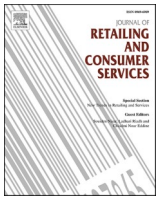
Journal of Retailing and Consumer Services 64 (2022) 102816

Contents lists available at ScienceDirect

Journal of Retailing and Consumer Services

journal homepage: www.elsevier.com/locate/jretconser



The effect of shopping goals and in-store mobile device use on purchase outcomes in brick-and-mortar stores

Girish Punj, PhD

Department of Marketing, School of Business, University of Connecticut, 2100 Hillside Road, Storrs, CT, 06269-9013, USA

ARTICLE INFO

Keywords:
Mobile device-assisted shopping
Shopping goals
In-store mobile search
Brick-and-mortar stores
Information search
Pathway to purchase
Consumer decision journey

ABSTRACT

The present study examines the effect of using a mobile device on search and evaluation by a shopper in a brick-and-mortar store. A conceptual model that proposes inter-relationships between shopping goals, the amount and type of in-store mobile device use, and purchase outcomes is developed. Data from a national quota sample of 1034 mobile shoppers is used to test hypotheses derived from the proposed model. The findings provide several new insights into the impact of in-store mobile device use on the consumer decision journey in a brick-and-mortar store. Depending upon the shopping goals of the consumer, the use of a mobile device by shoppers in a brick-and-mortar store can either decrease or increase search, lead to more deferred purchases or in-store-now purchases, and more online or physical store purchases. The study is among the first to model the pathway to purchase for mobile device assisted shoppers in brick-and-mortar stores.

1. Introduction

Mobile commerce sales are growing at a rate three times faster than online sales on fixed devices and are expected to constitute 73 percent of all e-commerce sales globally by the end of 2021 (James, 2021). A recent report by the consultancy Buildfire indicates that 79 percent of mobile device users made an online purchase using their mobile devices (Goyal, 2021). Mobile device assisted shopping is being regarded as "biggest disrupter" of retail since the advent of e-commerce twenty five years ago. M-commerce sales are estimated to exceed $300 billion or 54 percent of total US e-commerce sales by the end of 2021 (Mali, 2021).

The present study examines the effect of using a mobile device (e.g., a smartphone or a tablet) by a shopper to *assist* with information search and product evaluation in a brick-and-mortar store, without necessarily using the mobile device to make the purchase. Mobile device assisted shopping represents a *convergence* of several underlying shopping phenomena such as showrooming, webrooming, research-shopping, and multi-channel shopping, which have typically been examined separately (Flavian et al., 2020; Goraya et al., 2020; Gensler et al., 2017; Hajdas et al., 2020).

An important characteristic of mobile device-assisted shopping is the collapsing of the *temporal* (i.e., time) and *spatial* (i.e., location) dimensions that that separate the search and evaluation phases of the purchase process in traditional marketing channels. Another feature of mobile device assisted shopping is the ability of the shoppers to seamlessly shift between different search and evaluation tasks while they are in the store and process information that is both location-specific and time-sensitive.

Consumers use their mobile devices in stores to engage in a number of search and evaluation activities, such as comparing prices with those in nearby stores or online, searching for special price offers and e-coupons, examining product ratings in online review forums, seeking advice from friends and family, and so on. These sources of information can broadly be classified as being primarily *product-related* or *price-related* (Daurer et al., 2016).

The in-store activities of mobile device assisted shoppers can lead to various purchase outcomes. Shoppers may buy the product in the store, or at another nearby store, purchase the product online while in the store, or later at home, or not make a purchase at all, depending on the shopping goals of the consumer (Bridges and Florsheim, 2008). The purchase options can be *temporally* re-classified as in-store-now purchases (a physical or online purchase in the store) versus deferred purchases (a physical purchase at another store or an online purchase later at home), or *spatially* as online versus store purchases.

An understanding of the inter-relationships between in-store search and evaluation activities and purchase outcomes is essential to understanding the pathway to purchase (i.e., from need recognition to information search, product evaluation, and final purchase) for mobile device assisted shoppers in the evolving retail landscape (Flavian et al., 2020; Thaichon et al., 2020).

E-mail address: Girish.Punj@uconn.edu.

https://doi.org/10.1016/j.jretconser.2021.102816
Received 21 May 2021; Received in revised form 19 September 2021; Accepted 18 October 2021
Available online 20 October 2021

The type of in-store mobile device use by shoppers can help retailers identify various behavioral "triggers" that lead to in-store or online purchases, enabling them to take appropriate action to "close the sale" while the consumer is still in the store. For example, when a mobile shopper accesses price-related information in a store is that an indication that they are ready to make an in-store purchase? Or, when do shoppers review product-related information on a mobile website while in a store is that a clue that they intend to complete the purchase online later at home? Such information is invaluable to brick-and-mortar retailers as it can help them design marketing interventions to increase in-store sales conversion rates (Andrews et al., 2015) as brick-and-mortar retailers compete not just with other traditional retailers but also with online-only merchants (e.g., Amazon).

The purpose of the present study is to propose and test a conceptual model of the pathway to purchase for mobile device assisted shoppers while they are in a traditional brick-and-mortar store. The proposed model seeks to provide a complete depiction of the consumer decision journey for mobile device assisted shoppers than is currently available. A related goal is to identify mobile device assisted shopper segments that can be used to describe alternative pathways to purchase (Aw et al., 2021; Lee et al., 2018).

The study seeks to be among the first that examines these diverse phenomena in an integrated manner. By so doing, it fills an important knowledge gap in the literature on online and mobile device-assisted shopping (Singh and Jang, 2020; Luo et al., 2013 Xu et al., 2016; de Haan et al., 2018; Grewal et al., 2018), while also updating the traditional consumer decision journey framework (Paul and Rosenbaum, 2020; Edelman and Singer, 2015; Barwitz and Maas, 2018) to the mobile era.

1.1. Conceptual model development

There are costs and benefits attached to the use of different channels when a shopper is in a brick-and-mortar store. In addition, there are switching costs when consumers engage in cross-channel shopping. The use of mobile devices significantly reduces both types of costs. Mobile shoppers use their mobile devices while in a store in-store activities that offer proportionately higher search benefits in relation to these costs.

Yet, not much is known about how in-store search and evaluation is affected by the use of a mobile device and does such use lead to more in-store (vs. deferred) purchases? And more online (vs. store) purchases? Also how are these effects influenced by shopping goals of the mobile shopper?

