retailers in the UK using the 21-item omnichannel integration measure. We inserted the dichotomous data into a matrix where the rows represent the integration items and the columns represent the retailers. Each cell within the matrix was completed to indicate the retailers' compliance (1) or non-compliance (0) with each item. For example, if the retailer had aligned price across channels, it scored 1 for the corresponding item; if a retailer had different prices online versus in store, it scored 0. Each retailer (column) and each item (row) was then assigned a composite score, with the rows ranked in descending order and the columns composite scores ranked in ascending order. A hierarchy thus emerged from the matrix, with positive values on the right and zero values on the left, ranked from top (compliance with integration item) to bottom (non-compliance with integration item). Positive values then emerge toward the top right of the scalogram and zero values emerge toward the bottom left.

The probabilistic perspective of the Guttman scalogram makes a perfect result unlikely. We therefore produced a reproducibility coefficient (Guttman, 1950) where we calculated the amount of erroneous data that did not fit the pattern (see Table 5). The reproducibility coefficient was .927, which is above the recommendation of .9 (Guttman, 1950). The Guttman ranking confirms a hierarchy in response patterns for the set of items outlined in Table 4, where items at the bottom are those present in omnichannel retailers with a high degree of integration and items at the top are strategies implemented by omnichannel retailers with a low degree of integration.

Customer engagement was measured using a two-dimensional seven-item Likert scale (Hollebeek et al., 2014). Retailer switching was measured using a three-item Likert scale adapted from Romani et al. (2012). All items were assessed using a seven-point Likert scale (1 = strongly disagree, 7 = strongly agree). Finally, basket size was measured as the number of items purchased during the shopping experience (Nichols et al., 2015). Appendix F shows all behavioral items used.

#### 4.2. *Multilevel model*

We used multilevel modeling (MLM) to test the hypotheses. Our data encounter an observed predictor variable (omnichannel integration) and perceived dependent variables as rated by customers of the retailer, and the MLM method allows for the nested structure within the data. This overcomes the homogeneity of regression slopes found in traditional structural equation modeling (SEM) and allows for variability in regression slopes. Thus, MLM accounts for differences between retailers and allows data at the customer and retailer levels to be considered simultaneously, while also calculating interactions between levels. This approach also estimates standard errors, significance levels and confidence intervals more accurately than traditional SEM by considering the bias of standard errors that result from independent observations common in the data. Ignoring the nested structure of the data would lead to misspecification of the model and standard error bias (Hox, 2010). By using MLM, we can therefore test the hypotheses by examining the indirect effects at both the retailer and customer levels. All hypotheses that contain A focus on relationships at the customer level (level 1), while all hypotheses that contain B focus on both retailer and customer levels (levels 2 and 1).

We undertook several procedures to examine scale reliability and validity. First, we used EFA and CFA to investigate the structure and variance in the data. This revealed that each construct loaded onto its own factor and explained 69% of the variance. The model provided satisfactory fit to the data ( $\chi^2 = 568.281$  (202), RMSEA = .073, CFI = .922, TLI = 0.911). Cronbach's alpha values for each construct ranged from .743 to .920. Supporting convergent validity, all CR values were above the .7 threshold, and all AVE values were above .5 (Fornell & Larcker, 1981). Confirming discriminant validity, all AVE values were higher than the squared correlation between each pair of constructs (Fornell & Larcker, 1981). To check for common method variance, all items were loaded onto a single factor. All single-factor models provided significantly worse fit than the structured model. The proportions of variance in the single-factor models were also much lower than for the structured models (43.63%).

To examine the requirements for MLM, we tested the hierarchical structure of the data (consumers nested within retailers) by analyzing customer-level variance. We estimated a baseline model, containing no predictor variables, to determine variability among consumers that is different from zero. To test for variance among groups, we conducted an intraclass correlation test (ICC) (Duncan et al., 1997) and design effects calculations (DEFF) (Kish, 1995), as follows:

$$ICC = \sigma^2_B / \sigma^2_B + \sigma^2_w$$

where  $\sigma^2_B$  is the variance between groups and  $\sigma^2_w$  is the variance within groups, and

$$DEFF = 1 + (c - 1) * ICC$$

where  $c$  = average cluster size.

The ICC score indicated that 6% of the differences in customer perceptions could be attributed to retailer differences. The DEFF score was 1.2. As these results significantly differed from zero ( $p < .05$ ) (Swoboda et al., 2016), we proceeded with the MLM.

The MLM analysis procedures were carried out in a stepwise manner. In both studies, we started with a baseline model that contained only customer-level constructs. In the second step, the predictor variable (omnichannel integration) was added. The third step included random intercepts only, and the fourth step included random intercepts, slopes and cross-level variances. To test the hypotheses, we used the random intercept and random slopes models containing cross-level interactions. The mediating variable (seamless shopping journey) was grand-mean centered, allowing investigation of within and between-group indirect effects (Krull & MacKinnon, 2001; Tofghi & Thoemmes, 2014).

