

Using mobile while shopping in-store: a new model of impulse-buying behaviour

Simone Aiolfi, Silvia Bellini and Benedetta Grandi

Department of Economics and Management, University of Parma, Parma, Italy

Abstract

Purpose – The purpose of this paper is to develop a comprehensive model of impulse-buying that considers the impact of mobile device use on shopping behaviour as a tool for shopping preparation or as a tool for self-regulation.

Design/methodology/approach – Data were obtained through a single-stage mall intercept survey method using a structured questionnaire involving 406 respondents interviewed after checkout. Data analysis was conducted using a structural equation modelling approach with LISREL 8.8.

Findings – The results support most elements of the hypothesis of the proposed conceptual framework. Specifically, findings show the impact of mobile usage on shopping behaviour, which results in fewer impulse purchases.

Practical implications – The research demonstrates how shoppers using mobile devices in-store felt less of an urge to purchase during shopping, resulting in fewer unplanned purchases. The effects of mobile device use on in-store purchasing decisions are designed to create a new scenario for the practice of shopper marketing, and retailers and manufacturers will have to seek new ways to capture consumers' attention in-store and to influence shoppers' perceptions early in the shopping cycle without diminishing the role of in-store marketing levers.

Originality/value – Prior research found the antecedents of impulse-buying in individual characteristics, situational variables and endogenous variables. However, it did not consider mobile pre-shopping factors or mobile usage. Filling the gap in the existing literature, this work sets out to develop a comprehensive model of impulse-buying that considers the impact of mobile usage on shopping behaviour.

Keywords Impulse-buying, Mobile device, Shopper marketing, Smartphone usage, Consumer behaviour

Paper type Research paper

Introduction

Manufacturers and retailers have always been interested in understanding impulse-buying behaviour in the grocery setting. Both recognize the growing importance of the point of sale in influencing consumers' decisions. In fact, even if grocery items are generally perceived to be low-involvement goods and the grocery shopping trip a low-involvement activity (Smith and Carsky, 1996), understanding the factors that trigger impulsive purchases is important because as many as nine out of ten shoppers occasionally buy on impulse (Cobb and Hoyer, 1986; Silvera *et al.*, 2008). A factor that contributes to the high number of impulse purchases is the design of supermarkets that encourages such purchases (Zhang *et al.*, 2007; Hultén and Vanyushyn, 2011).

Manufacturers have gradually shifted their strategic focus from the traditional marketing levers to in-store marketing, whereas retailers have invested many resources in shopper marketing so as to influence consumers' decisions in front of the display.

Despite the extensive literature available on factors that influence the consumer decision-making process inside the store and on impulse-buying behaviour (Kollat and Willett, 1967; Iyer and Ahlawat, 1987; Iyer, 1989; Inman *et al.*, 2009; Hultén, 2012; Mohan *et al.*, 2013; Shankar, 2014; Wiese *et al.*, 2015; Bellini *et al.*, 2016; Bellini and Aiolfi, 2017, 2019), recent

changes in the business and technological landscape have created a new scenario for shopping behaviour in grocery retailing. Specifically, digitalization has significantly affected the retail landscape and managers have become interested in designing new strategies that could improve their profitability by taking advantage of technological innovations (Kollmann *et al.*, 2012; Pantano and Viasone, 2014). One of the most appealing targets for marketing managers is the customer decision-making process in the digital world (Sun and Wu, 2011; Ström *et al.*, 2014; Ansari and Riasi, 2016).

Over the last few years, widespread mobile connectivity has significantly influenced the consumer decision-making process. This impact depends on the type of use (Sciandra and Inman, 2014). In fact, in a retail environment, mobile devices could be used both in-store and out-of-store. Consumers use their mobile outside the store to collect information before entering the point of sale. On the contrary, consumers can use their

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mobile in-store as a guide for shopping – for example, to check their digital shopping lists, make online price comparisons, consult digital flyers or use mobile retail apps. Recent research by [PYMNTS \(2019\)](#) states how, among 2,300 American consumers, 48% of those who own smartphones use them while shopping in stores. Specifically, consumers mostly use mobile devices for shopping-related activities. For instance, 46.8% use them to access in-app discounts, 43.3% look up product information, 33.6% use them to compare prices with competitors and 31.1% consult product reviews. In addition, a recent survey by [Statista \(2020b\)](#) stated that approximately 46% of consumers worldwide felt comfortable using their own mobile phone for in-store activities; specifically, 73% of survey respondents felt secure about using their mobile device for shopping-related activities such as looking up product information while in an in-store retail environment.

As a result of this type of mobile in-store usage, consumers are more informed during the shopping trip. Consequently, using mobile devices in-store as a guide for shopping, consumers are less aware of the in-store marketing stimuli promoted by retailers, leading to fewer unplanned purchases ([Bellini and Aiolfi, 2017, 2019](#)). Our examination of the literature led us to identify several main strands on how in-store mobile usage affects retailer performance. In conducting our study, we followed the one that affirms that the use of mobile devices in relation to shopping leads to customers making fewer unplanned purchases than those who do not use mobile devices ([Sciandra and Inman, 2014; Bellini and Aiolfi, 2017, 2019](#)).

Given these results, it becomes crucial to understand how mobile phones influence the decision-making process inside the store as well as the purchasing behaviour of shoppers.