Consumers have different shopping goals while using a mobile device in a brick-and-mortar store. These typically include *concrete* goals such finding the best price or deal (saving money), convenience (saving time and effort), finding the product that best matches needs (find the best product "fit) or *abstract* goals such as, enjoying the shopping experience (recreation and enjoyment), and seeking variety (discover new products). The costs and benefits attached to the use of a mobile device in a brick-and-mortar store can be expected to vary across shoppers depending upon their shopping goals. The use of a mobile device while shopping is likely to influence both shopping experience and product satisfaction but will depend on the product category being considered for purchase (utilitarian vs. hedonic) (Bridges and Florsheim, 2008) and the type of store in which the search is conducted (discount vs. regular store).

It is likely that the use of a mobile device will lead to more shopping experience satisfaction for (a) *utilitarian* products, and in (b) *discount stores* while resulting in more product satisfaction for (a) *hedonic* products, and in (b) *regular stores.* A likely reason for this difference is due to the fact that the attributes of utilitarian products are typically easier to evaluate on mobile devices, thereby enabling greater product satisfaction. In contrast, the attributes of hedonic products are normally more difficult to access and evaluate on mobile devices.

Likewise, the wider product assortment typically found in discount stores is easier to evaluate on mobile devices, leading to lower search costs and greater shopping experience satisfaction. On the other hand, the limited assortment and increased emphasis of personal service limits the utility of mobile devices in regular stores, leading to reduced search benefits less product satisfaction.

1.2. Literature review

Mobile device-assisted shopping is an evolution of the research-shopper and showrooming phenomena where the focus is on researching products online and then buying them in-store or vice-versa (Konus et al., 2008; Verhoef et al., 2007). Earlier studies on mobile device-assisted shopping have shown that consumers use their mobile devices in stores for convenience and savings (Shankar et al., 2010) and for fact-checking and information verification rather than extensive evaluation (Büttner et al., 2013).

Depending on the purpose for which they are used, mobile devices can increase search costs or decrease them (Ghose et al., 2013), while also influencing purchase intentions and price sensitivity (Daurer et al., 2016). Mobile devices can create value for in-store shoppers (Kim et al., 2015) through an *engagement* effect, but can also be beneficial to store sales when shoppers use them for them for unrelated purposes (Sciandra and Inman, 2015) due to a *distraction* effect.

The empirical findings related to mobile device-assisted shopping indicate that shoppers switch between devices (mobile or fixed) and channels (in-store or online) during the earlier stages of the purchase process, but as they proceed along the pathway to purchase the influence of mobile devices on sales conversion rates may be diminished (de Haan et al., 2018; Lemon and Verhoef, 2016). However, at the same time the use of mobile devices has been found to lead to more time being spent in the store examining products and increased sales (Grewal et al., 2018; Wang et al., 2015). Hence, it is not immediately clear whether the use of a mobile device in a traditional retail store is favorable or detrimental to in-store sales conversion rates? Lurie et al. (2018) propose that increased use of mobile devices is likely to increase the amount of information accessed (but not the time spent in search), lower price sensitivity, lead to faster decision making, and increase the likelihood of not making a choice at all. But all these ideas are yet to be empirically validated.

Mobile devices help shoppers find better prices and/or products that better match needs by enabling them to search and evaluate products across both online and physical marketing channels (Singh and Jang, 2020; Gensler et al., 2017). While there is an extensive literature on mobile marketing in a retail environment (Shankar and Balasubramanian, 2009; Shankar et al., 2010) and interactive technologies in a retail context (Varadarajan et al., 2010), surprisingly little is known about mobile device-assisted shopping in traditional retail stores (Wang et al., 2015).

1.3. Research model and hypotheses

The present study uses a *needs-adaptive approach* (Lee et al., 2018) to propose a conceptual model that describes the pathway to purchase for mobile device assisted shoppers (see Fig. 1). It does so by (a) identifying differences on consumer decision journey constructs between shoppers who use a mobile device in a store in comparison to those who do not use such a device, and (b) formulating and testing hypotheses that seek to explain the inter-relationships between these constructs.

The *mindset theory of action phases* (Gollwitzer and Keller, 2016) provides a natural fit to the behavior of interest and is used to support the conceptual model and hypotheses. Mindset theory proposes that individuals are in a *deliberative state* during goal-setting and an *implemental phase* during goal-pursuit (Büttner et al., 2013; Lurie et al. 2018). The theory further states that motivational principles apply during goal setting while volitional principles apply to goal-pursuit (Gollwitzer and Keller, 2016).

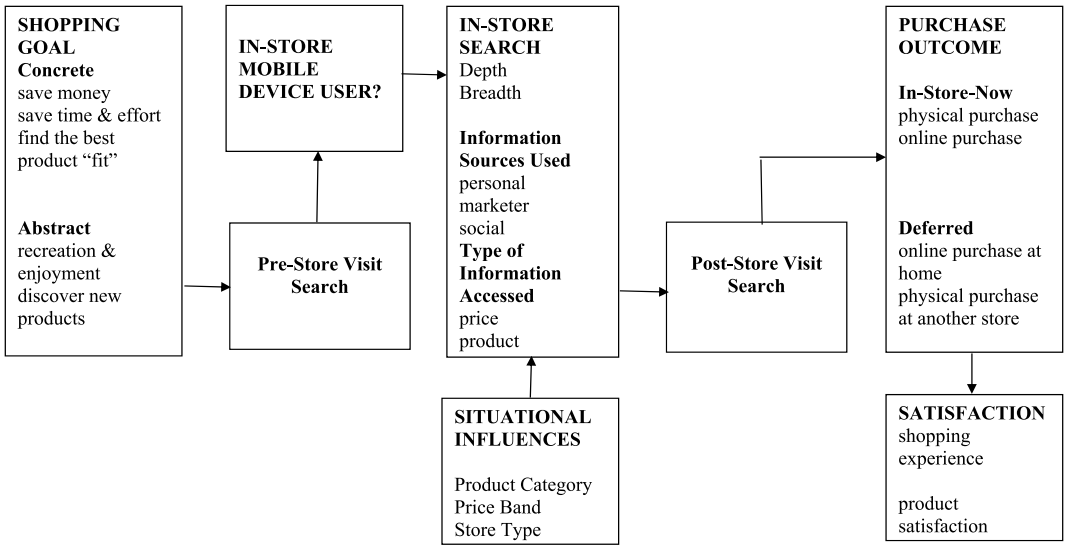


Fig. 1. Conceptual model of the consumer decision journey for in-store mobile device users in brick-and-mortar stores.

The deliberation versus implementation distinction translates intuitively to mobile device-assisted shopping because a similar separation has been noted in a number of studies by both academic researchers and retail practitioners (Ghose, 2017). Some shoppers are near the moment of purchase (implemental phase) when they enter a store, while other shoppers are at an earlier point on the pathway to purchase (deliberative state). The amount and type of in-store search conducted by mobile shoppers, along with their pre-store visit search propensity can be used to categorize shoppers as having a deliberative or implemental mindset.