### 4.3. Results

In our framework, we used a 2-1-1 MLM, where 2 represents the higher-level and 1 the lower-level effects. The levels of each of the X (retailer omnichannel integration), M (the mediator, seamless shopping journey) and Y variables (outcomes) dictate the within- and between-effects that can be measured and interpreted (Zhang et al., 2010). Within-effects occur within groups (i.e., differences in individual customer responses). Between-effects occur between groups (i.e.,

differences between groups of customers). The relationship between the X and M variables means that the traditional mediation path  $a$  in our model takes place from level 2 (X) to level 1 (M) (Baron & Kenny, 1986; Zhang et al., 2008). Because of problems with conflated effects (Zhang et al., 2008), we were only able to hypothesize, measure and interpret the within-group effects for path  $a$  in our model.

In contrast to the  $a$  path, the  $b$  path occurring between M and Y in our model (all the A hypotheses) occurs at the individual customer level (the 1-1 part of the 2-1-1 model). Therefore, we measured and interpreted the within-effects only. Next, we discuss the results of all studies regarding direct and indirect effects.<sup>1</sup> Table 6 gives the results for each hypothesis.

***-Insert Table 6 here-***

#### *4.3.1. Direct effects*

Regarding the direct effects of retailer omnichannel integration on seamless shopping journeys, the effect was positive and significant ( $\beta = .12, p < 0.05$ ), supporting H1. In support of H2A, positive and significant relationships were found between seamless shopping journey and both customer engagement dimensions. For the cognitive dimension ( $\beta = .26, p < .001$ ) and the affective dimension ( $\beta = .45, p < .001$ ), the results support the claim that seamless shopping journeys lead to customer engagement. A negative significant indicator was found between seamless shopping journey and retailer switching ( $\beta = -.38, p < .001$ ). H3A is therefore supported. In support of H4A, a positive and significant relationship was found between seamless shopping journey and basket size ( $\beta = .18, p = .05$ ). This indicates that seamless shopping journeys lead to greater basket size.

#### *4.3.2. Indirect effects*

Regarding indirect effects, the direct paths from seamless shopping journey to customer engagement are both positive and significant. The indirect effect is supported in both dimensions,

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<sup>1</sup> We also investigated total effects, but found no significant results.

cognitive ( $\beta = .03, p < .05$ ) and affective ( $\beta = .05, p < .05$ ). As the direct paths between omnichannel integration and both customer engagement dimensions are not significant, H2B is supported; seamless shopping journey fully mediates the omnichannel integration–customer engagement relationship. The indirect effect between omnichannel integration and retailer switching, mediated by seamless shopping journey, is significant ( $\beta = -.04, p < .05$ ). As the direct path is not significant, H3B is supported; seamless shopping journey fully mediates the omnichannel integration–retailer switching link. Lastly, the direct path between omnichannel integration and basket size is not significant ( $\beta = .09, p = ns$ ), and nor is the indirect effect ( $\beta = .02, p = ns$ ). Thus, H4B is not supported; seamless shopping does not mediate the omnichannel integration–basket size relationship.

## 5. General discussion

This paper extends knowledge of the chain of events from omnichannel integration to the seamless shopping journey and behavioral outcomes, which is central to omnichannel retailing strategies. We provide a conceptualization of the seamless shopping journey, which is the customer perception of a continuous and consistent shopping journey across multiple channels with a single retailer and includes two dimensions, continuity and consistency. We provide a seven-item measurement tool. We demonstrate that omnichannel integration leads to seamless shopping journeys, and that seamless shopping journeys lead to lower retailer switching, higher customer engagement and larger basket size. This paper provides a framework around the seamless shopping journey; it contributes to customer experience and omnichannel theory, and to managerial practice, in the ways discussed below.

### 5.1. Theoretical contributions

First, we provide a conceptualization of the seamless shopping journey and a suitable measurement instrument. We empirically developed a short scale, validating it by collecting data sets across two populations (consumers in the UK and the USA), and proving nomological validity



by measuring relationships using prominent customer experience evaluation scales. As we developed the scale on the basis of experiences with various omnichannel product categories, it applies to many omnichannel retailers, various product categories and different shopping experiences. We therefore suggest that retail practitioners adopt the scale to assess their omnichannel strategies.

Second, we identify how omnichannel strategies influence customers' perceptions of a seamless shopping journey, thereby extending pivotal research in the channel integration field by updating existing measures in the omnichannel environment (Cao & Li, 2015; Herhausen et al., 2015; Neslin et al., 2006; Verhoef et al., 2015). We updated and adapted existing measures into a 21-item measurement tool that can be used to observe the omnichannel integration of retailers using the Guttman scalogram. Our results, obtained through observation of 17 retailers in the UK, are not totally in line with those of Cao and Li (2015), who consider full integration to be achieved through the alignment of fundamentals. Indeed, our results show that alignment of marketing messages and of prices across channels are strategies of retailers with low degrees of integration. In Cao and Li (2015), click-to-call and allowing online consumers to browse the inventory in store are strategies of moderately integrated retailers; in our study, these denote a high degree of integration. Ultimately, our results show that implementing this comprehensive set of omnichannel integration activities improves the customer perception of the seamless shopping journey.

