PRIVACY THREATS WITH RETAIL TECHNOLOGIES: A CONSUMER PERSPECTIVE

Gabriele Pizzi

Associate Professor of Marketing – Department of Management –

University of Bologna (ITALY)

via Capo di Lucca, 34

40126 Bologna (ITALY)

gabriele.pizzi@unibo.it

Daniele Scarpi

Associate Professor of Marketing – Department of Management –

University of Bologna (ITALY)

via Capo di Lucca, 34

40126 Bologna (ITALY)

daniele.scarpi@unibo.it

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Abstract

This paper focuses on new retail technologies that acquire information from consumers, advancing that such devices represent privacy management concerns. Specifically, we propose that privacy perceptions in a retail environment are driven by retailer- and technology-related factors as well as consumers' personality traits. By running a moderated serial mediation analysis, we address the technologies' fairness and hedonism as antecedents of consumer privacy perceptions, technology acceptance and perceived value, and account for consumers' trust in the retailer. We find that privacy perceptions are directly affected by distributive fairness, while the technology's hedonism affects acceptance. Further, the effects extend to patronage intention and word-of-mouth.

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1. Introduction

The growing number of digital technologies adopted by both online and offline retailers has dramatically increased consumers' privacy issues (Renko and Druzijanic, 2014; Margulis, Boeck, and Laroche, 2019). The academic literature has approached this problem from different angles: On one side, multidisciplinary research has explored the impact of public regulation on retailers' adopted privacy policies, as well as the strategies that companies can adopt to comply with privacy-related rules (e.g., Pan and Zinkhan, 2006; Wirtz, Lwin, and Williams, 2007). Meanwhile, a different stream of research has sought to understand consumers' reactions to how both offline and online retailers manage consumers' personal information (Miltgen et al., 2016; Wang, 2019). For instance, previous studies investigated the impact of privacy disclosure (e.g., message length, wording) on consumers' purchasing experience (Pantano and Priporas, 2016), with a particular emphasis on the online channel (Ashworth and Free, 2006; Malhotra, Kim, and Agarwal, 2004; Martin, 2015; Mothersbaugh et al., 2012).

However, the rise of technologies such as sensors, RFID tags (e.g., Mueller-Seitz et al., 2009), augmented (Javornik, 2016) or virtual reality (Pizzi et al., 2019), and the Internet of Things (Kim et al., 2019) poses relevant questions about the extent to which consumers perceive that retailers are protecting their personal information (Bonetti, Warnaby, and Quinn, 2018). Addressing potential privacy threats in offline versus online contexts is not a trivial issue (Bahri, Carminati, and Ferrari, 2018): For instance, offline consumers are easily affected by the shopping environment (DeCanio et al., 2019; Joseph and Flynn, 2014), which could bring that environment closer and render it more tangible, thereby increasing consumer trust

(Darke et al., 2016). Further, offline retail environments could incline consumers to reveal a wider variety of personal information than they would in online contexts, including not only registration data and usage behavior, but also biometric data such as consumers' face, ethnicity, and emotional reactions (Kindt, 2013). Accordingly, the extant literature has developed theoretical models to explain how consumers react to privacy threats in an online context, but these have yet to incorporate the entire set of evaluations that consumers develop when exposed to potential privacy threats in an offline setting. Indeed, the technology-related antecedents of consumers' privacy concerns remain underexplored, especially in offline contexts.

The present research aims to fill this gap by addressing the antecedents of consumers' privacy perceptions offline while disentangling technology- from retailer-specific factors. In doing so, we combine two separate streams of literature that have scarcely cross-fertilized in order to explain consumer reactions to privacy threats. Specifically, we help address recent calls for research related to how perceptions of retail technologies drive customers' privacy perceptions and acceptance decisions (Inman and Nikolova, 2017; Roy et al., 2018) by disentangling the effect of distributive fairness (e.g., whether they are perceived as more useful for the retailer or the consumer) and the hedonism of the technologies on consumer perceptions (Pizzi et al., 2019). We posit that distributive fairness and technology hedonism separately affect consumers' privacy perceptions and acceptance of the technology.

Notably, recent literature has also adopted the consumer perspective to identify the antecedents of shopping value perceptions toward smart retail technology, relating these perceptions to behavioral intentions (Adapa et al., 2020). However, these studies did not investigate privacy perceptions among the set of antecedents, even though a recent study in the domain of banking services found that they are a main driver of consumers' resistance to adopting smart services (Mani and Chouk, 2019). The present research aims to fill this void

and contends that privacy perceptions and technology acceptance in a retail environment extend beyond attitudes toward the technology and affect consumers' value perceptions about the retailer, which then impact their intention to patronize the retailer and spread positive word-of-mouth.

Finally, a separate stream of research has clearly suggested that consumers react differently to the actions of retailers—whether offline (Walz and Celuch, 2010) or online (Bleier and Eisenbeiss 2015)—based on the latter's level of trustworthiness. Since consumers display different willingness to disclose personal information to third parties depending on the perceived trustworthiness (Taddei and Contena, 2013), the present research addresses the role of consumers' stock of retailer trust in their reactions to privacy threats.

Addressing these open issues should advance scholarly knowledge on consumers' decisions to disclose personal information via retailer-provided technologies.

We begin by briefly reviewing the extant literature, and then we develop a set of hypotheses that are synthesized into a moderated sequential mediation model. Finally, we address the theoretical and managerial implications of our results, as well as their limitations and directions for future research.