The portability of mobile devices and their ability to receive time-sensitive and location-specific information makes them suitable for processing dynamic (frequently changing) information. Information that is numerical or can be ordered in the form of ratings (or rankings) is more likely to be accessed on a mobile device because of low search costs associated with such a format. Price-related information typically has these characteristics. Due to the temporary nature of special price offers, mobile shoppers with an implemental mindset are more likely to research any last-minute deals that might be available nearby or search for mobile coupons. The interactivity of the mobile device enables these shoppers to act on these offers in real-time when they are in a store.

The ergonomic characteristics of mobile devices (e.g., screen size, display limitations) make them less suitable for evaluating textual or verbatim information because of the search costs associated with processing such information. Product-related information normally has these characteristics. Hence, mobile shoppers with a deliberative mindset are less likely to use their devices to access product descriptions on retailer or manufacturer websites or verbatim user-generated information on online forums. Moreover, due the relatively static (unchanging) nature of product information, such information is best accessed by the shopper of a fixed device (e.g., a laptop or desktop) prior to–or after the store visit.

The conceptual model incorporates both *cost-benefit* and *risk-uncertainty reduction* mechanisms (Lee et al., 2018; Shankar and Balasubramanian, 2009) to propose hypotheses by examining potential interactions between shopping goals (i.e., consumer motivations) and in-store mobile device use. The use of a mobile device while shopping in a brick-and-mortar store will influence both the amount and type of in-store search. Stated another way, the use of a mobile device will influence both the number of different search activities performed (i.e., breadth of search) and the cumulative amount of time spent engaging in in-store search and evaluation activities (i.e., depth of search). It is likely that the use of a mobile device in a brick-and-mortar store will be used to make search more diffused (i.e., less depth, greater breadth) in comparison to non-use (Daurer et al., 2016; Ghose et al., 2013).

In other words, the use of mobile device while shopping in a brick-and-mortar store can either *facilitate* search (i.e., increase search) *or* make it more *efficient* (i.e., decrease search). The reason for this difference is that the search costs of using a mobile device in a store are proportionately low, while the search benefits are also proportionately high. For example, looking for a location-specific mobile coupon while shopping in a store is a relatively low cost activity, as is accessing dynamic (i.e., real-time) price information to verify that the purchase is being made at the lowest price currently available, while both these activities have significant benefits. Hence, the following hypotheses are proposed.

H1. Mobile device assisted shoppers are more likely to conduct in-store search that is characterized by less depth in comparison to shoppers who do not shop with the assistance of a mobile device

H2. Mobile device assisted shoppers are more likely to conduct in-store search that is characterized by greater breadth in comparison to shoppers who do not shop with the assistance of a mobile device

The use of a mobile device while shopping in a brick-and-mortar store is also likely to affect purchase outcomes depending upon the shopping goals of the consumer. Mobile shoppers with an implemental mindset are more likely to pursue in-store-now purchase options (a physical or online purchase in the store), while those with a deliberative mindset are more likely to defer their purchases to a later time (a physical purchase at another store or an online purchase later at home).

Further, shoppers with *concrete* goals, such as *saving money, saving time & effort*, and *finding the best product "fit,"* are more likely to make *deferred* purchases (an online purchase at home or a physical purchase at another store or a decision to not make a purchase), while those with *abstract* goals, such as *recreation & enjoyment* and *discover new products* are more likely pursue *in-store-now* purchase options (a physical or online purchase while at the store). The reason for this difference is that the risk-uncertainty associated with the use of a mobile device for concrete goals while in a store is proportionately high in comparison to that for abstract goals. For example, the risk of purchasing a product that does not match needs (i.e., poor product "fit') or one that is not money saving is high in comparison to the low uncertainty associated with the use of a mobile device for shopping enjoyment, recreation, variety seeking or discovery. Hence, the following hypothesis is proposed.

H3. Mobile device assisted shoppers with concrete shopping goals are more likely to make deferred purchases in comparison to shoppers with

abstract shopping goals

H4. Mobile device assisted shoppers with concrete shopping goals are more likely to make online purchases in comparison to shoppers with abstract shopping goals

The proposed relationships are likely to be influenced by the product category being considered for purchase (hedonic vs. utilitarian), the store type (discount vs. regular store) in which the in-store search was conducted, and the price band (i.e., price range) of the product being considered for purchase. Hence, it is necessary to control for these situational influences during hypotheses testing.

2. Methodology

2.1. Data and sample

Data related to the behavior of interest cannot easily be gathered through a survey of the general population. Hence, respondents were recruited from an online consumer panel maintained by Qualtrics. As panel members, respondents were contacted on a weekly basis to report their shopping behavior using an online interface. The use of a professionally managed panel made it possible to use screening questions to include (exclude) respondents from the sample and also embed multiple respondent verification check questions in the survey instrument. The latter were necessary to ensure good quality data. The target population of interest was shoppers who had either used or not used a handheld mobile device (e.g., smartphone or tablet) that could access the internet while shopping in a brick-and-mortar store.

A national quota (non-probability) sample of 1034 adults were selected from the target population using quotas that matched the American population in terms of (a) the incidence of mobile device assisted shopping, and (b) the demographics characteristics in terms of gender, age, income, and education. The sample size calculation (n = 1000+) was based on having a margin of error no greater than ± 3 percent at a 95 percent confidence level, which is the standard used by most professional survey organizations seeking statistically significant findings in sub-sample analyses.

2.2. Constructs and measures

The variable *In-Store Mobile Device User* was used to categorize shoppers who had used a mobile device while shopping versus those who had not during their most recent visit to a brick-and-mortar store. It was measured using a dichotomous scale (1 = yes; 0 = no). *Shopping Goal* was used to categorize respondents based on whether the purpose of their store visit was to (1) save money (2) save time and effort, (3) find the best product "fit" (4) recreation & enjoyment, or (5) discover new products. It was measured using a five-point categorical scale that has been used in previous research (Brown et al., 2003).

The shopping goals were re-categorized as being *concrete* (save money, save time and effort, finding the best product "fit') or *abstract* (recreation & enjoyment, discover new products). *Purchase Outcome* was used to classify respondents based on whether they had (1) purchased at the store (2) purchased online while at the store (3) purchased online later at home (4) purchased later at another store, or (5) decided not to make a purchase or wait to make a purchase. It was measured using a five-point categorical scale that captures the typical purchase outcomes of shoppers. The purchase options were re-categorized as being *in-store-now* (a physical or online purchase while at the store) or *deferred* purchases (an online purchase at home or a physical purchase at another store or a decision to not make a purchase).