Third, our research clarifies the central role of the seamless shopping journey in omnichannel retailing. We explored empirically the mediating role of the seamless shopping journey in the relationship between omnichannel integration and beneficial consumer behaviors. Although previous studies have observed that customer perceptions of omnichannel integration affect behavioral outcomes such as channel loyalty (Frasquet & Miquel, 2017), omnichannel usage (Gao et al., 2021; Shen et al., 2018), consumer empowerment (Zhang et al., 2018) and customer engagement (Lee et al., 2019), very few studies (Gao et al., 2021) have investigated the process by which the strategies of omnichannel retailers influence customer behaviors. Our study differs from

that of Gao et al. (2021), because instead of asking consumers to rate the level of channel integration, we observed retailer omnichannel strategies through our omnichannel measure. Therefore, our results add to the body of knowledge regarding the behavioral outcomes of seamless shopping journeys. When a seamless shopping journey is achieved, this creates desirable behavioral outcomes of customer engagement, avoidance of retailer switching and higher basket size. Our findings also alleviate some confusion arising from channel integration quality research, clarifying the differences between retailer-controlled channel integration and the consumer process of the seamless shopping journey (which is an internal customer response). We reinforce this distinction by employing a two-level multilevel design. Thus, this study is the first of its kind to provide empirical evidence of the causal relationships between omnichannel integration, seamless shopping journeys and behavioral outcomes.

## 5.2. *Managerial implications*

This study has direct and practical relevance for all retailers carrying out omnichannel strategies. First, they should integrate channels to achieve seamless shopping journeys. Multiple-channel retailers have traditionally been found to lag behind their online competitors (Cao & Li, 2015), and our 21-item omnichannel integration measurement tool can be used as a checklist to help them to compete and to achieve their goals in respect of seamlessness. The scalogram shows several areas where retailers can improve. Retailers are encouraged to re-evaluate their data systems and to consider keeping customer past purchase data to allow them to deal quickly with queries or problems across channels. This will enable them to support customers better and to overcome obstacles more quickly, which will improve the seamlessness of shopping journeys. Although some retailers record purchases via loyalty cards, ID cards or store (credit) cards, not all customers have access to this. Similarly, although all the retailers were found to have optimized websites, not all the websites and apps retained searched items in the basket when moving between the online channels. As customers now use several channels to shop, keeping an up-to-date basket between channels allows them to continue their journey without having to search for items again. Although many

retailers have mobile apps, often with helpful barcode scanners or an in-store mode, there is little advertising of these apps in store. Making customers aware of the mobile app can enhance the in-store experience and help them to find items without having to wait for customer service assistants. Similarly, allowing customers to access customer service in real time via the website (click-to-chat) can allow them to seek help directly. This saves waiting for responses and avoids delays in the experience. By integrating channels in these ways, retailers can enhance the seamlessness of the shopping journey.

Second, we find evidence that retailers are failing to align prices and promotions, one of the basic levels of integration in our research. For example, Gap stores and gap.eu and Sephora (in France) and Sephora.fr operate different price and promotion strategies. A Chanel perfume on Sephora.fr costs EUR 96, whereas the same perfume in the Sephora store costs EUR 128.<sup>2</sup> Despite claims regarding Sephora's success in omnichannel retailing and provision of a seamless experience (Magaud, 2019), a difference greater than EUR 30 and a 33% increase in price from one channel to the other calls into question whether the brand is operating as one brand for the customer. This leads to a shopping journey with poor seamlessness. We conclude that managers operating under the same brand should consider basic channel integration efforts in relation to price, promotion and assortment to promote consistency of the experience across channels. Given current shopping behaviors across channels, brands that fail to operate basic channel integration activities and promote seamless perceptions are likely to fall behind the competition (Piotrowicz & Cuthbertson, 2014).

Our research also opens up opportunities in omnichannel integration that retailers can exploit to achieve seamless shopping journeys. Several categories of integration show evidence of low compliance. Although integration of stores into online channels is strong, online integration into the store channel is weak. It may seem obvious that all retailers have online channels, but in-store

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<sup>2</sup> Comparison of Chanel Coco Mademoiselle eau de parfum 100 ml at Sephora.fr and the Sephora store, Grand Place, Lille, on November 11, 2019.

promotion of online access to the retailer may create brand stimulus and remind customers to continue their purchases online or to search and purchase online during their next customer journey. Offering ways to pay online while in store, such as providing a kiosk or enabling online orders for home delivery, may enhance customer convenience during the journey. New initiatives are also emerging between online and customer service, and between store and mobile. Retailer investment in customer services online and better in-store advertising of the mobile options opens new avenues to get ahead of the competition by making the shopping journey more seamless.

Lastly, managers and marketers can use our seamless shopping journey scale to help predict retailer switching, customer engagement and basket size. Since omnichannel integration activities result indirectly in these desirable outcomes, the seamless shopping journey construct offers a more optimized customer journey measure that can be used to improve customer engagement, avoid retailer switching and increase customer basket size.