2. Theoretical Background

Retailers are investing heavily in new technologies, but the benefits of doing so depend largely on consumer's technology acceptance. Consequently, scholars have primarily adopted the technology acceptance model (TAM) in order to predict this construct (Davis, 1989). The TAM and its developments (e.g., Venkatesh and Davis, 2000) postulate that consumers' intention to adopt a technology can be expressed as a function of the technology's ease of use and usefulness. Because of its parsimonious nature, TAM has been widely adopted to explain consumers' attitudes toward technology acceptance (Venkatesh and Davis, 2000); however, some researchers have argued that this parsimony is also a drawback, limiting the inclusion of

additional issues that might intervene in consumers' assessments of retail technologies (Kleijnen, De Ruyter, and Wetzels, 2007). Accordingly, the present research supplements the theoretical framework provided by TAM with consumers' privacy concerns. With regard to privacy issues, the extant literature has rarely adopted consumers' perspective when addressing how retailers' introduction of a technology might raise consumers' privacy concerns (Kakatkar and Spann, 2019; van de Sanden, Willems, and Brengman, 2019) and limit their adoption intention (Laukkanen, 2016; Mani and Chouk, 2017).

On one hand, the present research builds on Justice Theory (Deutsch, 1985) to suggest that even technologies with significant benefits might backfire if consumers perceive that the benefits are outweighed by the amount of personal information that has to be given in return (Aguirre et al., 2015). This stream of research focuses on whether consumer perceive that they are receiving sufficient value in exchange for the information shared with the retailer (Inman and Nikolova, 2017).

On the other hand, building on the literature on shopping orientation (Babin, Darden, and Griffin, 1994), previous studies have shown that fun, pleasure and enjoyment play a significant role in driving consumers' acceptance of retail technologies (e.g., Kulviwat et al., 2007). In this vein, previous studies have shown that consumers who shop hedonically might respond differently to more utilitarian in-store technologies such as self-service or automatic checkout (White, Breazeale, and Collier, 2012). Thus, both hedonism and fairness could variably affect consumers' confidence about using a new technology to disclose private details (Chiu et al., 2009).

The extant literature has focused on the ways that consumers react to the introduction of retail technologies (Pantano and Naccarato, 2010) and identified two key shopper reactions: i) patronage intentions and ii) word-of-mouth referral (Inman and Nikolova, 2017). Accordingly, our theoretical framework delineates between privacy concerns and technology

acceptance, allowing us to better account for the set of evaluations that shoppers utilize when exposed to a retail technology. Further, our theoretical framework accounts for the set of perceptual and behavioral consequences that stem from consumers' assessment of their privacy concerns and technology acceptance. Below we provide a more detailed discussion of the most salient shopper perceptions and reactions that might result from the introduction of a new retail technology.

2.1. Antecedents of privacy perceptions and technology acceptance

Previous studies classified technologies based on whether they provide more benefits to retailers (e.g., lower labor costs and/or increased efficiency) or to customers (e.g., greater convenience and/or increased interactivity) (Roy et al., 2018; Wünderlich et al., 2013). In this regard, the literature has typically framed perceived justice or fairness as the extent to which consumers feel that the exchange with another party is equitable and balanced (Maxham and Netemeyer, 2003). In particular, distributive fairness refers to the perceived balance between what is given and what is received by each party in a relationship (Greenberg, 1987). In other words, distributive fairness pertains to feelings of proportionality between what individuals provide and what they receive in exchange (Cropanzano et al., 2001). Translating these considerations to the domain of personal information disclosure, the literature has pointed out that these feelings of distributive fairness stem from the comparison between the information provided and the benefits received—for example, in terms of customized service (Wirtz and Lwin, 2009) or offerings, as well as access to free services (Martin and Murphy, 2017). Given high levels of distributive fairness, consumers are more likely to relinquish some privacy and even to accept mild privacy violations such as highly targeted advertising.

Justice Theory helps explain that individuals are exposed to a trade-off between the costs and benefits of information disclosure, which gives rise to a privacy calculus model (Dinev and Hart, 2006). The privacy calculus model contends that consumers make decisions

about their privacy disclosure depending on the relative weight they attribute to the risks and benefits connected to said disclosure (Dinev and Hart, 2006). Specifically, this model predicts that individuals are more likely to disclose their personal information when the benefits outweigh the risks of that behavior (Sun et al., 2015: Trepte, Scharkov, and Dienlin, 2020). In this vein, Norberg, Horne, and Horne (2007) documented a privacy paradox whereby consumers behave differently from their stated intentions with regard to privacy disclosure because the perceived risk of disclosing personal information looms larger than the benefits they might obtain in exchange.

Looking at retail technologies in terms of perceived distributive fairness and the privacy calculus model, it is clear that different technologies can shift the balance of the cost-benefit ratio more toward the consumer or the retailer. Accordingly, one can argue that technologies that are perceived as providing more benefit to the retailer might lead consumers to perceive lower levels of distributive fairness and therefore to feel more concerned about disclosing their personal information in order to use the technology. Specifically, we hypothesize:

H1a. When consumers perceive a retailer technology as providing more benefits to themselves than to the retailer, they are more confident about disclosing personal information when using the technology.

Technologies can also be classified with regard to the kind of shopping value they provide to consumers: namely, hedonic and/or utilitarian (Babin, Darden, and Griffin, 1994; Van der Heijden, 2004). Most previous studies have focused on the utilitarian benefits that consumers might receive in exchange for their information disclosure (Sun et al., 2015): typically, productivity and efficiency (e.g., Awad and Krishnan, 2006). However, the literature on retail technologies has also highlighted the potential perceived hedonism in terms of users' pleasure, fun, and enjoyment (Blazquez, 2014; Pizzi et al., 2019). In other words,

even technologies that do not provide objective and utilitarian benefits (such as saving time or money) could nonetheless provide consumers with valuable benefits in terms of fun. In fact, prior literature has documented that hedonism can be a stronger driver of positive behavioral outcomes than utilitarianism (Scarpi, 2012), mainly by facilitating consumers' escapism from everyday concerns (Mathwick, Malhotra, and Rigdon, 2001). Hedonism—and its related construct, playful enjoyment—is an end unto itself (Babin, Darden, and Griffin, 1994) that disengages consumers from concerns about practical considerations (Henderson Knight and Richardson, 2013). Accordingly, one can argue that consumers will develop lower concerns about disclosing personal information when using a technology that offers high hedonism. Hence:

H2a. When consumers perceive a technology as providing higher hedonism, they are more confident about disclosing personal information when using the technology.