Several different search and evaluation behaviors that shoppers typically engage in while shopping were also measured. *Breadth of In-Store Search* was measured by the number of different search activities performed by the respondent from among a number of pre-specified list of twelve typical search and evaluation activities while using a mobile device in a store, such as comparing prices, examining product ratings in online review forums, seeking advice from friends and family, and so on. It was measured as a continuous variable (Daurer et al., 2016). *Depth of In-Store Search* measured by the cumulative amount of time respondents reported having spent engaging in in-store search and evaluation activities. It was measured as a continuous variable (Daurer et al., 2016). *Type of Information Accessed* was used to determine whether respondents primarily sought product-related or price-related information during the store visit, while *Information Sources Used* measured whether respondents primarily relied on information from personal, marketer or social sources. Both these variables were measured as categorical variables (Gensler et al., 2017; Konus et al., 2008). *Pre-Store Visit Search* and *Post-Store Visit Search* measured the amount of time respondents reported having spent searching for information before and after the store visit, respectively. Both these variables were measured as continuous variables (Daurer el 2016).

Respondents were also asked to report on the *Product Category* for which they had been shopping, the *Store Type* at which they had been shopping, and the *Price Band* searched for the item for which they had been shopping. *Product Category* and *Store Type* were measured as dichotomous variables, while *Price Band* was measured as a continuous variable. *Shopping Experience Satisfaction* and *Product Satisfaction* were used to measure the respondent's level of satisfaction with the shopping experience and the product purchase, respectively, on seven-point interval scale (Balasubramanian et al.2005).

2.3. Construct validity and measurement reliability

The construct validity of the constructs in the study (see Fig. 1) was pre-established by relying almost exclusively on constructs that have been used in previous studies of information search and product evaluation in both online and retail store settings. This was done for two reasons. First, the need to re-establish the validity of the study constructs is mitigated as they have already been accepted in the literature (e.g., Brown et al., 2003; Daurer et al., 2016; Gensler et al., 2017; Konus et al., 2008; and Balasubramanian et al. 2005). Second, the study findings can be more easily benchmarked with existing findings in the literature. The constructs *Shopping Goal*, *Breadth of In-Store Search, Depth of In-Store Search, Type of Information Accessed*, and *Information Sources Used* fall under this category, as they have been used in the aforementioned studies. For the constructs, *Purchase Outcome* and *In-Store Mobile Device User?* validity was established using the criterion validity criterion identified in Knapp and Mueller (2010), which was to use the judgment of experts who were unfamiliar with the study objectives.

As regards measurement reliability, the traditional measure of (Cronbach α) was used for both *Shopping Experience Satisfaction* and *Product Satisfaction,* as these are 7-point ordinal scale items. The coefficient α's were 0.71 and 0.79 for *Shopping Experience Satisfaction* and *Product Satisfaction,* respectively. While these values are low in comparison to those reported in experimental research, they are still considered acceptable for survey research (Knapp and Mueller, 2010). For many of study constructs, measurement reliability cannot be assessed using Cronbach's alpha or any other equivalent measure (e.g., test-retest, parallel forms) as these are not scale items (ordinal or interval). The constructs *Shopping Goal, Breadth of In-Store Search, Depth of In-Store Search, Type of Information Accessed, Information Sources Used, Purchase Outcome* and *In-Store Mobile Device User?* fall in this category. As can be noted from Table 1, these are all either categorical or ratio scale variables that are measured as counts or percentages. Hence, their reliability must be assessed by other methods. In the present context, the internal consistency criterion was used (Knapp and Mueller, 2010). To implement such a criterion is a survey setting, the two-forms methodology that is often used in survey research was used. In other words, the information sought by each of the constructs was gathered through two differently worded questions that sought the exact same information but were located in various parts of the questionnaire (Callegaro et al.,

Table 1
Descriptive statistics for consumer decision journey variables.

	Frequency (percent)	Mean (low – high)	Range
Shopping Goal:			
Concrete			
save money	40.1		
save time & effort	4.9		
find the best product "fit"	43.4		
Abstract			
recreation & enjoyment	5.3		
discover new products	7.2		
In-Store Mobile Device User			
Yes	76.2		
No	23.8		
Pre-Store Visit Search (in minutes)		19.1	0–120
Depth of In-Store Search (in minutes)		13.8	0–60
Breadth of In-Store Search (# of different activities)		4.1	0–12
Information Sources Used			
Personal	14.9		
Marketer	34.4		
Social	25.4		
Neutral	25.2		
Type of Information Accessed			
Price	36.8		
Product	63.2		
Post-Store Visit Search (in minutes)		12.2	0–120
Purchase Outcome:			
In-Store-Now			
physical purchase at the store	73.7		
online purchase while at store	6.0		
Deferred			
online purchase at home	7.6		
physical purchase at another store	7.0		
decided not to make a purchase	5.7		
Shopping Experience Satisfaction (rating scale)		6.10	1–7
Product Satisfaction (rating scale)		6.45	1–7
Product Category (searched)			
Utilitarian	37.6		
Hedonic	59.1		
Price Band (searched in $)		241.1	0–500
Store Type (where search occurred)			
discount store	71.5		
regular store	26.8		

2014). Respondent observations where the internal consistency criterion was below the commonly used 0.90 threshold were dropped from the analysis. This reduced the sample size by approximately fifty observations but assured that the remaining data used to test the hypotheses and estimate the logistic regression models was of high quality.

Demographic information, such as *Age* and *Income* that could be used to profile shoppers was also collected. Descriptive statistics that include frequency counts for the dichotomous and categorical variables and means and ranges for the consumer decision journey variables are reported in Table 1.

3. Empirical results

Logistic regression was used as the analysis methodology because of the scale properties of the dependent variables (dichotomous) and of the independent variables (mix of dichotomous and continuous). It is the most appropriate modeling technique under these measurement conditions. The parameter estimates (β's) and the associated Odd Ratio's [Exp (β)'s] of the estimated logistic regression models were used to test the hypotheses proposed in an earlier section.

In the first logistic regression model, *In-Store Mobile Device User* was used as the dependent variable while *Pre-Store Visit Search, Depth of In-Store Search, Breadth of In-Store Search, Information Sources Used, Type of Information Accessed, Post-Store Visit Search, Shopping Experience Satisfaction* and *Product Satisfaction* were entered as independent variables. The purpose of this model was to identify differences in the consumer decision journey constructs for shoppers who had used a mobile device while shopping in a brick-and-mortar store in comparison to those who had not. The −2 log likelihood difference for the *In-Store Mobile Device User* model indicated a significant fit ($\chi 2 = 427.59$; df = 17; $p < .01$) with a Nagelkerke $R^2 = 0.43$, as shown in Table 2.