Prior research developed models that explained impulse-buying, but they did not consider pre-shopping factors and mobile usage ([Beatty and Ferrell, 1998; Mohan et al., 2013; Bellini et al., 2017](#)). Specifically, only a few contributions have so far shown that the degree of shopping preparation influences the behaviour of shoppers inside the store, resulting in fewer impulse purchases: the greater the tendency to plan purchases, the lower the tendency to engage in impulse-buying ([Bellini et al., 2016, 2017](#)). As stated by [Bellini et al. \(2017\)](#), consumers are better prepared than they were in the past and tend to limit the influence of retailers in-store. This phenomenon is further reinforced by mobile usage during the in-store shopping experience that may influence consumers, who, thanks to their pre-purchase preparation, tend to follow their physical, mental or digital shopping list and are therefore less influenced by the retail environment ([Bellini and Aiolfi, 2019](#)). Considering the increase in pre-shopping activities and the growth of mobile device use, it is important to extend the previous models to consider these variables. Starting from the prior models ([Beatty and Ferrell, 1998; Mohan et al., 2013; Bellini et al., 2017](#)), our intention was to develop and test a comprehensive model that considers pre-shopping preparation tendency and in-store mobile usage as antecedents of impulse-buying behaviour. Specifically, we posit that both reduce the urge experienced during the shopping trip towards impulse-buying behaviour. This new model will help researchers and marketers better understand shopping behaviour in the digital world, where consumers are better prepared than they were in the past, using mobile devices both out-of-store as a tool for shopping

preparation and in-store as a tool for self-regulation. To develop our impulse-buying model, we used a structural equation modelling approach that took into account the impact of mobile device use on in-store shopping behaviour.

Conceptual framework and hypotheses

Impulse-buying

The in-store behaviour of shoppers has been of interest to researchers for over 60 years now ([Kollat and Willett, 1967; Stern, 1962; Kim and Park, 1997; Underhill, 1999, 2009; Sorensen et al., 2017](#)). Specifically, researchers' attention to the factors that influence consumer decision-making inside the store has led to several studies that have striven to advance the science of shopping ([Kollat and Willett, 1967; Iyer and Ahlawat, 1987; Iyer, 1989; Inman et al., 2009; Hultén, 2012; Mohan et al., 2013; Shankar, 2014; Wiese et al., 2015; Bellini et al., 2016](#)). Of all the aspects of shoppers' behaviour in-store, we have intentionally focused in our work on the fundamental patterns of impulse-buying behaviour, on which extensive literature exists ([Muruganatham and Ravi Shankar, 2013; Venkateswara Raju et al., 2015](#)). Within this literature, the definition we chose to analyse in our work comes from [Iyer \(1989\)](#), who divided impulse purchases into four categories: pure impulse-buying (defined as purchases characterized by a complete absence of planning); suggested impulse-buying (defined as a purchase that occurs when the retailer and the store itself suggest new product alternatives to satisfy a desire or a need); reminded impulse-buying (intended as a purchase that occurs when consumers only remember to buy a product they need when they are in the store in front of the display); and planned impulse-buying (defined as purchases partially planned before entering in the store – e.g. purchases for which the category has been decided in advance).

Impulse-buying reflects the ability of retailers to generate immediate desire and redirect consumer purchases towards products or categories for which no pre-shopping intention existed. Individuals are aware of this power that retailers have and attempt to limit the effect by activating some self-control strategies. In grocery retailing, there are two ways for consumers to control their impulsiveness: define a mental budget to be followed during the shopping expedition ([Heat and Soll, 1996; Stille et al., 2010](#)) and devote time to the preparation of the shopping trip ([Heckhausen and Gollwitzer, 1987; Iyer and Ahlawat, 1987; Thomas and Garland, 1993, 2004](#)). The shopping list, for example, is an external memory aid ([Block and Morwitz, 1999](#)) that increases the probability of correspondence between intention and action.

Over the past few years, the growing penetration of digital technology has reinforced this tendency towards self-regulation, enabling individuals to prepare their shopping expedition with different tools in addition to the written shopping list ([Bellini and Aiolfi, 2017, 2019](#)). Consumers enter the store much better prepared than in the past. Thanks to technology, consumers are now able to collect information out-of-store, carry out many and sundry pre-trip activities such as comparing the pricing, promotions and range of the various retailers. Consumers therefore enter the store with advanced knowledge and are able to shop quickly, only searching for the products they had planned to buy, guided by a digital shopping list, digital coupons or printed customized promotions ([Bellini](#)

et al., 2016). Literature states that the degree of grocery shopping preparation is related to the shopper's behaviour inside the store in terms of its influence on the balance between planned and impulsive buying: the higher the degree of shopping preparation, the greater the tendency to plan purchases before entering the store, and hence the lower the tendency to engage in impulse-buying in-store (Bellini *et al.*, 2016).

The close connection between preparatory activities and the type of product purchased has enriched the literature with a new model of shopper behaviour that considers the pre-shopping tendency amongst the factors affecting impulsive purchases (Bellini *et al.*, 2017). From this perspective, impulsive purchases depend on individual characteristics and any number of variables that might affect any particular shopping trip. The model shows that higher pre-shopping tendencies have a direct influence on impulse-buying inasmuch as they result in fewer impulsive purchases.

Impulse-buying and in-store mobile device usage

Widespread mobile connectivity and the growing penetration of mobile devices have significantly affected consumers' decision-making processes. This impact, however, depends on the type of use that is made of the technology (Sciandra and Inman, 2014). The use is defined as task-unrelated when individuals use their device in a manner that is not directly related to the focal decision task. For example, mobile usage is considered task-unrelated when consumers engage in private conversations, send personal text messages, check e-mails and surf the Web. Conversely, the use is considered task-related when individuals use their device in a manner directly related to the shopping. As far as grocery shopping is concerned, the use is task-related when consumers use the mobile device to access digital shopping lists, collect information about prices and products, scan product barcodes, compare prices, use mobile shopping applications or collect digital coupons to be redeemed in-store.

This latter type of usage can help consumers make better decisions because they are less influenced by the environment and expend less effort inside the store (Bellini *et al.*, 2016). Therefore, digital and mobile tools may positively affect both the quality and the efficiency of purchases and decision-making processes inside the store.

From a retailer's perspective, several authors have found that in-store mobile usage affects retailer performance in a variety of ways. For example, Grewal *et al.* (2018) consider mobile distraction a key factor for increasing purchases and therefore profits, as customers spend more time in the store and pay much more attention to the shelves.

On the contrary, some authors (Sciandra and Inman, 2014; Bellini and Aiolfi, 2017, 2019) define the type of mobile usage more precisely (related or unrelated to the shopping goal), demonstrating that the use of mobile devices in a shopping-related manner leads customers to make fewer unplanned purchases compared to those who do not use mobile devices, as they are better equipped to stay on track while shopping.