Previous studies have highlighted the potential relevance of consumers' perceptions of a retailer's trustworthiness—defined as "a consumer's confidence in a retailer's reliability and integrity" (De Wulf and Odekerken-Schroder, 2003, p. 97). It follows that a retailer's trustworthiness captures consumers' belief about the retailer's ability to perform its function properly (Massara et al., 2018) and act in customers' best interests (Doney and Cannon, 1997). In this vein, Horne and Horne (2002) documented an interplay between the perceptions of potentially negative outcomes following an information disclosure and the level of trust in the retailer.

In summary, when consumers trust a retailer, they believe the retailer will not take actions that might harm the consumer (Chaudhuri and Holbrook, 2001). This implies that consumers might feel safer disclosing personal information to a retailer they trust because they perceive that the retailer will manage their personal information with integrity.

Therefore, one can expect that consumers' stock of trustworthiness in a retailer will strengthen the positive effect of fairness and hedonism on privacy perceptions and technology acceptance. In other words, perceived fairness and hedonism being equal, their effects on privacy and technology acceptance should be stronger when the technology is adopted by a retailer that consumers trust. Specifically:

H1b. Retailer's trustworthiness positively moderates the relationship between fairness and privacy.

H2b. Retailer's trustworthiness positively moderates the relationship between the technology's hedonism and privacy.

Building on these considerations, research has pointed out that introducing new in-store technologies does not necessarily yield the expected returns (Sethuraman and Parasuraman, 2005) unless consumers feel that the technology's benefits are salient (Renko and Druzijanic, 2014). In this vein, previous studies reported several cases in which consumers exhibited a weak intention to adopt a new technology due to a limited set of perceived benefits. For instance, Coldfelter (2010) observed that consumers were highly reluctant to use their fingerprints as a payment authentication system, while Lee, Cheung, and Chen (2007) highlighted that consumers tend to underestimate the actual benefits of RFID technologies in retailing.

Conversely, the literature has reported that if consumers perceive high levels of trustworthiness and fairness in a retailer's decision to adopt a technology, they are more willing to adopt said technology (Chiu et al., 2009; Turel, Yuan, and Connelly, 2008). It follows that consumers may also express higher acceptance of the technology if it provides them with sufficient benefits to offset the exchange costs. Specifically, we hypothesize:

H3. When consumers perceive a technology as providing more benefits to themselves than to the retailer, they are more likely to accept the technology.

Recent studies have extended the original TAM to include a broader spectrum of considerations and boundary conditions (see Venkatesh et al., 2003 for a review). One such boundary condition is the hedonic nature of technology (van der Heijden, 2004). In this regard, previous research has shown that, depending on the specific technology, intrinsic motivators like fun and enjoyment could be even stronger than extrinsic motivators like perceived usefulness. Hedonism represents the fun aspect of a technology (van der Heijden, 2004) and has been found to be a significant driver of people's willingness to use that technology (Lee and Shim, 2006). On one hand, this implies that a person needs to evaluate the hedonism of the considered technology; on the other hand, it means that the acceptance of a technology cannot be explained effectively without hedonism.

While the original TAM framed perceived usefulness as aspects outside the user–system interaction, consumers might accept a technology based simply on the user–system interaction without considering the outcome of this interaction (Ayyagari, 2006). In this vein, Davis, Bagozzi, and Warshaw (1992, p. 1113) supplemented TAM with a third belief: perceived enjoyment, or "the extent to which the activity of using the computer is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated," which is akin to Babin and colleagues' (1994, p. 649) definition of hedonism as enjoyment beyond "the items I may have purchased." Indeed, a decade later, van der Heijden (2004) classified technologies as either utilitarian or hedonic. Hedonic technologies provide the user with benefits in terms of fun and enjoyment (van der Heijden, 2004), while perceived enjoyment has been found to play an even greater role than perceived usefulness in certain cases (van der Heijden, 2004; Lee, Cheung, and Chen, 2007). Hence, the hedonism of the

technology used by the retailer is an important boundary condition in TAM, and we posit that it will positively affect consumers' acceptance of the technology. Formally:

H4. When consumers perceive a technology to be more hedonic, they are more likely to accept using the technology.

Finally, the previous literature has established a positive relationship between consumers' privacy perceptions related to a given technology and their willingness to accept that technology (Arpaci, Kilicer, and Bardakci, 2015). For instance, privacy issues have been found to be among the main obstacles to consumers' acceptance of new technologies in the banking industry (Pikkarainen et al., 2004), and consumers often rely on those technologies that they feel will protect their privacy (Sathye, 1999). In this vein, other studies have expanded the TAM model by drawing on the privacy literature, showing that privacy concerns are relevant to consumers' acceptance of a technology (Miltgen, Popovic, and Oliveira, 2013). Even though the privacy–technology acceptance relationship is not novel in the general marketing literature, we specifically apply it to the context of retailing in order to address how privacy concerns drive consumers' willingness to accept technologies. Specifically, we hypothesize the following:

H5. When consumers are more confident about disclosing personal information, they will be more likely to accept a particular technology.