The parameter estimates (β's) and the associated Odd Ratio's [Exp (β)'s] for the independent variables that were significant ($p < .05$) in Table 2 were used to highlight important differences in the pathway to purchase for in-store mobile device users and non-users. *In-Store Mobile Device User* was positively related to both *Depth of In-Store Search* (β = 0.22) and *Breadth of Search* (β = 0.43), while being negatively associated with *Post-Store Visit Search* (β = −0.42), which suggests that in-store search by mobile device users is both broad and deep in scope, and not typically followed with additional post-store visit search. Hence H2 was supported but not H1.

Further, *Mobile Device User* was negatively related (β = −0.51) to *Information Sources Used (personal),* which implies that shoppers are less inclined to use their mobile devices for seeking advice from friends and relatives while in the store. Surprisingly, *In-Store Mobile Device User* was unrelated to *Type of Information Accessed (price)* which is contrary to the common belief that in-store mobile device users are mainly price shoppers.

In-store mobile device use was negatively associated with *Product Category (utilitarian)* (β = −0.78), *Store Type (discount)* (β = −0.79) and *Price Band* (β = −0.79), which indicates that in-store mobile device use is more associated with hedonic product categories, regular price stores and low price band items. Further, there were no differences in *Shopping Experience Satisfaction* and *Product Satisfaction* between mobile device users and non-users, which was somewhat surprising because in-store mobile device use has been assumed to lead to a more satisfying shopping experience.

In terms of demographics, *In-Store Mobile Device User* was positively

Table 2
Logistic regression parameter estimates for in-store mobile device user (yes)*.

	B	Significance ($p \leq$)	Odds Ratio [Exp (β)]
Pre-Store Visit Search	−0.01	n.s.	n.a.
Depth of In-Store Search	0.22	0.01	1.3
Breadth of In-Store Search	0.43	0.01	1.5
Information Sources Used			
personal	−0.51	0.04	0.6
marketer	−0.03	n.s.	n.a.
social	0.30	n.s.	n.a.
Type of Information Accessed			
price	0.17	n.s.	n.a.
product	0.03	n.s	n.a.
Post-Store Visit Search	−0.42	0.01	0.7
Shopping Experience Satisfaction	0.04	n.s.	n.a.
Product Satisfaction	0.08	n.s.	n.a.
Product Category			
utilitarian	−0.78	0.01	0.5
hedonic**			
Price Band	−0.25	0.01	0.8
Store Type			
Discount	−0.79	0.01	0.5
regular**			
Gender (male)	−0.37	0.02	0.7
Age	−0.34	0.01	0.7
Income	0.24	0.01	1.3
Goodness-of-Fit Statistics			
−2 Log Likelihood	1069.46	Cox and Snell R^2	0.32
Model χ^2 (df = 17)	427.59; p < .01	Nagelkerke R^2	0.43

Notes: *In-Store Mobile Device User (No) is used as reference category.
**used as reference categories for β estimates.

related to *Income* (β = 0.24) and negatively associated with *Age* (β = −0.34) and *Gender (male)* (β = −0.37), which indicates that younger female shoppers with more income are more likely to use their mobile devices in brick-and-mortar stores than older male shoppers with less income.

In the second logistic regression model, *Purchase Outcome (In-Store-Now)* was used as the dependent variable while *In-Store Mobile Device User* along with the same set of variables as in the first model were entered as independent variables. The purpose of the model was to examine differences between in-store-now versus deferred purchases. The −2 log likelihood difference indicated a significant fit ($\chi 2 = 356.18$; df = 14; $p < .01$; Nagelkerke $R^2 = 0.31$), as shown in Table 3.

The parameter estimates (β's) and the associated Odd Ratio's [Exp (β)'s] for the independent variables that were significant ($p < .05$) in Table 3 were used to highlight important differences in in-store-now versus deferred purchase outcomes, based on shopping goals and in-store mobile device use. *Purchase Outcome (In-Store-Now)* is negatively related to *Shopping Goal (concrete)* (β = −0.88) and positively related to *In-Store Mobile Device User* (β = 0.80), which suggests that in-store mobile device leads to physical in-store purchases for shoppers with abstract goals such, as recreation & enjoyment and discover new products, but not so for shoppers with concrete goals such as saving money, saving time & effort, and finding the best product "fit." Hence H3 was supported.

In the third logistic regression model, *Purchase Outcome (Online Purchase)* was used as the dependent variable with the same set of independent variables as in the *Purchase Outcome (In-Store-Now)* model. The purpose of this model was to examine differences between physical store purchases versus online purchases. The −2 log likelihood difference indicated a significant fit ($\chi 2 = 366.67$; df = 14; $p < .01$; Nagelkerke $R^2 = 0.31$), as shown in Table 4.

As before, the parameter estimates (β's) and the associated Odd Ratio's [Exp (β)'s] for the independent variables that were significant ($p < .05$) in Table 4 were used to highlight important differences between store versus online purchase outcomes. *Purchase Outcome (Online Purchase)* was unrelated to *Shopping Goal (concrete)* while being negatively related to *In-Store Mobile Device User* (β = −1.06), which suggests that in-store mobile device does not lead to online purchases for shoppers with concrete shopping goals, such as saving money, save time & effort, and find the best product "fit", as has often been conjectured. Hence H4 was supported.

Table 3
Logistic regression parameter estimates for purchase outcome (in-store-now)*.

		B	Significance (*p* ≤)	Odds Ratio [Exp (β)]
Shopping Goal				
Concrete abstract**		−0.88	0.01	0.4
Pre-Store Visit Search		0.11	0.03	1.1
In-Store Mobile Device User?				
Yes		0.80	0.01	2.2
no**				
Depth of In-Store Search		−0.29	0.01	0.8
Breadth of In-Store Search		−0.14	0.01	0.9
Information Sources Used				
personal		−0.26	n.s.	n.a.
marketer		0.33	0.05	1.4
social		−0.15	n.s.	n.a.
Type of Information Accessed				
price		−0.01	n.s.	n.a.
product		0.38	0.03	1.5
Post-Store Visit Search		−0.26	0.01	0.8
Product Category				
utilitarian		0.47	0.01	1.6
hedonic**				
Price Band		0.02	n.s.	n.a.
Store Type				
discount		0.38	0.01	1.5
regular**				
Goodness-of-Fit Statistics				
−2 Log Likelihood	1501.20	Cox and Snell R^2		0.23
Model χ^2 (df = 14)	356.18; p < .01	Nagelkerke R^2		0.31

Notes: *Purchase Outcome (Deferred Purchase) is used as the reference category.
**used as reference categories for β estimates.