Proposed impulse-buying model

The growing penetration of mobile devices, along with increasing mobile device use in a task-related manner (Bellini

and Aiolfi, 2019; PYMNTS, 2019; Statista, 2020a), provides the opportunity to revise the existing literature on impulse-buying behaviour.

The purpose of our work is to offer a model of impulse-buying which can help researchers and practitioners better understand shopping behaviour in the new retail setting, where consumers are much better prepared than in the past, using mobile devices both out-of-store as a tool for shopping preparation and in-store as a tool for self-regulation.

In line with prior research, our model considers shopping enjoyment and impulse-buying tendency as individual traits (Sproles and Kendall, 1996), and the influence of positive and negative affect (Beatty and Ferrell, 1998; Bellini *et al.*, 2017), the influence of exogenous situational variables such as time and money available (Beatty and Ferrell, 1998) and the urge to purchase impulsively (Beatty and Ferrell, 1998; Dholakia, 2000) as mediators of the influence of the other variables (i.e. positive and negative affect, shopping enjoyment, impulse-buying tendency, mobile usage) on impulse-buying behaviour.

Moreover, we include pre-purchase planning tendency among the individual characteristics already considered in existing literature (Bellini *et al.*, 2017). Finally, filling the gap in existing literature, we include consumer mobile usage only for shoppers who use the mobile device in a shopping-related manner.

This sub-section explains the conceptual framework of our revised model of impulse-buying behaviour (see Figure 1).

Shopping enjoyment and positive affect

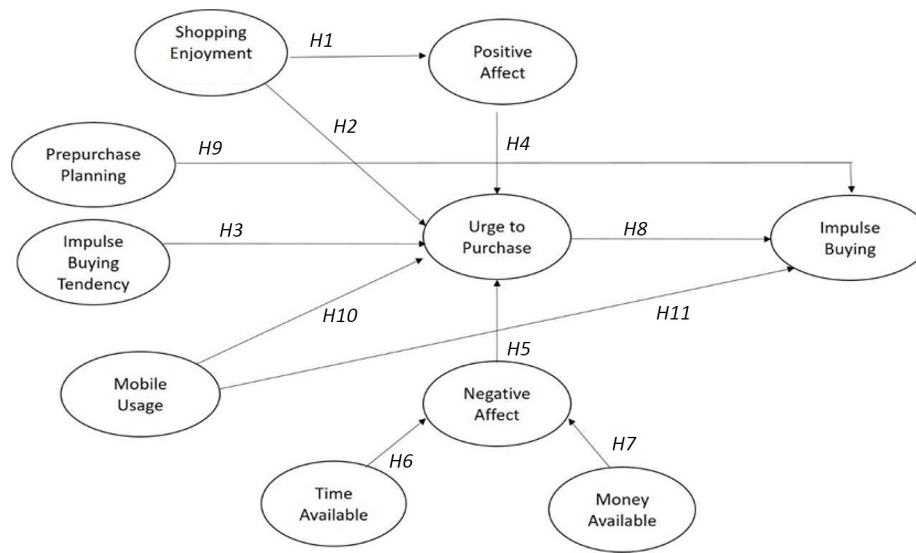
Literature defines shopping enjoyment as the pleasure an individual obtains from the shopping process (Beatty and Ferrell, 1998). According to literature, shoppers who consider shopping an enjoyable activity derive pleasure from the shopping experience, so they are more likely to get psychological rewards from the shopping experience itself (Bellenger, 1980; Beatty and Ferrell, 1998; Bellini *et al.*, 2017). Therefore, pleasure and enjoyable shopping experiences lead to positive moods in the grocery setting, as demonstrated in several studies (Beatty and Ferrell, 1998; Mohan *et al.*, 2013; Bellini *et al.*, 2017). These considerations lead to the following hypothesis:

- H1. The higher the level of shopping enjoyment, the higher the level of positive affect.

Shopping enjoyment and urge to purchase impulsively

According to Beatty and Ferrell (1998), we defined the urge to purchase impulsively as a state of desire that is experienced upon encountering an object in the environment. It clearly precedes the actual impulse action and, as stated in literature, it is spontaneous and sudden. Prior research states that shoppers who consider shopping an enjoyable activity derive pleasure from the shopping experience, spend more time shopping and browse for longer before making a purchase (Westbrook and Black, 1985; Beatty and Ferrell, 1998; Atulkar and Kesari, 2018). Because recreational shoppers obtain gratification from the process of shopping, they can hardly resist the urge they experience upon encountering a product in the retail environment and are more likely to engage in unplanned

Figure 1 Conceptual framework



purchases (Rook, 1987; Beatty and Ferrell, 1998). Thus, we offer this hypothesis:

H2. The higher the level of shopping enjoyment, the stronger the urge to purchase impulsively.

Impulse-buying tendency and urge to purchase impulsively

In line with prior research, we defined the impulse-buying tendency as a tendency to make unplanned purchases and to buy spontaneously with little or no deliberation or consideration of consequences (Beatty and Ferrell, 1998; Weun *et al.*, 1998; Bellini *et al.*, 2017). According to literature, shoppers with stronger impulse-buying tendencies are more likely to experience urges to buy impulsively in a retail setting (Beatty and Ferrell, 1998; Bellini *et al.*, 2017). This leads to the following hypothesis:

H3. The stronger the impulse-buying tendency, the stronger the urge to purchase impulsively.

Positive affect and urge to purchase impulsively

Literature states that there is a positive and direct association between positive affect and urge to purchase impulsively (Rook and Gardner, 1993; Beatty and Ferrell, 1998; Bellini *et al.*, 2017). According to prior research, in a retail setting, a positive mood will lead to impulse-buying more than a negative mood: individuals in a positive mood have an unconstrained feeling, the desire to reward themselves and higher energy levels (Rook and Gardner, 1993). Moreover, psychological literature suggests that positive moods cause people to feel they have more freedom to act (Cunningham, 1979) and, consequently, pleasure is positively associated with the likelihood of overspending during the shopping expedition (Donovan *et al.*, 1994). Hence, the following hypothesis:

H4. The higher the level of positive affect, the stronger the urge to purchase impulsively.