2.2. Consequences of Privacy Perceptions and Technology Acceptance on Consumers'
   Perceptions and Intentions

Perceived value can be defined as consumers' assessment of what is received and given in interacting with a retailer (Davis and Hodges, 2012). This broad definition comprises all the various monetary and non-monetary (Alavi, Wieseke, and Guba, 2016), tangible and

intangible (Baker, 2006) benefits that consumers can obtain in a store environment (Dodds, Monroe, and Grewal, 1991). In this vein, Klasnja and colleagues (2009) found that privacy management builds value perceptions. Similarly, Xu and colleagues (2011) found a positive relationship between the perceived benefits of information disclosure and perceived value, but a negative relationship between privacy concerns and perceived value. Meanwhile, Zhou (2011) drew on Justice Theory to examine the effects of consumers' intention to disclose personal information on perceived value.

Consistent with this perspective, Awad and Krishnan (2006) found that consumers who are concerned about disclosing personal information perceive value from a transparent management of privacy issues and the lack of privacy invasions. Thus, one might expect that consumers' value perceptions of the retailer would be increased when they feel that said retailer is managing a technology's privacy issues in a way that bolsters consumer confidence. Specifically, we hypothesize the following:

H6. When consumers are more confident about disclosing personal information, they will display a positive change in their value perceptions of the retailer.

Furthermore, previous studies have shown that technology acceptance can transcend the mere use of a technology to produce additional effects—such as enjoyment (Lee, Fiore, and Kim, 2006) and engagement in that specific technology (Boyle et al., 2012)—that are typically associated with perceived value (Kim, Kim, and Wachter, 2013). Thakur (2016) documented a similar phenomenon in store environments. In this context, value perception can be conceptualized as the difference between the set of advantages that consumers receive and the (monetary and non-monetary) efforts they are required to expend for a retailer (Dodds, Monroe, and Grewal, 1991). Building on TAM, one can argue that consumers accept a technology so long as its benefits outweigh its requisite effort, which is consistent with the

results by Pantano and Naccarato (2010). In a similar vein, Poncin and Mimoun (2014) found that consumers' value perceptions change when new technologies are adopted in-store, thereby suggesting a direct relationship between consumers' acceptance of the technology and their value perceptions.

Therefore, we hypothesize the following:

H7. When consumers exhibit higher levels of technology acceptance, they will display a positive change in their value perceptions of the retailer.

Previous research has found that shoppers' positive value perceptions exert a generally favorable impact on retailers' performance (e.g., Wakefield and Barnes, 1996). In this vein, perceived value was found to be a key determinant of behavioral intentions (Turel, Serenko, and Bontis, 2007). Specifically, the literature has posited perceived value as a mediator of the relationship between the store environment and consumers' behavioral intentions (Dodds, Monroe, and Grewal, 1991), such as store choice (Poncin and Mimoun, 2014; Zielke, 2014), store loyalty (Magni et al., 2010; Sirohi, McLaughlin, and Wittink, 1998), and word-of-mouth referral (Cronin, Brady, and Hult, 2000; Dodds, Monroe, and Grewal, 1991).

Several new retail technologies affect the store environment in terms of changing its layout (e.g., automatic cashiers), leading to a different organization of the assortment (e.g., beacons) and/or the addition of new features (e.g., smart mirrors) that change how consumers interact with the store. Accordingly, we posit that the adoption of new retail technologies could changes consumers' value perceptions, and thereby shape patronage and referral intentions. Formally:

H8. When consumers display a positive change in their value perceptions of a retailer, they are more likely to spread positive word-of-mouth about the retailer;

H9. When consumers display a positive change in their value perceptions of a retailer, they are more likely to patronize the retailer.

2.3. The Conceptual Model

Overall, the hypotheses build on the literature on privacy perceptions and technology acceptance, advancing that a technology will lead to lower privacy concerns and higher technology acceptance when consumers perceive it as more hedonic and more advantageous to themselves than to the retailer – especially when such technology is adopted by a retailer they trust. In turn, we posit that lower privacy concerns and higher technology acceptance increase consumers' value perceptions of the retailer and, ultimately, their willingness to spread positive WOM about and patronize the retailer.

The set of hypothesized relationships is illustrated in Figure 1.

INSERT FIGURE 1 ABOUT HERE

Finally, previous studies have suggested that personality traits might affect how consumers interact with retail technologies (Marbach et al., 2019; Sun et al., 2015) and how they disclose personal information online (Bansal, Zahedi, and Gefen, 2016). In particular, prior literature has focused on gender- (Tifferet, 2019) and age- (Priporas, Stylos, and Fotiadis, 2017) related differences. Among these studies, the vast majority have added narrow personality traits to the broader framework of the TAM model (e.g., self-efficacy, as in Compeau and Higgins, 1995; or personal innovativeness, as in Agarwal and Prasad, 1998). However, the psychological literature has raised serious concerns about the use of narrow personality traits (Judge and Bono, 2001). Accordingly, earlier studies introduced the Big Five (Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness; Cattell, 1943; McCrae and Costa, 1987) to the theoretical framework of privacy perceptions (Korzaan

and Boswell, 2008). Building on these findings, the present study also adds considerations about consumer personality traits and posits that they might affect the strength of privacy concerns—depending, for instance, on consumers' levels of neuroticism or openness.

3. Method

3.1. Design

Participants were randomly assigned to one of the eight experimental conditions resulting from a 2 (Technology Benefit for the Retailer vs. Consumer) × 2 (Technology with Low vs. High Hedonism) × 2 (Low vs. High Retailer Trustworthiness) between-subjects experimental design.