Table 4
Logistic regression parameter estimates for purchase outcome (online purchase)*.

		B	Significance (*p* ≤)	Odds Ratio [Exp (β)]
Shopping Goal				
Concrete abstract**		−0.16	n.s.	n.a.
Pre-Store Visit Search		−0.09	n.s.	n.a.
In-Store Mobile Device User?				
Yes		−1.06	0.01	0.4
no**				
Depth of In-Store Search		0.08	n.s.	n.a.
Breadth of In-Store Search		0.18	0.01	1.2
Information Sources Used				
Personal		0.03	n.s.	n.a.
Marketer		−0.52	0.01	0.6
Social		0.35	0.04	1.4
Type of Information Accessed				
Price		−0.29	n.s.	n.a.
Product		−0.37	0.03	0.7
Post-Store Visit Search		0.24	0.01	1.3
Product Category				
Utilitarian hedonic**		−0.43	0.02	0.7
Price Band		0.12	0.01	1.1
Store Type				
Discount regular**		−0.45	0.01	0.6
Goodness-of-Fit Statistics				
−2 Log Likelihood	1530.47	Cox and Snell R^2		0.24
Model χ^2 (df = 14)	366.67; p < .01	Nagelkerke R^2		0.31

Notes: *Purchase Outcome (Online Purchase) is used as the reference category.
**used as reference categories for β estimates.

4. Discussion of research findings

Purchase Outcome (In-Store-Now) was negatively related to both *Depth of In-Store Search* and *Breadth of In-Store Search*, while being positively related to *Information Sources Used (marketer)* and *Type of Information Accessed (product),* which indicates that in-store search for product information from marketer sources does typically lead to in-store-now purchases, despite such search being minimal in breadth and depth. Further, *Purchase Outcome (In-Store-Now)* was positively associated with *Product Category* (*utilitarian)* and *Store Type (discount)*, which indicates that in-store-now purchases are more associated with utilitarian product categories and discount stores.

Purchase Outcome (Online Purchase) was positively related to *Breadth of In-Store Search,* but not to *Depth of In-Store Search,* while being negatively related to *Information Sources Used (marketer)* and positively related to *Information Sources Used (social),* which suggests that shoppers who make online purchases typically rely on social and not marketer sources of information. *Purchase Outcome (Online Purchase)* was negatively related to *Type of Information Accessed (product)* which indicates that shoppers making online purchases rely less of product information. Further, *Purchase Outcome (Online Purchase)* was negatively associated with *Product Category* (*utilitarian)* and *Store Type (discount),* but positively related to *Price Band*, which indicates that online purchases are more associated with hedonic product categories, regular price stores

and high price band items.

5. General discussion

The present study seeks to fill an important knowledge gap relating to mobile device assisted shopping. It does so by examining the interrelationships between shopping goals, in-store mobile device use, the amount and type of information accessed in the store, and purchase outcomes. The findings provide several new insights into the impact of in-store mobile device use on the consumer decision journey in a brick-and-mortar store. First, the use of a mobile device by shoppers in a brick-and-mortar store can either decrease or increase search depending upon the shopping goals of the consumer. For *concrete* shopping goals, such as *saving money*, *saving time & effort*, and *finding the best product "fit"* the use of a mobile device decreases both the depth and breadth of in-store search. In other words, it makes search more *efficient* (Daurer et al., 2016). But, for abstract shopping goals, such as *recreation & enjoyment* and *discover new products*, it facilitates search. Thus, shoppers get the best of both worlds by using a mobile device in a brick-and-mortar, depending on their underlying motivations.

Second, in-store mobile device use leads to more deferred purchases for shoppers with concrete goals, but for more in-store-now purchases for shoppers with abstract goals. Thus, while shoppers with concrete goals can conduct a more focused search while in a brick-and-mortar store they still defer their purchases, possibly because they need time to think about their proposed purchase or conduct additional post-store visit. Shoppers with abstract goals, on the other hand, whose search is more diffused are ready to buy while in the store with little need for additional search.

Third, in-store mobile device use also leads to more online purchases for shoppers with concrete goals, but for more store purchases for shoppers with abstract goals. When this result is combined with the previous one, it seems that for shoppers with concrete goals are more likely to make online purchases from home, while those with abstract goals are likely to make a purchase before leaving the store. This difference may explain why in-store mobile use has been found to be related to both high and low conversion rates in previous studies (de Haan et 2018; Grewal et al., 2018).

Fourth, the findings qualify some of the previously reported empirical results on the influence of mobile devices on sales conversion rates. Specifically, they reconcile the findings of de Haan et al. (2018) findings who found that mobile use decreases sales conversion rates with those of Grewal et al. (2018) who found the reverse to be true. It seems that this anomaly could be due to differences in shopping goals (concrete vs. abstract) as was found in the current study.

Fifth, the results confirm some of the theoretical propositions developed by Lurie et al. (2018) that in-store mobile device increases the amount of information accessed and lowers price sensitivity. Interestingly, the use of a mobile device leads to more store purchases for utilitarian product categories, in regular price stores and for low price band items.

Some of the earliest work on consumer store orientations classified shoppers as having an information seeking (price and product), convenience or social orientation (e.g., Bellenger and Korgaonkar, 1980). Information seeking shoppers are mainly concerned about getting the best value for the money they spend, while convenience shoppers are more focused on saving time and effort. Social shoppers value the social interaction and hedonic pleasure associated with shopping.

In the current context, it is the in-store search and evaluation activities of mobile device assisted shoppers that are the behaviors of interest. Changes in technology and the retail landscape with the advent of the mobile internet has made shopping behavior in stores more situational and context dependent (e.g., Brown et al., 2003). Yet, consumer store orientations that have previously been identified in the literature may still be relevant for mobile device assisted shopping.

The relationships between both *Breadth of In-Store Search* and *Depth of In-Store Search* with *Purchase Outcome* were significant and showed definitive patterns. For *Breadth of In-Store Mobile Search,* mobile shoppers who primarily searched product-related information on their mobile devices were most likely to buy at the store or another store, relative to those who primarily searched price-related information. In contrast, mobile shoppers who primarily searched price-related information were more likely to buy online, either while they were at the store or later at home. For *Depth of In-Store Search*, mobile shoppers with a low amount of in-store mobile search were more likely to purchase at the store, while those with a high amount were more likely to make a purchase at another store or online later at home.

The relationships between *Product Category* and *Store Type* with *Purchase Outcome* revealed that in-store mobile device assisted search for utilitarian products was more likely to lead to in-store purchases as was search conducted in discount stores, while in-store mobile device assisted search conducted at regular stores was more likely to result in online purchases, as was search for hedonic products.