Negative affect and urge to purchase impulsively

According to a review of the literature, the effects of negative moods on behaviour are not so clear. Sometimes positive moods and negative moods produce the same effects, while other times they produce opposite effects (Clark and Isen, 1982). Generally, in a retail setting, negative affect creates a desire to withdraw from the retail environment as it makes the shoppers perceive the store as unlikely to respond to their shopping needs (Eroglu and Machleit, 1993). Because negative affect may cause withdrawal from the store, it is unlikely to result in impulsive urges. Hence, we hypothesize:

H5. The higher the level of negative affect, the weaker the urge to purchase impulsively.

Time available and negative affect

In line with Beatty and Ferrell (1998), we introduced an exogenous situational variable considered important in the buying behaviour scenario: time available. We defined time available as the amount of time shoppers feel they have available for that shopping expedition (Beatty and Ferrell, 1998). According to this definition, time available is the opposite of time pressure (Iyer, 1989; Beatty and Ferrell, 1998; Xu, 2007).

Iyer (1989) found that time pressure negatively affects the individual's behaviour inside the store, whereas Beatty and Smith (1987) found that time availability is positively connected to searching activity in a retail setting. Thus, as stated by Beatty and Ferrell (1998) and Muruganatham and Ravi Shankar (2013), not only does in-store browsing appear to be positively affected by the time the customer has available, but it also has a positive impact on the customer's feelings.

In-store browsing appears to be positively influenced by an individual's available time and impulse-buying tendency. In turn, in-store browsing has a positive impact on consumers' positive feelings and impulse-buying urge (Beatty and Ferrell, 1998). In other words, having little time available for the shopping activity could lead to frustration and negative reactions to the environment for people aiming to carry out planned activities within the store. This is consistent with literature that confirms that not achieving a goal is positively associated with negative affect (Dawson *et al.*, 2002; Babin *et al.*, 1994). Hence the following:

H6. More time availability leads to lower levels of negative affect.

Money available and negative affect

In accordance with Beatty and Ferrell (1998), we added a second situational variable to our model: money available. Money available is a situational variable operationalized in terms of respondents' perception of their monetary budget for that specific shopping expedition. This is consistent with the definition given by Beatty and Ferrell (1998, p. 176) for which money available was "the amount of budget or extra money the individual perceives she or he has to spend on that day". Thus, we considered money available as the amount of monetary budget or extra money individuals perceive they have to spend on that shopping expedition (Beatty and Ferrell, 1998). Because money availability increases people's purchasing power, they will avoid purchasing and the shopping environment if they do not have the required money (Jeon, 1990). Particularly, individuals avoid hedonic purchases not to increase their negative feelings (Levav and McGraw, 2009). This leads to negative affect during the shopping expedition. If, on the contrary, people have enough money, they can use the money available for virtuous expenditures to alleviate their negative feelings (Levav and McGraw, 2009).

Previous research stated that money availability has a strong relationship with our overall well-being: the perception of available money produces more excitement – i.e. positive affect – and less frustration during the customer's stay in the shopping environment (Beatty and Ferrell, 1998; Matz *et al.*, 2016). Furthermore, spending causes a great increase in happiness and well-being, especially when it is on goods and services that match the consumer's personality (Matz *et al.*, 2016). Thus, as stated by Matz *et al.* (2016), money available can indeed increase happiness if it is spent "right". Hence the following hypothesis:

H7. More money availability leads to lower levels of negative affect.

Urge to purchase impulsively and impulse-buying

In line with previous studies (Beatty and Ferrell, 1998; Mohan *et al.*, 2013; Bellini *et al.*, 2017), we have identified impulse-buying as the incidence of impulse purchases, calculated as the number of products purchased on impulse over the total number of products purchased. Unlike previous studies on impulse-buying (Beatty and Ferrell, 1998; Bellini *et al.*, 2017), we also considered impulse purchases as reminded purchases,

in the belief that retailers are responsible for reminding customers of the products they require to fulfil their needs and establish a long-lasting relationship with them. Prior research shows a positive relationship between the urge to purchase impulsively and impulse-buying (Beatty and Ferrell, 1998; Bellini *et al.*, 2017). As more urges are experienced, the likelihood of engaging in impulse-buying increases (Beatty and Ferrell, 1998). Hence, shoppers who continually experience impulsive urges during their shopping expedition are unable to resist many of these impulsive urges despite the self-control strategies they may have implemented to limit the ability of the retailer to generate immediate desires and to be less affected by in-store stimuli (Hoch and Loewenstein, 1991; Dholakia, 2000; Baumeister, 2002). Therefore, we propose the following hypothesis:

H8. The stronger the urge to purchase impulsively, the higher the level of impulse-buying.

Pre-purchase planning and impulse-buying

According to Gauri *et al.* (2008), we defined pre-purchase planning as the degree to which a consumer develops clear purchasing intentions and engages in particular preparatory behaviours before visiting the grocery store. In line with prior research, shoppers devote time and effort to the preparation of the shopping expedition in terms of price searching and planning of purchases to avoid impulsive purchases (Heckhausen and Gollwitzer, 1987; Iyer and Ahlawat, 1987; Thomas and Garland, 1993, 2004). The literature has demonstrated the existence of a positive association between the degree of grocery shopping preparatory activities and shopper behaviour inside the store in terms of impulse-buying. Specifically, the higher the degree of shopping preparation, the greater the tendency to plan purchases before entering the store and hence the lower the tendency to engage in impulse-buying in-store (Bellini *et al.*, 2016). Hence, the following hypothesis:

H9. The higher the level of pre-purchase planning, the lower the quantity of impulse-buying.