### *5.3. Limitations and future research*

Although our results are fairly stable across retailers, some challenges warrant further investigation. First, although our study captures the integration of many retailers in several industries and offers clear guidance for omnichannel retailers, it is acknowledged that several underlying company operational processes contribute to channel integration. Omnichannel retailing stretches far and wide within a company, through strategy, vision, departments and supply chain (Piotrowicz & Cuthbertson, 2014; Saghiri et al., 2017). As a complement to observed integration initiatives that measure the extent of omnichannel integration, a survey of internal underpinning operational integration initiatives would provide a wider understanding of the integration quality that affects seamless shopping journeys and outcome behaviors.

Second, future research should explore typical customer journeys to determine how seamless shopping is characterized in each phase (pre-purchase, purchase and post-purchase) and its effect on behavioral outcomes. Obstacles in the pre-purchase phase (e.g., perceived website function) may be more likely to lead to channel or retailer switching, whereas fewer obstacles in the

post-purchase phase (e.g., good aftersales service) may lead to higher engagement. Investigating perceived seamlessness across the various phases of the shopping journey, as well as breaking down touchpoint and channel activities in typical journeys, will provide managers with richer information for creating seamless shopping journeys.

Lastly, several studies have suggested that omnichannel usage is affected by customer characteristics (De Keyser et al., 2015; Konoş et al., 2008; Nakano & Kondo, 2018; Sands et al., 2016) such as multichannel ability, price consciousness, time pressure and loyalty proneness, which could have a moderating effect on the relationship between omnichannel integration and their perceived seamless shopping journey. Examining these effects could clarify where retailers need to invest more. For instance, if a retailer has low channel integration and its customers are relatively price-conscious, improving omnichannel integration will make the customer journey more seamless.

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**Table 1***Examples of Consistency and Continuity*

<b>Consistency</b>	<b>Continuity</b>
<p>If a customer sees a EUR 50 price for a product on the website and finds the same product in store is EUR 50, this is consistent price information.</p> <p>If a customer sees an offer for 10% off a product in store, then finds the same product online is also on offer for 10%, this is a consistent price discount.</p> <p>If a customer finds a product range in store and they go to the website to browse further and the range is available online, the shopping journey is consistent.</p>	<p>If the retailer's physical store allows a customer to do an online order in store, the customer is able to connect their experience between channels, and this enhances simultaneous movement from one channel to the next.</p> <p>If the retailer provides a service online to browse the inventory in store, a customer is able to assess whether a product is available in store. When they go to the store, the product is available, the customer is able to continue their shopping journey.</p> <p>If a retailer connects the app and website basket, such that when a customer puts products in their shopping basket on the website and attempts to later pay on the app, the products are in the basket and they are able to continue their shopping journey.</p> <p>If the retailer allows customers to view past purchases in store when they previously shopped online, then if the customer wants to find a similar item, they find it easily and are able to continue their shopping journey.</p>

**Table 2***Scale Development Process*

Step	Data and method	Result
Item generation	Literature review	Initial set of 29 items generated
	Customer interviews (n = 20)	
Scale purification	Expert judges (n = 9)	Eight items removed
	Statistical procedure (CVR)	
	Collection of data: 301 UK consumers (Study 1)	Final scale with seven items
	Statistical procedures (EFA, CFA)	
Scale dimensionality	Discriminant validity between SSJ dimensions: Fornell–Larcker criterion (data from Study 1)	Model with two dimensions shows best fit, and discriminant validity is confirmed between SSJ dimensions
Scale validation	Collection of data: 322 US customers (Study 2)	Consistency is confirmed and validated in another data set, on a second population
	Statistical procedures (EFA, CFA)	
Discriminant validity	Collection of data: 323 US customers (Study 3)	Discriminant validity is confirmed between SSJ dimensions and satisfaction, shopping value, loyalty and service quality scales
	CFAs to check discriminant validity of SSJ	
Nomological validity	Nomological validity between SSJ and related constructs	All correlations with constructs were positive and significant
Cross-national invariance	Assess cross-validation across multiple groups	<i>Consistency</i> items were error-invariant across both UK and US populations, and the <i>continuity</i> dimension exhibited a slight difference

*Notes.* CFA: confirmatory factor analysis, EFA: exploratory factor analysis, SEM: structural equation modeling, CVR: content validity ratio, SSJ: seamless shopping journey.

**Table 3***Confirmatory Factor Analysis: Standardized Factor Loadings*

Item	Study 1	Study 2	Study 3
<i>Continuity</i>			
I am able to continue the shopping experience on any channel.	0.74	0.82	0.77
I can use channels interchangeably during the search and purchase stage.	0.71	0.79	0.81
I can move easily from one channel to another.	0.73	0.81	0.84
My shopping journey is continuous across channels.	0.73	0.81	0.83
<i>Consistency</i>			
Product availability is the same in all channels.	0.73	0.71	0.72
Offers are consistent across channels.	0.76	0.85	0.83
Prices are the same across channels.	0.73	0.73	0.81
Number of observations	301	322	323
Average variance extracted <i>continuity</i>	0.63	0.65	0.66
Composite reliability <i>continuity</i>	0.87	0.88	0.88
Average variance extracted <i>consistency</i>	0.55	0.59	0.62
Composite reliability <i>consistency</i>	0.78	0.81	0.83
Factor correlation	0.57	0.71	0.69
$\chi^2$	19.387	20.045	30.685
Comparative fit index	0.992	0.994	0.986
Tucker–Lewis index	0.987	0.991	0.978
Root mean square error of approximation	0.040	0.041	0.065
Standardized root mean square residual	0.026	0.022	0.026