The experimental stimuli were selected on the basis of a pre-test run with a convenience sample of 30 respondents gathered via a social media group. They were asked to evaluate a set of technologies and retailers in the apparel clothing industry. Specifically, participants in the pre-test were presented with brief descriptions of retail technologies and asked to assess whether each given technology provided more benefit to the retailer or to the consumer (7-point bipolar scale, three items adapted from Maxham and Netemeyer, 2003), as well as to evaluate the hedonism of each technology (7-point Likert scale, three items adapted from Scarpi, 2012). Further, pre-test participants were asked to evaluate the trustworthiness of the retailers under investigation using an adapted version of the scale (7-point Likert scale, five items) developed by Ou, Abratt, and Dion (2006). The pre-test results allowed us to identify two retailers that differed on trust perceptions (Low: Primark; High: Nike Store) and four technologies that respondents perceived as having different levels of hedonism and benefit for the consumer versus the retailer: (a) Beacons (Main benefit attributed to the Retailer, High Hedonism), (b) Facial Recognition (Main benefit attributed to the Retailer, Low Hedonism), (c) Smart Mirrors (Main benefit attributed to the Customer, High Hedonism), and (d) Automatic Checkout (Main benefit attributed to the Customer, Low Hedonism). With this

procedure, we identified the stimuli to be used in the main study's experimental manipulations. Sample stimuli can be found in Appendix A.

3.2. Sample, Procedure and Measures

The data were collected on Qualtrics from a sample of 240 UK respondents (Mean age = 30 years, 55.45% female) gathered on Prolific, a European online panel company.

After reading a short introductory section, participants were exposed to one of the four technologies by reading the description of the technology that the target retailer might be evaluating to implement in the near future. A short explanatory video accompanied this description in order to improve the vividness of the scenario, in line with the theater methodology to "increase the level of experimental control while providing an environment similar to the actual setting" (Russel, 2002, p. 309).

After being exposed to the scenario, participants were asked, as manipulation checks, to evaluate whether they perceived the technology depicted in the scenario as more beneficial to the retailer or the consumer, as well as the hedonism of the technology and the trustworthiness of the aforementioned retailer, using the same scales as in the pre-test. Next, participants were asked to assess their privacy perceptions associated with the technology depicted in the scenario (7-point Likert scale, eight items adapted from Wolfinbarger and Gilly, 2003), technology acceptance (7-point Likert scale, two items adapted from Venkatesh and Davis, 2000), change in value perception (one item from Inman and Nikolova, 2017), and willingness to visit the store and willingness to spread WOM (7-point bipolar scale, two items each adapted from Maxham and Netemeyer, 2003). Finally, participants completed the Mini IPIS scale for the Big Five personality traits (Donnellan et al., 2006). Scale items can be found in Table 1 in the Appendix. Finally, they were tested for suspicion, thanked and debriefed.

3.3.Moderated mediation model

We ran a custom model with the PROCESS 3.3 macro syntax for SPSS to estimate the moderated serial mediation chain advanced in Figure 1. Following Hayes (2018), the statistical significance of the direct and indirect effects was evaluated by means of 5,000 bootstrap samples to create bias-corrected confidence intervals (CIs: 95%) with heteroscedasticity-consistent SEs. We used the mean composite scores on the items for each construct.

The two dummy variables indicating the experimental manipulations of Perceived Benefit (Retailer vs. Consumer) and Hedonism (Low vs. High) were set as independent variables in the model. The composite scores for the constructs of Privacy Perceptions, Technology Acceptance and Value Change toward the Retailer were entered as mediators, with WOM referral intention and patronage intention as dependent variables. The Big Five factors were entered as personality-related covariates in the model, while Retailer Trustworthiness was added as a moderator of the Benefit–Privacy and Hedonism–Privacy relationships, as hypothesized in H1b and H2b, respectively.

4. Results

4.1. Reliability and Validity

We followed Anderson and Gerbing's (1988) procedure for assessing adequacy of measurements. A factor analysis with Maximum Likelihood extraction and Oblimin rotation confirmed the factorial structure of the original scales, explaining 87% of the variance. The measures appear to have convergent validity, given that all factor loadings exceed the 0.6 threshold (Bagozzi and Yi, 1988), while the composite reliability (CR) and average variance extracted (AVE) exceed the 0.7 and 0.5 thresholds, respectively (Fornell and Larcker, 1981).

In this study, the minimum CR is .78 (Openness) and the minimum AVE is .59 (Hedonism). We also confirmed discriminant validity, as the lowest AVE (0.69) exceeds the highest squared correlation between any two variables (0.50). Furthermore, reliability is satisfactory for all scales, with Cronbach's alpha ranging from .76 (Openness) to .96 (Privacy). The measurement model therefore meets all relevant psychometric properties. The details can be found in Table 1 in the Appendix.

4.2. Manipulation Checks

The results from the manipulation checks supported the effectiveness of our experimental manipulations. In line with the results of the pre-test, the Nike Store was perceived as more reliable than Primark (M_{Nike} = 3.82; $M_{Primark}$ = 3.22; $F(1;239)$ = 38.22; η^2 = .14). Furthermore, Smart Mirrors and Automatic Checkout were believed to have more benefits for the consumer (M = 3.10) than Beacons and Face Recognition (M = 1.81; $F(1;239)$ = 66.37; η^2 = .22). Finally, Beacons and Smart Mirrors were attributed higher hedonism (M = 3.18) than Face Recognition and Automatic Checkouts (M = 2.52; $F(1;239)$ = 20.56; η^2 = .08).

4.3. Model Estimation

The estimation of the model shows a significant index of moderated mediation on purchase intention (Effect = .08, 95% CI [.03, .16]) as well as on word-of-mouth (Effect = .08, 95% CI [.02, .15]), as the 95% CI interval does not include zero. This evidence supports the presence of moderated mediation and the robustness of the conceptual model (Hayes, 2018).

Consumers' confidence about privacy issues with a technology increased when they perceived the technology as more beneficial to them than to the retailer (Effect = .79; p = .006), providing support for H1a. However, contrary to H2a, hedonism was not found to

affect individuals' confidence about disclosing information through the technology (Effect = .36; $p > .10$).