Mobile usage, urge to purchase impulsively and impulse-buying

The growing penetration of mobile devices in the daily lives of individuals has also significantly influenced consumers' decision-making process. However, literature has stated that this impact depends on the type of use made: task-related or task-unrelated (Sciandra and Inman, 2014; Bellini and Aiolfi, 2017, 2019).

In our model, we decided to focus only on the directly related use of mobile devices during the shopping task. Therefore, as suggested by Sciandra and Inman (2014) and Bellini and Aiolfi (2017, 2019), we only considered shoppers who used their mobile devices to collect information about prices and products, to scan product barcodes, to compare prices, to create and consult a digital shopping list, to use the retailer's app and to collect digital coupons to be redeemed in-store. From the consumers' perspective, this type of usage could help consumers make

better decisions, because they are less influenced by the shopping environment.

Conversely, from the retailer's perspective, use of the mobile device in-store in a shopping-related manner as a tool for self-regulation is likely to reduce the effectiveness of their in-store marketing strategies: individuals using mobile devices in a shopping-related manner make fewer unplanned purchases compared to those who do not use mobile devices.

These considerations lead to our final hypotheses:

H10. Shoppers using mobile technologies in a shopping-related manner will experience weaker urges to purchase impulsively.

H11. Shoppers using mobile technologies in a shopping-related manner will make fewer impulse purchases.

Methodology

Sample

The research was based on the single-stage mall intercept survey method to collect data using a process widely used in the literature (Beatty and Ferrell, 1998; Sharma *et al.*, 2010; Mohan *et al.*, 2013; Sciandra and Inman, 2014; Bellini *et al.*, 2017; Bellini and Aiolfi, 2017, 2019). A leading Italian grocery retailer gave us permission to conduct our survey in its stores. A total of 406 shoppers were interviewed by three researchers, but 77 individuals were subsequently excluded because they used the mobile device in a shopping-unrelated manner and we decided not to consider those shoppers in our structural equation model. The aim of the research is to understand what the determinants of impulse-buying are in a multi-channel context characterized by this interesting growth in the use of the mobile as a pre-shopping planning tool (Sciandra and Inman, 2014; Bellini and Aiolfi, 2019). If it is true, as has been shown, that those who use mobile technology in a shopping-related manner are less likely to buy on impulse, it seems necessary to review the traditional criteria that explain purchasing behaviour and so to include in the model on the determinants of impulse-buying the use of mobile phones in a shopping-related manner. For these reasons, it was decided in the model only to consider users who make shopping-related use of their mobile device, it being of no interest to dwell upon the use of the tool for other purposes. Thus, we excluded 77 respondents who did not use their phone for a shopping-related reason. These individuals could not be put in the non-mobile users group because, for the purposes of this study, they still used it (even if for reasons not related to the shopping task) and therefore they were not comparable to non-users. Consequently, our sample was composed of 329 individuals. Table 1 illustrates the demographic features of the sample.

Procedure

We stopped shoppers after the checkout to ask them to answer a structured questionnaire. We first asked them whether they had used their mobile devices during their shopping expedition and, if so, for what reasons (see Table 2).

To classify the use of the mobile device according to previous contributions (Sciandra and Inman, 2014; Bellini and Aiolfi, 2017, 2019), we assigned shopping-related usage if the respondents indicated that they had used their phone to create

Table 1 Demographic characteristics of the sample

Characteristics	(%)
Gender	
Female	72.7
Male	27.3
Age	
20–24	7.4
25–29	10.3
30–34	15.5
35–44	16.0
45–54	23.6
55–65	16.7
Over 65	10.3

Table 2 Mobile usage in store

Mobile in store	(%)
Mobile usage	
Yes	33.5
No	66.5
Type of use	
Shopping-related	43.5
Shopping-unrelated	56.5

or access a digital shopping list, to compare prices of products, to use the retailer's app, to compare different retailers for the best price, to look at a retailer's website or at a manufacturer's website, to scan a QR code on a package and/or to call someone for help with a decision. Conversely, mobile device use was classified as shopping-unrelated if the customers indicated they had used their phone to make or receive calls, to send or reply to personal messages, to check or send e-mails, to control their social networks, to look at websites not related to the shopping trip, to listen to music and/or to play games. Table 2 illustrates how many respondents used a phone during that specific shopping expedition (33.5%, 136 respondents) and how many did not (66.5%, 270 respondents). In addition, Table 2 explains how many of our respondents used a mobile device for activities related to shopping in-store (43.5%, 59 respondents) and how many for shopping-unrelated activities (56.5%, 77 respondents). Specifically, because our research focused on shopping-related mobile usage, Table 3 shows the several types of shopping-related mobile usage in-store declared by our respondents and their respective percentages.

Considering the goals of our research, it was also necessary to measure the number of products purchased on impulse. In line with previous studies (Beatty and Ferrell, 1998; Mohan *et al.*, 2013; Bellini *et al.*, 2017; Bellini and Aiolfi, 2019), the incidence of impulse purchases was calculated as the number of products purchased on impulse over the total number of products purchased during the specific shopping trip. Therefore, shoppers were asked to show their receipt and to identify, together with the researcher, any products purchased on impulse – namely, any products that they had not planned to buy (the so-called “pure impulse”) or that they were reminded of by the retailer during the shopping expedition (the so-called

Table 3 Type of shopping-related mobile usage inside the store

Type of shopping-related mobile usage inside the store	(%)
To check the digital shopping list	58.6
To check the promotions on the site/banner app	27.1
To call a family member/friend for information regarding grocery shopping	20.7
To seek for product information	20.7
To make calculation	17.2
To pay	12.1
To compare product prices with other retailers	3.4
To scan the QR code	3.4
To use the retailer's apps	3.4
To use digital coupons	1.7
To visit the retailer website	1.7

“reminded”) (Beatty and Ferrell, 1998). As suggested by Bellini and Aiolfi (2019), the identification of impulse purchases was made by a double-checked process: the interviewer and the shopper compared the planned products (in the shopping list) with the products actually purchased during that specific shopping trip by cross-checking the list and the basket.