6. Limitations and future research

6.1. Limitations

The study is based on data collected from a professionally managed online consumer panel. Respondents were panel members who reported having used a mobile device (i.e., a smartphone or a tablet) while shopping in a brick-and-mortar store during their most recent store visit. While the survey instrument was designed and implemented using best practices for conducting online panel research (Callegaro et al., 2014; Krosnick et al., 2015), it is probable that respondents made recall errors while providing information.

Despite this drawback and the use of correlations to infer relationships, the study is high in external validity because it is based on a quota sample of 1000+ mobile device shoppers that matches the incidence of mobile device assisted shopping in brick-and-mortar stores as well as the demographics of the American population.

To achieve the high degree of external validity some compromises had to be made during the data collection process. Some of the variables were measured using single indicators because of the concern that fatigue might lead some respondents to (prematurely) terminate the interview. Hence, the empirical findings must be interpreted with these limitations in mind.

6.2. Future research

Several avenues for future research emerge from the present study. First, the findings regarding in-store-now and deferred purchases relate to the *temporal* separation between purchase outcomes. Just as important is research relating to the *spatial* partition between physical and online purchases made while the mobile shopper is in the store. In other words, what in-store influences lead mobile shoppers to buy the product online while in the store instead of at the check-out counter? Or later at home? Second, a more detailed understanding of how pre-store visit search influences in-store search and evaluation, and how the latter effects post-store search is essential to obtaining a more detailed picture of the consumer decision journey.

Another avenue for future research on in-store mobile device use is to observe and track in-store mobile device use in an omnichannel store environment that offers multiple pathways to purchase (e.g., Best Buy, Nordstrom). Yet another possibility is to track the in-store behavior of mobile shoppers who use store-specific "apps" where they also have multiple purchase options (e.g., Sephora, Victoria's Secret).

A knowledge of how shopping goals and pre-store visit search influences in-store search and evaluation, and how the latter effects post-store search can be used to construct mobile shopper *archetypes* that depict the multiple pathways to purchase for mobile device assisted shoppers (Balasubramanian et al.2005).

6.3. Managerial implications

The findings reported in this study have important implications for brick-and-mortar retailers as they face increased competition from online-only stores. First, mobile shoppers with a product orientation are the best prospects for in-store interventions, and not those with a price orientation as commonly believed by traditional retailers. Retailers should devote significant in-store sales resources to these shoppers as they are close to the moment of purchase and an appropriate in-store intervention could "trigger" the purchase.

Second, mobile shoppers who have a price orientation tend to buy online, mostly later at home. Yet, they may be susceptible to an online purchase made while they are in the store. Salespeople can direct them to in-store information kiosks where they can compare in-store and online purchases, while offering them an e-coupon if they complete the purchase on the store's mobile app or website.

Third, mobile shoppers who have a social orientation may not be the best prospects for in-store interventions. These shoppers are not far along on the pathway to purchase. Still, salespersons could create the possibility of an in-store sale by referring them to an online review forum or a social media website where the product has recently received favorable mention. As these shoppers have a greater propensity to share their buying experience on social media, it is important to provide them with a wholesome store experience.

Overall, the findings show that mobile shoppers are not just focused on price when they use their mobile devices in a store. Rather, they view their mobile devices as personal shopping assistants, which creates multiple selling opportunities using in-store interventions that are in real-time and exploit location-aware information.

The findings are important for brick-and-mortar retailers as they attempt to stay viable in the evolving retail landscape. They need to understand that there are many different pathways to purchase for mobile device assisted shoppers including making a purchase at an online-only store (e.g., Amazon) while they are in the store. So doing requires a comprehensive understanding of the multiple routes to purchase coupled with real-time data and advanced analytics.

Recent advances in retail technology, such as the use of beacons, ceiling sensors and computer vision to analyze engagement and dwell time adjacent to IoT enabled digital shelf labels now permits retailers to construct detailed heat and traffic maps of in-store shopper activity. The new generation of tools are less invasive as they do not rely on visual data (i.e., facial recognition) to track individual shoppers, but privacy remains an issue. A knowledge of common mobile shopper archetypes is essential for traditional store retailers as they seek to endure in the current retailing landscape.

7. Summary and conclusions

The study findings provide at least two three insights into a consumer phenomenon that is rapidly disrupting traditional retailing. First and foremost, the research validates the importance of *deliberative* and *implemental* mobile shopper mindsets as an essential factor in influencing both the type of in-store mobile search conducted and purchase outcomes. By so doing, it makes an important theoretical advance in the evolving literature on mobile device-assisted shopping, which till now has not recognized the role of this important shopper predisposition on mobile device-assisted search in a brick-and-mortar store.

Second, the study findings highlight the important interactions between mobile shopper mindsets, the type of in-store mobile search conducted by the shopper, and purchase outcomes at a level of detail that has been missing from prior research. The findings show that there is an important context effect for in-store mobile search conducted in mass merchandise outlets in comparison to specialty stores, as well as for hedonic products in comparison to utilitarian products. An important takeaway is that the benefits of in-store mobile search in relation to costs is higher for hedonic products in specialty stores.

Finally, when viewed collectively, the research results challenge the *distraction* hypothesis, as the reason why the use of mobile devices in stores results in more in-store sales. According to that hypothesis, the use of mobile devices in stores distracts shoppers causing them to spend more time and money in stores than they anticipated. The findings of the present study are more consistent with an *engagement* explanation which suggests that mobile devices are actively and efficiently used by shoppers in brick-and-mortar stores to pursue search and evaluation goals depending on their mindsets.

References

Andrews, M., Luo, X., Fang, Z., Ghose, A., 2015. Mobile ad effectiveness: hyper-contextual targeting with crowdedness. Market. Sci. 35 (2), 218–233.

Aw, E.C.X., Basha, N.K., Ng, S.I., Ho, J.A., 2021. Searching online and buying offline: understanding the role of channel-, consumer-, and product-related factors in determining webrooming intention. J. Retailing Consum. Serv. 58, 1–12.

Balasubramanian, S., Raghunathan, R., Mahajan, V., 2005. Consumers in a multichannel environment: product utility, process utility, and channel choice. J. Interact. Market. 19 (2), 12–30.

Barwitz, N., Maas, P., 2018. Understanding the omnichannel customer journey: determinants of interaction choice. J. Interact. Market. 43, 116–133.

Bellenger, D.N., Korgaonkar, P.K., 1980. Profiling the recreational shopper. J. Retailing 56 (3), 77–92.

Bridges, E., Florsheim, R., 2008. Hedonic and utilitarian shopping goals: the online experience. J. Bus. Res. 61 (4), 309–314.