Among the personality-related covariates, only Openness was found to significantly and positively affect privacy perceptions (Effect = .18; $p = .004$), suggesting that individuals characterized by an openness to new ideas are more likely to feel confident about disclosing their personal information when using a technology.

The analysis on the moderating role played by the retailer – in terms of its ex-ante trustworthiness –yielded no significant effect on the benefit–privacy and hedonism–privacy relationships. Thus, we found no empirical support for H1b and H2. The lack of statistical significance is relevant, suggesting that the retailer's reputation (good or bad) does not matter to consumers when their privacy is at stake. Rather, the key to generating positive privacy perceptions for all retailers is providing customers with clear benefits in exchange for the technology-related information disclosure.

As advanced in H3 and H4, respectively, customers are more likely to display higher acceptance of the technology if the technology provides more benefits to the customer than to the retailer (Effect = .57; $p = .007$) and if the technology is perceived as hedonic (Effect = .46; $p = .025$). Our results further show that technology benefits and hedonism act independently from each other: No significant interaction effect emerged between the two independent variables on either privacy perceptions (Effect = .03; $p = .932$) or technology acceptance (Effect = −.04; $p = .887$).

Finally, our results indicate that technology acceptance is also positively affected by privacy perceptions (Effect = .90; $p < .001$). This evidence supports H5 and indicates a partial mediation of privacy perception within the technology benefit–acceptance relationship.

In line with H6 and H7, perceived privacy (Effect = .45; $p < .001$) and technology acceptance (Effect = .25; $p < .001$) were found to positively affect a change in perceived

value toward the retailer implementing the technology. Value change, in turn, was found to positively affect customers' intention to spread positive WOM for the retailer (Effect = .72; $p < .001$) and ultimately patronize the store (Effect = .36; $p < .001$), thereby providing empirical support to H8 and H9.

No direct effects emerged from the two independent variables on WOM referral intention or patronage intention. However, the total indirect effect of technology benefit on patronage intention was significant, since the 95% booted confidence interval (CI) does not contain zero (Effect = .17; CI [.01; .34]), as was the total indirect effect of hedonism on patronage intention (Effect = .68; CI [.33; 1.04]). In particular, the full chain of indirect effects through privacy, technology acceptance and change in retailer's perceived value was found to be significant as a function of both the technology benefit (Effect = .04; CI [.01; .08]) and its hedonism (Effect = .08; CI [.01; .16]), thus indicating a full mediation path as hypothesized in the conceptual model.

The results of the PROCESS moderated mediation analysis are illustrated in Figure 2.

INSERT FIGURE 2 ABOUT HERE

5. **Discussion**

New retail technologies—such as beacons, facial recognition, smart mirrors and automatic checkout—pose important challenges to privacy concerns. In light of recent findings that a technology's distributive fairness (Bahri-Ammari and Bilgihan, 2017) and hedonism (Van der Heijden, 2004; Sun et al., 2015) might be relevant features of consumer-facing technologies, the present research investigated consumers' perceptions of those features in relation to the four aforementioned retail technologies.

The literature dealing with consumers' acceptance of new technologies has typically relied on TAM to address the role of technology features related to utility, ease of use, or fun

(Weijters et al., 2007), while often overlooking the set of privacy concerns implied by in-store technologies (De Kerviler, Demoulin, and Zidda, 2016; Perry, 2016). Those studies that have dealt with consumers' privacy perceptions focused on the technology's distributive fairness (Inman and Nikolova, 2017) and on the privacy calculus (Dinev and Hart, 2006). Their results suggest that consumers might be differently willing to share their personal information depending on the perceived benefits the technology provides in exchange.

The present research combines these two streams of research in order to assert that privacy perceptions are a significant antecedent of technology acceptance: the more confidence that customers have about their personal information disclosure through the technology, the higher their intention to adopt it. Furthermore, our results show that retailers' distributive fairness and the technology's hedonism jointly contribute to explaining consumers' technology acceptance; however, privacy perceptions are only directly affected by distributive fairness. This is to say, consumers are more willing to accept the technology when they have fun using it and when they perceive it as beneficial. However, their privacy concerns are relieved only by fairness-related considerations. Although consumers could have a great deal of fun using new retail technologies, such enjoyment does not mitigate their privacy concerns.

Further, we account for the moderating effect of a retailer's trustworthiness, thereby supplementing previous studies that focused on retail technologies, but that did not account for consumer opinions about the retailer who adopts those technologies. Our findings show that although retail technologies can change consumers' value perception of the retailer, privacy concerns have to be managed regardless of the trustworthiness stock retailers might enjoy. The lack of a significant moderation constitutes an advancement because it signals that privacy concerns and technology acceptance are not a function of how much consumers trust the retailer. Although consumers are more likely to patronize the retailers they trust

(Chaudhuri and Holbrook, 2001; Cho, 2006), our results indicate that trusting the retailer does not automatically translate into feeling that one's privacy is safely managed.

Finally, our theoretical framework also accounts for consumers' personality traits, as these might affect how consumers react to privacy threats. We find that, among the Big Five, openness positively affects consumers' confidence about disclosing their personal information, which is consistent with the findings by Ben-Ze'ev (2003). Although this finding might be difficult for retailers to immediately implement, it shows the need to account for consumers' personal values and traits.

In summary, our results extend evidence from previous studies in several directions, adding considerations of personality traits, the hedonism of retail technologies, and retailer trustworthiness, as well as manipulating distributive fairness as a key technology-related antecedent of privacy perceptions and technology acceptance.