Finally, shoppers answered questions regarding how they had prepared their shopping activities before entering the store (pre-purchase planning; Gauri *et al.*, 2008), their view of shopping as an enjoyable activity (shopping enjoyment; Sproles and Kendall, 1996), how often they engaged in impulse-buying (impulse-buying tendency; Weun *et al.*, 1998), the urges to engage in impulse-buying they experienced during the specific shopping trip (urge to purchase; Beatty and Ferrell, 1998), their monetary budget and time available for the trip (money and time available; Beatty and Ferrell, 1998), and the level of positive and negative affect experienced during the shopping trip (positive and negative affect; Watson *et al.*, 1988).

Measures

All the variables considered were measured with multiple-item scales, with the exception of impulse-buying and mobile usage. All the scales used in this research were drawn from previous studies on consumer and shopper behaviour, translated and adapted for the purpose of our research. Specifically, we adapted the shopping enjoyment items from Sproles and Kendall (1986), Beatty and Ferrell (1998) identified the negative affect items and time and money available, while the positive affect scale was adapted from the Positive and Negative Affect Schedule (PANAS) scale by Watson *et al.* (1988); the impulse-buying tendency scale was adapted from the existing scale developed by Beatty and Ferrell (1998); while pre-purchase planning came from Gauri *et al.* (2008). To investigate impulse-buying variables, by cross-checking the list and the basket, researchers counted the total number of impulse purchases, considering both pure and reminded impulse purchases. We therefore calculated the incidence of impulse purchases as the dependent variable in our proposed model. As far as data using proportions were concerned, Steel and Torrie (1980) recommended the arcsine transformation to address the concern that the variance of means tends to be smaller near 0% and 100% compared to near 30%–70%. For this reason, in line with Mohan *et al.* (2013), we

transformed our dependent variable using the arcsine transformation to develop a more accurate analysis. Finally, mobile usage, in line with the hypothesis, was considered as a dichotomous variable, where 1 referred to people who used their mobile in a shopping-related manner (e.g. digital shopping list, online price comparison, consultation of digital flyers and usage of apps), and 0 referred to consumers who did not use their mobile during their shopping trip.

Findings and discussion

Measurement model

To test our hypotheses, we used a structural equation modelling approach using LISREL 8.8. As recommended by Anderson and Gerbing (1988) and Sethi and King (1994), we tested the measurement model before analysing the structural model. For each construct, the adequacy of the individual items and the composites were assessed by measures of reliability and validity (Beatty and Ferrell, 1998). Firstly, we tested the reliability using Cronbach's alpha (Santos, 1999). Secondly, to test the convergent validity of our measurements, we examined the significance of the factor loading (Anderson and Gerbing, 1988) and composite reliability. Discriminant validity was assessed by comparing the average variance extracted (AVE) to the square of the correlation between the two latent variables (Fornell and Larcker, 1981). Table 4 shows all the items considered in the analysis.

As far as reliability is concerned, our results demonstrated that all the values were higher than the minimum acceptable value of 0.70. Furthermore, we found all the factor loadings to be significant, and the composite reliability of each construct higher than the cut-off value (0.70), confirming the convergent validity.

Finally, as far as discriminant validity was concerned, we found evidence of it for each construct as the AVE in each factor exceeds the correlation coefficient.

The model had a good fit: $\chi^2 = 589.771$ ($p = 0.0$), $df = 308$, $\chi^2/df = 1.91$, RMSEA = 0.052, CFI = 0.97, std RMR = 0.03. All the fit indices were better than the recommended ones (RMSEA < 0.06, CFI > 0.95, std RMR < 0.05).

Structural equation model

The overall fit of the model was found to be good: $\chi^2 = 693.741$ ($p = 0.0$), $df = 328$, $\chi^2/df = 2.11$, SRMR = 0.06,

Table 4 Scale summary

Scale items	Factor loading	Cronbach's alpha	Composite reliability
Shopping enjoyment (Sproles and Kendall, 1986)		0.95	0.95
1. Shopping is one of my favourite activities	0.90		
2. Shopping is a way I like to spend leisure time	1		
Pre-purchase planning (Gauri et al., 2008)		0.77	0.80
1. I prepare a shopping list before going grocery shopping	0.73		
2. I know what products I am going to buy before going to the supermarket	0.78		
3. I am a well-organized grocery shopper	0.88		
4. Before going to the supermarket, I plan my purchases based on the specials available that week	0.44		
Urge to purchase (Beatty and Ferrell, 1998)		0.97	0.97
1. I experienced a number of sudden urges to buy things I had not planned to purchase on this trip	0.99		
2. On this trip I saw a number of things I wanted to buy even though they were not on my shopping list	0.99		
3. I experienced no strong urge to make unplanned purchases on this trip	0.88		
Positive affect (Watson et al., 1988)		0.96	0.98
1. I felt excited on this shopping trip	0.99		
2. I felt enthusiastic while shopping today	0.99		
3. I felt happy during the shopping trip	0.94		
Negative affect (Watson et al., 1988)		0.97	0.98
1. I felt bored on this shopping trip	0.89		
2. I felt lethargic while shopping today	1		
3. I felt upset during the shopping trip	0.99		
Impulse buying tendency (Weun et al., 1998)		0.86	0.87
1. I avoid buying things that are not on my shopping list	0.65		
2. When I go shopping, I buy things I had not intended to purchase	0.87		
3. I am a person who makes unplanned purchases	0.90		
4. When I see something that really interests me, I buy it without considering the consequences	0.83		
5. It is fun to buy spontaneously	0.50		
Time available (Beatty and Ferrell, 1998)		0.97	0.97
1. I have limited time available to me for this particular shopping trip ^r	0.94		
2. I am not rushed for time on this shopping trip	0.95		
3. The amount of time pressure I feel on this shopping trip is high ^r	0.98		
Money available (Beatty and Ferrell, 1998)		0.90	0.91
1. I do not feel I can afford to make any unplanned purchases on this trip ^r	0.86		
2. I am on a tight budget while on this shopping trip ^r	0.88		
3. I feel that I have enough extra money on this shopping trip so that I can splurge a little if I find something I really like	0.89		