**Table 4***Omnichannel Integration Items*

Code	Item	Source
1	Retailer's online channels provide information about stores such as location, delivery points locations, access information and opening hours	Adapted from Frasquet and Miquel (2017); Lee and Kim (2010); Bendoly et al. (2005)
2	Click and pick-up in store	Cao and Li (2015)
3	Align marketing message across channel	Cao and Li (2015)
4	Align price across channel	Cao and Li (2015)
5	Website optimized for mobile	New item, inspired by Wang et al. (2015)
6	Align loyal program across channel	Cao and Li (2015)
7	Align assortment across channel	Cao and Li (2015)
8	Employees at the firm's stores are knowledgeable and helpful regarding the use of its website	Bendoly et al. (2005)
9	Buy online and return in store	Cao and Li (2015)
10	Retailer provides consistent product information across channels	Lee and Kim (2010)
11	Customer basket/cart online is accessible in the app or mobile website	New item, inspired by Close and Kukar-Kinney (2018)
12	Physical store allows checking product availability online via a kiosk/mobile or customer service representative	Lee and Kim (2010)
13	Past purchases online can be accessed in store	New item, inspired by Homburg et al. (2017)
14	Align promotions across channels	Cao and Li (2015)
15	Integrated marketing communication across channels	Cao and Li (2015)
16	Firm advertises its website at its local stores	Bendoly et al. (2005)
17	Click-to-call or click-to-chat	Cao and Li (2015)
18	Online consumers allowed to browse inventory in store	Cao and Li (2015)
19	Firm advertises its mobile app at its local stores	New item, inspired by Bendoly et al. (2005)
20	(Retailer's) physical store allows customers to order online	Frasquet and Miquel (2017)
21	Past purchases in store can be found online	Frasquet and Miquel (2017)

**Table 5***Guttman Scalogram of UK Retailers*

Item	TK Maxx	Asda	Tesco	Matala n	Sports Direct	Deben hams	JD Sports	Top shop	H&M	Marks & Spe ncer	Next	Smyth s	Zara	New Look	Currys PCwor ld	John Lewis	Argos	Pattern
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	17
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	17
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	17
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	17
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	17
6	<b>1</b>	<b>0</b>	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
7	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
8	<b>1</b>	1	<b>0</b>	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
9	<b>1</b>	0	1	1	<b>0</b>	1	1	1	1	1	1	1	1	1	1	1	1	15
10	0	<b>1</b>	1	1	<b>0</b>	1	1	1	1	1	1	1	1	1	1	1	1	15
11	0	<b>1</b>	1	1	1	1	<b>0</b>	1	1	1	1	1	1	1	1	1	1	15
12	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
13	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	13
14	0	0	<b>1</b>	0	0	<b>0</b>	1	1	1	1	1	1	1	1	1	1	1	12
15	0	0	0	0	<b>1</b>	0	<b>1</b>	1	<b>0</b>	1	1	1	1	1	<b>0</b>	1	1	10
16	0	0	0	0	0	<b>1</b>	0	<b>0</b>	1	1	1	1	1	1	1	1	1	10
17	0	0	0	0	0	<b>1</b>	0	0	1	1	1	1	<b>0</b>	1	1	1	1	9
18	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	8
19	0	0	0	0	<b>1</b>	0	<b>1</b>	0	<b>1</b>	0	0	<b>0</b>	1	<b>0</b>	1	<b>0</b>	1	6
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	3
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
Score	8	9	11	12	13	15	15	15	17	18	18	18	18	18	19	20	21	