Brown, M., Pope, N., Voges, K., 2003. Buying or browsing? An exploration of shopping orientations and online purchase intention. Eur. J. Market. 37 (11/12), 1666–1684.

Büttner, O.B., Florack, A., Göritz, A.S., 2013. Shopping orientation and mindsets: how motivation influences consumer information processing during shopping. Psychol. Market. 30 (9), 779–793.

Callegaro, M., Baker, R., Bethlehem, J., Göritz, A.S., Krosnick, J.A., Lavrakas, P.J., 2014. Online Panel Research. Online Panel Research: A Data Quality Perspective, pp. 1–22.

Daurer, S., Molitor, D., Spann, M., Manchanda, P., 2016. Consumer Search Behavior on the Mobile Internet: an Empirical Analysis. University of Michigan Ross School of Business Paper.

de Haan, E., Kannan, P.K., Verhoef, P.C., Wiesel, T., 2018. Device switching in online purchasing: examining the strategic contingencies. J. Market. 82 (5), 1–19.

Edelman, D., Singer, M., 2015. The new consumer decision journey. McKinsey Q. 1, 1–3.

Flavian, C., Gurrea, R., Orus, C., 2020. Combining channels to make smart purchases: the role of webrooming and showrooming. J. Retailing Consum. Serv. 52, 1–11.

Gensler, S., Neslin, S.A., Verhoef, P.C., 2017. The showrooming phenomenon: it's more than just about price. J. Interact. Market. 38, 29–43.

Ghose, A., 2017. Tap: Unlocking the Mobile Economy. MIT Press, Cambridge, MA.

Ghose, A., Goldfarb, A., Han, S.P., 2013. How is the mobile Internet different? Search costs and local activities. Inf. Syst. Res. 24 (3), 613–631.

Gollwitzer, P.M., Keller, L., 2016. Mindset Theory. Encyclopedia of Personality and Individual Differences, pp. 1–8.

Goraya, M.A.S., Zhu, J., Akram, M.S., Shareef, M.A., Malik, A., Bhatti, Z.A., 2020. The impact of channel integration on consumers' channel preferences: do showrooming and webrooming behaviors matter? J. Retailing Consum. Serv. 1–12.

Goyal, N., 2021. 10 mobile commerce trends that will dominate 2021. Buildfire Report. https://buildfire.com/mobile-commerce-trends/.

Grewal, D., Ahlbom, C.P., Beitelspacher, L., Noble, S.M., Nordfält, J., 2018. In-store mobile phone use and customer shopping behavior: evidence from the field. J. Market. 82 (4), 102–126.

Hajdas, M., Radomska, J., Silva, S.C., 2020. The omni-channel approach: a utopia for companies? J. Retailing Consum. Serv. 1–14.

James, L., 2021. Mobile commerce trends 2021. The Future of Customer Engagement and Experience Report. https://www.the-future-of-commerce.com/2020/11/18/mobile-commerce-trends-2021/.

Kim, S.J., Wang, R.J.H., Malthouse, E.C., 2015. The effects of adopting and using a brand's mobile application on customers' subsequent purchase behavior. J. Interact. Market. 31, 28–41.

Knapp, T.R., Mueller, R.O., 2010. Reliability and Validity of Instruments. The Reviewer's Guide to Quantitative Methods in the Social Sciences, pp. 337–341.

Konus, U., Verhoef, P.C., Neslin, S.A., 2008. Multichannel shopper segments and their covariates. J. Retailing 84 (4), 398–413.

Krosnick, J.A., Presser, S., Fealing, K.H., Ruggles, S., Vannette, D., 2015. The Future of Survey Research: Challenges and Opportunities. The National Science Foundation Advisory Committee for the Social, Behavioral and Economic Sciences Subcommittee on Advancing SBE Survey Research.

Lee, L., Inman, J.J., Argo, J.J., Böttger, T., Dholakia, U., Gilbride, T., et al., 2018. From browsing to buying and beyond: the needs-adaptive shopper journey model. Journal of the Association for Consumer Research 3 (3), 277–293.

Lemon, K.N., Verhoef, P.C., 2016. Understanding customer experience throughout the customer journey. J. Market. 80 (6), 69–96.

Luo, X., Andrews, M., Fang, Z., Phang, C.W., 2013. Mobile targeting. Manag. Sci. 60 (7), 1738–1756.

Lurie, N.H., Berger, J., Chen, Z., Li, B., Liu, H., Mason, C.H., Sun, B., 2018. Everywhere and at all times: mobility, consumer decision-making, and choice. Customer Needs and Solutions 1–13.

Mali, N., 2021. Your M-commerce deep dive: data, trends and What's Next in the mobile retail revenue world. Big Commerce Report. https://www.bigcommerce.com/blog/mobile-commerce/#are-there-different-types-of-mobile-commerce.
Paul, J., Rosenbaum, M., 2020. Retailing and consumer services at a tipping point: new conceptual frameworks and theoretical models. J. Retailing Consum. Serv. 54, 1–4.
Sciandra, M.R., Inman, J.J., 2015. Smart phones, bad calls? In-store mobile technology use and consumer purchase behavior. Adv. Consum. Res. 43.
Shankar, V., Balasubramanian, S., 2009. Mobile marketing: a synthesis and prognosis. J. Interact. Market. 23 (2), 118–129.
Shankar, V., Venkatesh, A., Hofacker, C., Naik, P., 2010. Mobile marketing in the retailing environment: current insights and future research avenues. J. Interact. Market. 24 (2), 111–120.
Singh, S., Jang, S., 2020. Search, purchase, and satisfaction in a multiple-channel environment: how have mobile devices changed consumer behaviors? J. Retailing Consum. Serv. 1–11.
Thaichon, P., Phau, I., Weaven, S., 2020. Moving from multi-channel to Omni-channel retailing: special issue introduction. J. Retailing Consum. Serv. 1–3.
Varadarajan, R., Srinivasan, R., Vadakkepatt, G.G., Yadav, M.S., Pavlou, P.A., Krishnamurthy, S., Krause, T., 2010. Interactive technologies and retailing strategy: a review, conceptual framework and future research directions. J. Interact. Market. 24 (2), 96–110.
Verhoef, P.C., Neslin, S.A., Vroomen, B., 2007. Multichannel customer management: understanding the research-shopper phenomenon. Int. J. Res. Market. 24 (2), 129–148.
Wang, R.J.H., Malthouse, E.C., Krishnamurthi, L., 2015. On the go: how mobile shopping affects customer purchase behavior. J. Retailing 91 (2), 217–234.
Xu, K., Chan, J., Ghose, A., Han, S.P., 2016. Battle of the channels: the impact of tablets on digital commerce. Manag. Sci. 63 (5), 1469–1492.