6. Managerial Implications

The results from this study might provide insights in the increasingly discussed area of consumers' privacy perceptions toward in-store digital technologies, which can be relevant for practitioners and stimulate future research. Given that the adoption of innovative technologies in the store environment often requires huge investments in time and resources, there is value in understanding which elements could minimize consumers' resistance to privacy disclosure and technology acceptance, thereby enabling retailers to reap the benefits of technological innovation.

First, managers might find it useful to know that consumers have to perceive a benefit from the technology in exchange for the data they are disclosing. This finding should stimulate retailers to conduct extensive market research before launching new technologies in their stores, quantifying the extent of benefits that consumers perceive from the new technology. Incorporating the consumer perspective might enable retailers to prevent

unexpected negative reactions toward the technology and/or the retailer (Pantano, 2016). This process may curtail some retailers' tendency to over-enthusiastically focus on the technical features of a technology (Grewal, Roggeveen, and Nordfalt, 2017) and forget about consumers' privacy concerns.

Further, retailers should be aware that being perceived as trustworthy does not exempt them from carefully addressing consumers' privacy concerns. Accordingly, even retailers who enjoy a solid reputation should vigilantly monitor the extent to which a new technology raises consumers' privacy concerns, as they will lower technology acceptance and value perception for retailers regardless of trust level.

Third, practitioners should consider that the hedonic or utilitarian content of the in-store technology differently affects consumers' acceptance of the technology. Beyond providing consumers with some benefit, the technology should also provide a hedonic shopping experience—that is, it should add fun to efficiency. Finally, it is worth noticing that both privacy perceptions and technology acceptance have the potential to change consumers' attitudes toward the retailer, eventually leading to desirable behavioral outcomes, such as spreading positive WOM and patronizing the store. That is to say, our results should encourage retailers to innovate by providing customers with new in-store technologies since these have the potential to drive long-term outcomes such as consumer loyalty and positive WOM referral. However, retailers only garner those positive results when consumers perceive the technology as fair and enjoyable enough to justify the "cost" of personal information disclosure. Indeed, new retail technologies might be a double-edged sword: Retailers who fail to achieve the appropriate balance between information disclosure, on one side, and fun and benefits, on the other side, risk being perceived as less valuable—and ultimately, less referred and visited.

7. Limitations and Future Research

Our results should be read in light of their limitations, which reveal avenues for future research. First, we adopted the theater methodology (Russell, 2002) to conduct our experimental manipulations in a vivid, though controllable, way in order to isolate the effects of retail technologies on consumers' perceptions and behavioral intentions. Future research should consider replicating the study in a natural context, however. On one hand, this would provide the advantage of higher ecological validity. On the other hand, actual consumers in a real setting could display different levels of awareness (Dommeyer and Gross, 2003) about the presence and use of technologies based on their own personal information (e.g., knowing about cameras in mannequins' eyes). Furthermore, consumers might exhibit different levels of perceived control (Cho, Lee, and Chung, 2010) over the use of their personal information and the possibility of revoking permission to use it. In this vein, future studies could compare consumers from different countries (e.g., the EU and the US), as different privacy regulations might affect consumers' sensitivity to privacy issues and therefore the emphasis that consumers put on information disclosure. Finally, the technologies we chose as our experimental stimuli were based on criteria backed by previous retailing studies. However, we do not pretend that they are exhaustive of the population of retail technologies. Accordingly, we welcome future studies to include more technologies and/or test the robustness of our conceptual model when technologies are selected based on different criteria. For instance, recent studies addressed virtual reality based on immersiveness and realism, showing that it can affect both the hedonic and utilitarian side of the shopping experience (Pizzi et al., 2019).

References

Adapa, S., Fazal-e-Hasan, S. M., Makam, S. B., Azeem, M. M., & Mortimer, G. (2020). Examining the antecedents and consequences of perceived shopping value through smart retail technology. *Journal of Retailing and Consumer Services*, 52, 101901.

Agarwal, R. and Prasad, J., A Conceptual And Operational Definition of Personal Innovativeness in the Domain of Information Technology, *Information Systems Research*, 9, 2, (1998), 204-215.

Aguirre, E., Roggeveen, A. L., Grewal, D., & Wetzels, M. (2016). The personalization-privacy paradox: implications for new media. *Journal of Consumer Marketing*, *33*(2), 98-110.

Alavi, S., Wieseke, J., & Guba, J. H. (2016). Saving on discounts through accurate sensing–salespeople's estimations of customer price importance and their effects on negotiation success. *Journal of Retailing*, *92*(1), 40-55.

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103(3), 411.

Arpaci, I., Kilicer, K., & Bardakci, S. (2015). Effects of security and privacy concerns on educational use of cloud services. *Computers in Human Behavior*, *45*, 93-98.

Ashworth, L., & Free, C. (2006). Marketing dataveillance and digital privacy: Using theories of justice to understand consumers' online privacy concerns. *Journal of Business Ethics, 67*, 107–123.

Awad, N. F., & Krishnan, M. S. (2006). The personalization privacy paradox: an empirical evaluation of information transparency and the willingness to be profiled online for personalization. *MIS quarterly*, 13-28.

Ayyagari, R. (2006). Examination of hedonism in TAM research. In *Proceedings of the, 2006 Southern Association for Information Systems Conference*, 197-204.

Babin, B. J., Darden, W. R., & Griffin, M. (1994). Work and/or fun: measuring hedonic and utilitarian shopping value. *Journal of consumer research*, *20*(4), 644-656.

Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the academy of marketing science*, *16*(1), 74-94.

Bahri-Ammari, N., & Bilgihan, A. (2017). The effects of distributive, procedural, and interactional justice on customer retention: An empirical investigation in the mobile telecom industry in Tunisia. *Journal of Retailing and Consumer Services*, 37, 89-100.