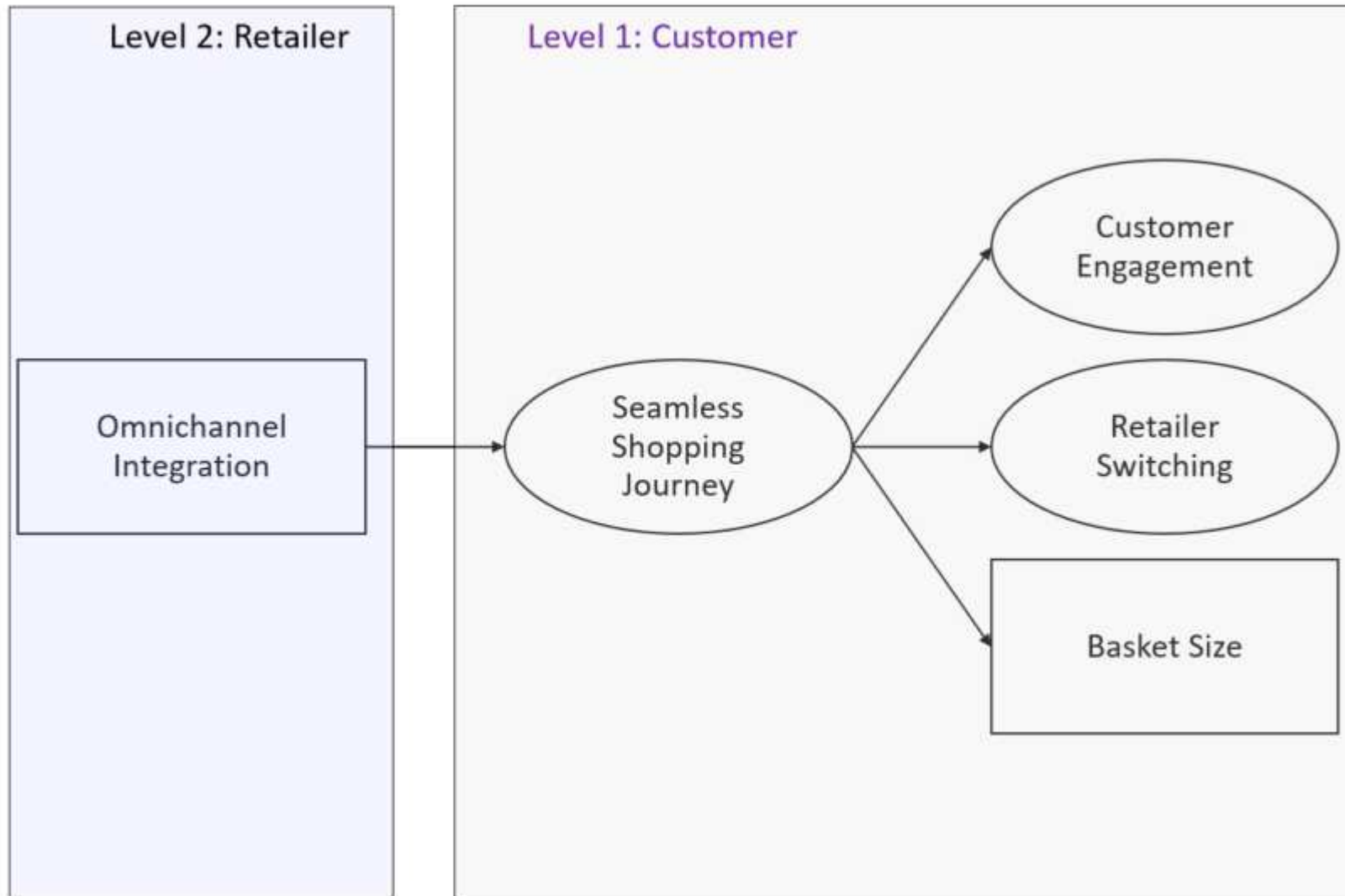
*Notes.* All 1s signify compliance with the channel integration item, and 0s signify non-compliance. Numbers that do not fit the pattern are considered errors and are shown in bold. Reproducibility coefficient = 1; total number of errors/total number of responses:  $1 - (26/357) = 0.927$ .

**Table 6***Multilevel Modeling Summary*

Hypothesis	Relationship	$\beta$	<i>p</i> value
H1	Omnichannel integration > Seamless shopping journey	.118*	.015
H2A	Seamless shopping journey > Customer engagement (cognitive)	.261***	.000
H2A	Seamless shopping journey > Customer engagement (affective)	.450***	.000
H3A	Seamless shopping journey > Retailer switching	-.382***	.000
H4A	Seamless shopping journey > Basket size	.177*	.054
H2B	Omnichannel integration > Customer engagement (cognitive)	-.010	.863
H2B	Omnichannel integration > Customer engagement (affective)	-.054	.428
H3B	Omnichannel integration > Retailer switching	.033	.454
H4B	Omnichannel integration > Basket size	.088	.174
H2B	Omnichannel integration > Seamless shopping journey > Customer engagement (cognitive)	.031*	.034
H2B	Omnichannel integration > Seamless shopping journey > Customer engagement (affective)	.053*	.021
H3B	Omnichannel integration > Seamless shopping journey > Retailer switching	-.044*	.025
H4B	Omnichannel integration > Seamless shopping journey > Basket size	.021	.135

Notes. Test of significance: \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .



**Figure 1***Multilevel Conceptual Framework*

## Appendix A

*Table A.1.: Descriptive Statistics*

Study population		Study 1 (n = 301)	Study 2 (n = 322)	Study 3 (n = 323)	Study 4 (n = 344)
		UK consumers (%)	US consumers (%)	US consumers (%)	UK consumers (%)
Gender	Male	42.9	67.6	31.3	32.3
	Female	57.1	32.4	68.7	67.7
Channel use					
	Mobile site/mobile app	43.3	46.3	46.6	39.8
	Website	33.2	30.0	30.3	34.0
	In store	18.4	18.4	18.4	19.5
	Telephone	3.5	4.3	3.6	4.4
	In-store kiosk/tablet	1.5	1.1	1.0	2.4
Product type					
	Consumer electronics	26.6	37.9	30.7	29.1
	Clothing/apparel	41.9	36.0	45.8	42.8
	Toys	15.0	8.7	10.2	12.2
	Home appliances	10.6	8.1	5.9	9.0
	Automotive	1.7	3.4	2.2	2.0
	Home improvements	4.3	5.9	5.3	5.0
Average number of channels used		2.23	2.27	2.26	2.42