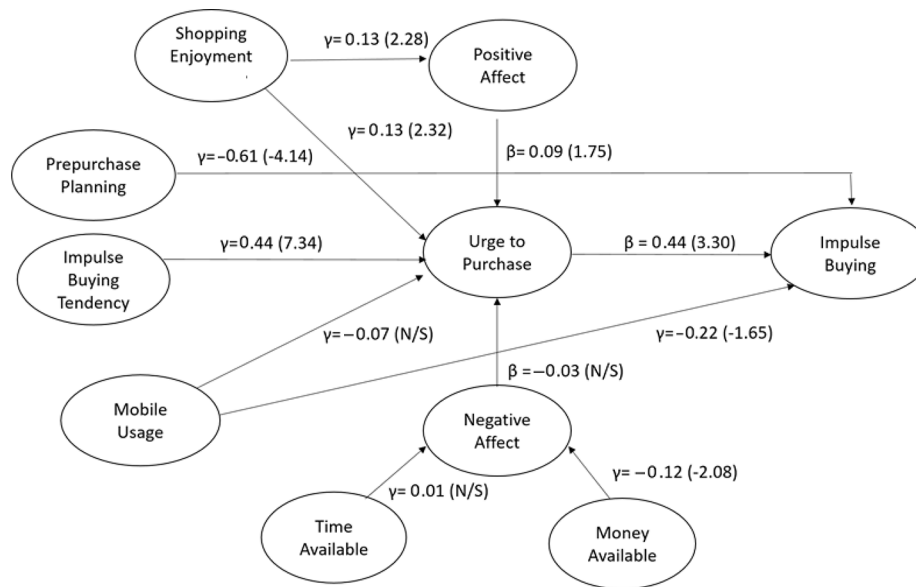
Note: r = reversed item

RMSEA = 0.058, CFI = 0.95, with all fit indices in line with recommended values.

Figure 2 shows the final structural model with all the path coefficients and the significance (*t*-value) for each of them. The results enabled us to support most elements of our hypothesis, except for *H5*, *H6* and *H10*. Specifically, shopping enjoyment has a positive effect on urge to purchase, both directly ($\gamma = 0.13$, *p*-value < 0.01) and through the mediation of positive affect ($\gamma = 0.13$, *p*-value < 0.05, $\beta = 0.09$, *p*-value < 0.10), supporting *H1*, *H2* and *H4*. Thus, consistent with prior research (Westbrook and Black, 1985; Beatty and Ferrell, 1998; Mohan et al., 2013; Bellini et al., 2017; Atulkar and Kesari, 2018),

shoppers who consider shopping an enjoyable activity derive pleasure from the shopping experience that leads to a positive mood, and they spend more time shopping and browse longer before making a purchase. Therefore, shoppers who obtain gratification from the process of shopping can hardly resist the urges that they experience in the retail environment and are more likely to engage in unplanned purchases (Rook, 1987; Beatty and Ferrell, 1998). As expected in *H3*, the impulse-buying tendency has a strong positive impact on urge to purchase ($\gamma = 0.44$, *p*-value < 0.000). Therefore, consistent with prior research (Beatty and Ferrell, 1998; Bellini et al., 2017), shoppers with higher levels of impulse-buying tendency are likely to experience

Figure 2 Structural model



more urges to buy impulsively in a retail setting. In addition, we found that urge to purchase has a significant positive impact on impulse-buying ($\beta = 0.44$, p -value < 0.000) for *H8* and a negative direct effect of pre-purchase planning on impulse-buying ($\gamma = -0.61$, p -value < 0.000) for *H9* but we did not find any significant relationship between negative affect and urge to purchase (*H5*). Consequently, shoppers who continually experience impulsive urges during their shopping expedition are unable to resist the immediate desires generated by in-store stimuli (Hoch and Loewenstein, 1991; Dholakia, 2000; Baumeister, 2002). Conversely, consistent with Bellini *et al.* (2016), the higher the degree of shopping preparation, the greater the tendency to plan purchases before entering the store and the lower the tendency to make impulse purchases in-store. Furthermore, we found a negative direct relationship between money available and negative affect ($\gamma = -0.12$, p -value < 0.05) for *H7*. Finally, there is a negative and direct impact of mobile usage on impulse-buying ($\gamma = -0.22$, p -value < 0.10 ; Fisher, 2006; Noymer, 2008), supporting *H11*. Therefore, from a retailer's perspective, use of the mobile in-store in a shopping-related manner, as a tool for self-regulation, reduces the effectiveness of the in-store marketing strategies. Specifically, individuals using mobile devices in a shopping-related manner make fewer unplanned purchases compared to those who do not use mobile devices.

Conclusions and implications

Recent changes in shopping behaviour, specifically the increase in pre-trip activities, have created a new scenario for the practice of shopper marketing. Retailers and manufacturers have started to recognize that the key trigger points in the shopping cycle can occur both outside and inside the store (Shankar, 2014; Bellini *et al.*, 2017).

Widespread mobile connectivity and the growing penetration of mobile devices have strengthened such trends.

Shoppers do not use the mobile device only during the pre-shopping phase, to collect information out-of-store (Bellini *et al.*, 2016); they bring the device in-store and use it as a guide for purchasing, checking the digital shopping list, comparing prices, searching for promotions or using the retailer's application (Bellini and Aiolfi, 2017, 2019).

However, only 43.5% of our respondents said that they used their mobile devices for shopping-related activities while shopping in-store, and this result seems to be inconsistent with our research. As an absolute value, these consumers may seem few. However, considering that there are very few Italian retailers who stimulate this use related to shopping, actually the number is not quite so low. Specifically, the scenario of shopper marketing from a mobile perspective is characterized by high demand and low supply. The demand is mature and consumers are ready to adopt retailers' apps and the e-commerce channel, as can be seen from the growth of this phenomenon in this period (also in light of the effects of the COVID-19 pandemic). Conversely, supply is lagging behind and retailers are managing the mobile channel as if they were still in an initial, development phase. For instance, there is a lack of availability of suitable retailers' apps, and this is consistent with the fact that only 3.4% of our sample used the mobile in-store to manage the retailer's apps (see Table 3).