## Appendix B

Table B.1. Exploratory Factor Analysis, Seamless Shopping Journey Dimensions (Study 1)

Item	Factor		Mean	Standard deviation
	<i>Consistency</i>	<i>Continuity</i>		
Product availability is the same in all channels.	<b>0.63</b>	0.33	5.04	1.68
Offers are consistent across channels.	<b>0.61</b>	0.40	5.19	1.49
Prices are the same across channels.	<b>0.81</b>	0.17	5.35	1.45
I am able to continue the shopping experience on any channel.	0.26	<b>0.70</b>	5.38	1.30
I can use channels interchangeably during the search and purchase stage.	0.23	<b>0.68</b>	5.08	1.43
I can move easily from one channel to another.	0.27	<b>0.68</b>	5.39	1.26
My shopping journey is continuous across channels.	0.29	<b>0.67</b>	5.18	1.30

*Notes.* Factor analysis with varimax rotation. Items in bold indicate their factor loadings. All items were assessed using a seven-point Likert scale (1 = strongly disagree, 7 = strongly agree). This table shows the final items used in the scale.

## Appendix C

Table C.1.: Discriminant Validity, Average Variance Extracted (Study 3)

Measure	<i>Consistency</i>	<i>Continuity</i>	Satisfaction	Shopping value	Service quality	Loyalty
<i>Consistency</i>	<b>0.53</b>	<i>0.48</i>	<i>0.26</i>	<i>0.19</i>	<i>0.16</i>	<i>0.21</i>
<i>Continuity</i>	<i>0.69*</i>	<b>0.57</b>	<i>0.43</i>	<i>0.35</i>	<i>0.23</i>	<i>0.32</i>
Satisfaction	<i>0.51*</i>	<i>0.65*</i>	<b>0.58</b>	<i>0.51</i>	<i>0.34</i>	<i>0.41</i>
Shopping value	<i>0.44*</i>	<i>0.59*</i>	<i>0.72*</i>	<b>0.54</b>	<i>0.28</i>	<i>0.37</i>
Loyalty	<i>0.45*</i>	<i>0.57*</i>	<i>0.64*</i>	<i>0.61*</i>	<i>0.27</i>	<b>0.78</b>
Service quality	<i>0.40*</i>	<i>0.48*</i>	<i>0.58*</i>	<i>0.53*</i>	<b>0.93</b>	<i>0.52*</i>
Number of items	3	4	4	3	5	4
Mean	5.49	5.61	5.73	7.37	7.3	5.53
Standard deviation	1.17	1.03	1.03	1.35	1.56	1.33
Cronbach's alpha	0.82	0.88	0.88	0.81	0.85	0.91

Notes. \* = Correlation is significant at the 0.01 level (2-tailed). AVEs are shown in bold. Squared correlations are shown in italics. All scales were measured on a seven-point Likert scale, except shopping value and service quality, which were measured on their original nine-point response scales.

## Appendix D

Table D.1.: Nomological Validity

Construct	Study 2		Study 3		Study 4	
	<i>Consistency</i>	<i>Continuity</i>	<i>Consistency</i>	<i>Continuity</i>	<i>Consistency</i>	<i>Continuity</i>
Satisfaction	0.53*	0.62*	0.51*	0.65*	0.47*	0.45*
Shopping value	0.45*	0.57*	0.44*	0.59*	0.50*	0.38*
Service quality	0.37*	0.38*	0.40*	0.48*		
Loyalty			0.45*	0.57*	0.29*	0.35*
Switching intention					-0.25*	-0.20*

Notes. \* = Correlation is significant at the 0.01 level (2-tailed).