However, using mobile devices in-store in a shopping-related manner has made shoppers much more organized and better prepared. Because the use of mobile devices is directly related to the focal task (namely, to complete the shopping mission), shoppers spend their cognitive resources on the decision-making task. Therefore, they are more aware during the shopping trip and, for this reason, less susceptible to in-store marketing stimuli compared to consumers using the mobile in a shopping-unrelated manner. As a result, they reduce their unplanned purchases.

Our model shows that mobile device usage influences impulse-buying more directly than through the urge to purchase. Specifically, shoppers using mobile devices in-store,

for activities related to the shopping task, felt less urge to purchase impulsively during the shopping trip and made fewer impulse purchases compared to shoppers using mobile devices for activities not related to the shopping task.

Impulse-buying is an important issue in consumer research, and we believe that the findings we have summarized offer significant implications that could help advance the state of knowledge and its retailing application. The effects of mobile device usage on purchasing and decision-making processes in-store create a new scenario for the practice of shopper marketing. Retailers and manufacturers are forced to identify new ways to capture the attention of their buyers inside the store. Therefore, practitioners must be aware that consumers are becoming increasingly dependent on digital technologies, and the use of mobile devices within the retail setting will probably increase over the next few years (Shankar *et al.*, 2011; Pantano and Viassone, 2014).

Our findings could stimulate companies to exploit the potential of mobile-related use while shopping effectively, turning the threat of the effects caused by mobile-related usage into powerful opportunities not just for retailers but also for manufacturers. Innovative smart technologies such as artificial intelligence and machine learning technologies could bring about a more personalized, engaging and enjoyable shopping experience inside the store, and offer possible solutions to exploit the potential of mobile-related usage in-store. Furthermore, retailers could develop innovative mobile retail applications and stimulate customers to use those apps during their shopping trip, giving retailers significant content to constantly connect with customers in-store. Despite the lagging of the supply chain and the scarcity of apps, the speed of growth of mobile commerce (m-commerce) confirms the potential of this market. Precisely for this reason, some retailers have recently (October 2020) started experiments on the use of the mobile as a tool to replace self-scanning. This demonstrates retailers' awareness and interest in stimulating mobile usage in-store in a shopping-related manner. Therefore, they are exploring the potential of this tool as a means of planning and controlling spending.

The influence of the mobile phone becomes even more relevant if we consider its substantial usage in the different phases of the overall consumer journey. Specifically, marketers have to revise their best practices and design new directions to influence shoppers' perceptions early in the shopping cycle, without diminishing the role of the point of sale and therefore the role of the in-store marketing levers managed by the retailers.

To sum up, retailers should take two paths if they want to gain a competitive advantage in the omnichannel scenario. On the one hand, they should revise traditional marketing practices to consider the mobile both as a means for shopping and as a means for communicating directly with the consumer during the entire decision-making process. In particular, because of its growing relevance and effect on consumer spending behaviour, m-commerce has gained a crucial role in marketing and retailing, catching the attention of scholars and practitioners alike. On the other hand, retailers should continue to invest in the point of sale in order constantly to increase the appeal of the customer experience.

Limitations and future directions

Notwithstanding the valuable contributions that this research can offer to advance the state of knowledge on consumer behaviour and impulse-buying, it does have some limitations. First and foremost, one possible concern is the statistical generalizability of the structural model. Our sample is probably neither truly random nor necessarily representative of any larger population. Moreover, given the social desirability bias connected to the methodology used, it is essential to underline that the specific shopping trip investigated might have influenced the answers given by customers about their general tendencies (shopping enjoyment, impulse-buying tendency, pre-purchase planning), as the entire interview was carried out at the end of the trip. Furthermore, one important variable that can justify some model relations is the product need, as this variable could influence the urge to purchase and impulse-buying. Further research will include the variable in the model and consider it as a control variable. Furthermore, the model may seem very complex because of the large number of variables considered for the analysis. This complexity comes from the fact that we decided to consider most of the relationships already tested by the main models on impulse-buying (Beatty and Ferrell, 1998; Mohan *et al.*, 2013; Bellini *et al.*, 2017). The idea was to take the most cited models in literature, start from a validated basic model and then build the new one. In future research and updates on the topic, we expect to consider more variables as covariates and control for them without complicating the research unnecessarily. Moreover, it might be interesting to consider all the potential mediation effects that could be hypothesized and tested according to a specific theoretical framework of reference. Furthermore, it could be interesting to measure in-store browsing and its relationship with the incidence of impulse-buying, considering the distribution of shopping trips in terms of time spent in-store and the total amount of money spent on that specific shopping expedition.

Experimental work to demonstrate causality in a controlled way would be a good follow-up in this field study. In future research, we intend to test alternative models/paths to demonstrate the superiority of the proposed model (or a new model with updated variables) over competing ones.

In addition, we intend to enlarge the sample and investigate the phenomenon in different store formats so that we can understand the impact of competitive convergence on in-store shopping behaviour.

Finally, given the importance of m-commerce that accounted for 63.5% of total retail e-commerce sales worldwide in 2020 and around 72.9% in 2021 (Statista, 2020a), as well as the need to retain mobile consumers over time to achieve long-term profitability, it is interesting to investigate online impulse-buying (Chan *et al.*, 2017). Prior research estimates that about 40% of all purchases made by consumers in the online channel are attributable to online impulse-buying (Liu *et al.*, 2013). Probably, one factor that has contributed to the disruptive development of online impulse purchases is the online shopping environment, which is more conducive to impulse-buying behaviour than the offline environment. Although the topic of impulse purchases has been well studied in literature,

academic contributions to the knowledge of online impulse-buying are few.

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Corresponding author

Simone Aiolfi can be contacted at: simone.aiolfi@unipr.it