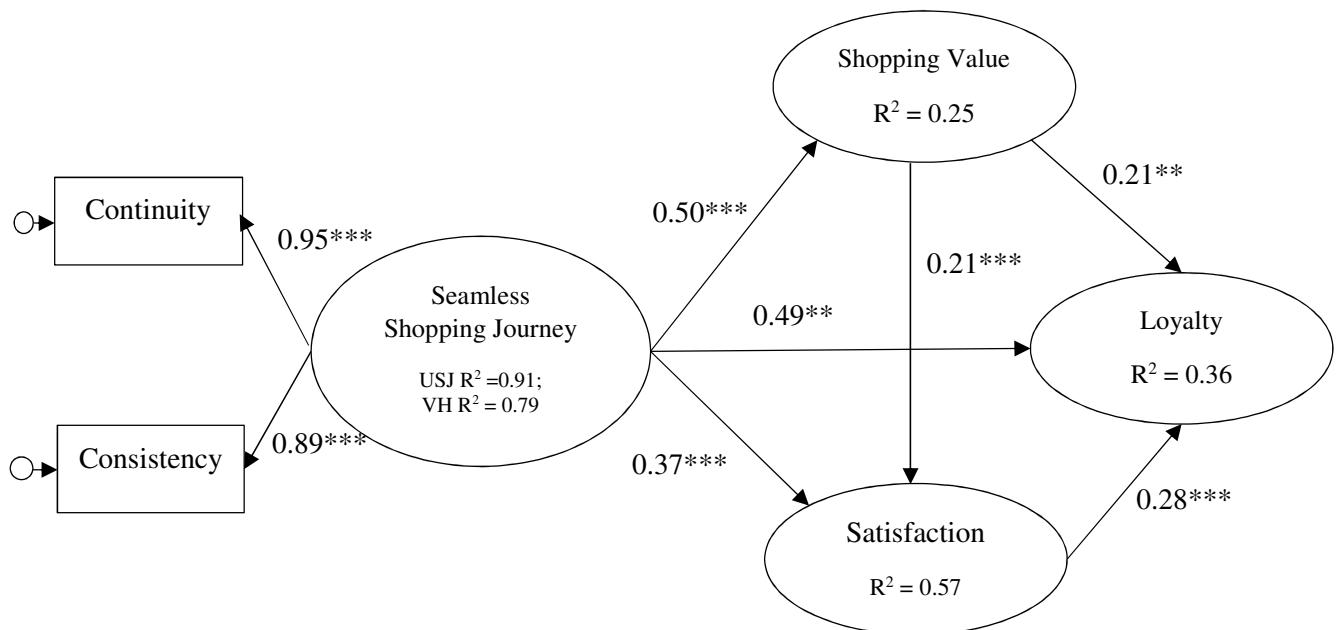
## Appendix E

To confirm predictive validity, an additional study was carried out with U.K. consumers (n=402, 37.3% female, median age: 18 – 29 years of age). Following previous studies, we asked participants to rate the 7-item seamless shopping scale against a recent shopping experience they encountered, using a minimum of two channels. All conditions were kept the same as in previous studies. We then examined the three other constructs; satisfaction, shopping value and loyalty based on the same experience. We assessed satisfaction with a 7-item scale adapted from Oliver (1980), a 3-item shopping value scale (Sirdeshmukh et al. 2002) and a 4 -item loyalty scale adapted from Yoo and Donthu (2001). All items were assessed using a 7-point Likert scale (1 = “strongly disagree” to 7 = strongly agree).

To analyze the predictive relationships, we used structural equation modelling, using Stata 16. The seamless shopping scale was validated again. The two-factor seamless shopping scale provided excellent fit (CFI = .986, TLI = 0.977, RMSEA = 0.066, SRMR = 0.024,  $\chi^2 = 35.742$ , df = 13). Both dimensions achieved high loadings, CRs and AVE’s. We then tested the full model of seamless shopping with the outcomes of satisfaction, shopping value, and loyalty. All correlations were positive and significant between constructs, and all constructs produced high reliabilities and loadings. The model achieved an excellent fit (CFI = 0.981, TLI = 0.977, RMSEA = 0.043, SRMR = 0.032,  $\chi^2 = 221.851$ , df = 142). In support of discriminant validity, all squared correlations between the two seamless shopping dimensions and the related constructs were higher than the AVEs. The model shown in here had the best model fit of all independent models and support effects of the previously untested seamless shopping construct on satisfaction and shopping value, leading to loyalty.

Direct and Indirect relationships were found. Regarding the direct effects (see Fig. A.1.), we find positive and significant effects between seamless shopping and shopping value (0.50,  $p < .001$ ), seamless shopping and satisfaction (0.37,  $p < .001$ ), seamless shopping and loyalty (0.49,  $p < .01$ ).

Fig. A1: Predictive Validity Model



Notes: \*\* $p < .01$ , \*\*\* $p < .001$ . VH = Value Harmonization, USJ = Uninterrupted Shopping Journey.

All coefficients are standardized.

Regarding the indirect effects, seamless shopping also had positive significant effects on shopping value, which in turn had positive significant effects on satisfaction ( $\beta = 0.23, p < .01$ ). Seamless shopping had a positive significant effect on loyalty through shopping value ( $\beta = 0.13, p < .01$ ). Seamless shopping also had a positive significant effect on loyalty through satisfaction ( $\beta = 0.13, p < .001$ ). We also tested the indirect effect of seamless shopping on loyalty through satisfaction and service value which was also positive and significant ( $\beta = 0.09, p < .001$ ). These partial mediations serve to support the model. All indirect effects are smaller than the direct effects but nonetheless contribute to the total effects. When adding the direct and indirect effects together, this provides the total effects. The standardized total effects of seamless shopping on satisfaction (0.60,  $p < .01$ ), shopping value (0.50,  $p < .001$ ) and loyalty (0.57,  $p < .01$ ) are positive and significant.

**Appendix F***Measurement Scale*

Customer engagement (Hollebeek et al., 2014)

*Cognitive processing*

Using x retailer gets me to think about x retailer.

I think about x retailer a lot when I'm using it.

Using x retailer stimulates my interest to learn more about x retailer.

*Affective factor*

I feel very positive when I use x retailer.

Using x retailer makes me happy.

I feel good when I use x retailer.

I'm proud to use x retailer.

Retailer switching (Jones & Taylor, 2007; Romani et al., 2012)

Rate the probability that you would switch to another retailer.

Unlikely / Likely

Improbable / Probable

No chance / Good chance