Bahri, L., Carminati, B., & Ferrari, E. (2018). Decentralized privacy preserving services for online social networks. *Online Social Networks and Media*, *6*, 18-25.

Baker, S. M. (2006). Consumer normalcy: Understanding the value of shopping through narratives of consumers with visual impairments. *Journal of retailing*, *82*(1), 37-50.

Bansal, G., Zahedi, F. M., & Gefen, D. (2016). Do context and personality matter? Trust and privacy concerns in disclosing private information online. *Information & Management*, 53(1), 1-21.

Ben-Ze'ev, A. (2003). Privacy, emotional closeness, and openness in cyberspace. *Computers in Human Behavior*, *19*(4), 451-467.

Blázquez, M. (2014). Fashion shopping in multichannel retail: The role of technology in enhancing the customer experience. *International Journal of Electronic Commerce*, *18*(4), 97-116.

Bleier, A., & Eisenbeiss, M. (2015). The importance of trust for personalized online advertising. *Journal of Retailing*, *91*(3), 390-409.

Bonetti, F., Warnaby, G., & Quinn, L. (2018). Augmented reality and virtual reality in physical and online retailing: A review, synthesis and research agenda. In *Augmented reality and virtual reality* (pp. 119-132). Springer, Cham.

Boyle, E. A., Connolly, T. M., Hainey, T., & Boyle, J. M. (2012). Engagement in digital entertainment games: A systematic review. *Computers in human behavior*, 28(3), 771-780.

Cattell, R. B. (1943). The description of personality. I. Foundations of trait measurement. *Psychological review*, *50*(6), 559.

Chaudhuri, A., & Holbrook, M. B. (2001). The chain of effects from brand trust and brand affect to brand performance: the role of brand loyalty. *Journal of marketing*, *65*(2), 81-93.

Chiu, C. M., Lin, H. Y., Sun, S. Y., & Hsu, M. H. (2009). Understanding customers' loyalty intentions towards online shopping: an integration of technology acceptance model and fairness theory. *Behaviour & Information Technology*, *28*(4), 347-360

Cho, J. (2006). The mechanism of trust and distrust formation and their relational outcomes. *Journal of retailing*, *82*(1), 25-35.

Cho, H., Lee, J. S., & Chung, S. (2010). Optimistic bias about online privacy risks: Testing the moderating effects of perceived controllability and prior experience. *Computers in Human Behavior*, *26*(5), 987-995.

Clodfelter, R. (2010). Biometric technology in retailing: Will consumers accept fingerprint authentication?. *Journal of Retailing and Consumer Services*, *17*(3), 181-188.

Compeau, D. R., & Higgins, C. A. (1995). Computer self-efficacy: Development of a measure and initial test. *MIS quarterly*, 189-211.

Cronin Jr, J. J., Brady, M. K., & Hult, G. T. M. (2000). Assessing the effects of quality, value, and customer satisfaction on consumer behavioral intentions in service environments. *Journal of retailing*, *76*(2), 193-218.

Cropanzano, R., Byrne, Z. S., Bobocel, D. R., & Rupp, D. E. (2001). Moral virtues, fairness heuristics, social entities, and other denizens of organizational justice. *Journal of vocational behavior*, *58*(2), 164-209.

Darke, P. R., Brady, M. K., Benedicktus, R. L., & Wilson, A. E. (2016). Feeling close from afar: The role of psychological distance in offsetting distrust in unfamiliar online retailers. *Journal of Retailing*, *92*(3), 287-299.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 319-340.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1992). Extrinsic and intrinsic motivation to use computers in the workplace 1. *Journal of applied social psychology*, *22*(14), 1111-1132.

Davis, L., & Hodges, N. (2012). Consumer shopping value: An investigation of shopping trip value, in-store shopping value and retail format. *Journal of Retailing and Consumer Services*, 19(2), 229-239.

De Canio, F., Martinelli, E., Pellegrini, D., & Nardin, G. (2019, June). Influencing Shopping Engagement Across Channels: The Role of Store Environment. In *International Conference on Advances in National Brand and Private Label Marketing* (pp. 106-113). Springer, Cham.

De Kerviler, G., Demoulin, N. T., & Zidda, P. (2016). Adoption of in-store mobile payment: Are perceived risk and convenience the only drivers?. *Journal of Retailing and Consumer Services*, 31, 334-344.

De Wulf, K., & Odekerken-Schröder, G. (2003). Assessing the impact of a retailer's relationship efforts on consumers' attitudes and behavior. *Journal of Retailing and Consumer Services*, *10*(2), 95-108.

Deutsch, M. (1985). Distributive justice: A social-psychological perspective. New Haven, CT: Yale University Press.

Dinev, T., & Hart, P. (2006). An extended privacy calculus model for e-commerce transactions. *Information systems research*, *17*(1), 61-80.

Dodds, W. B., Monroe, K. B., & Grewal, D. (1991). Effects of price, brand, and store information on buyers' product evaluations. *Journal of Marketing Research*, *28*(3), 307-319.

Dommeyer, C. J., & Gross, B. L. (2003). What consumers know and what they do: An investigation of consumer knowledge, awareness, and use of privacy protection strategies. *Journal of Interactive Marketing*, *17*(2), 34-51.

Doney, P. M., & Cannon, J. P. (1997). An examination of the nature of trust in buyer–seller relationships. *Journal of marketing*, *61*(2), 35-51.

Donnellan, M. B., Oswald, F. L., Baird, B. M., & Lucas, R. E. (2006). The mini-IPIP scales: tiny-yet-effective measures of the Big Five factors of personality. *Psychological assessment*, *18*(2), 192.

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

Greenberg, J. (1987). A taxonomy of organizational justice theories. *Academy of Management review*, *12*(1), 9-22.

Grewal, D., Roggeveen, A. L., & Nordfält, J. (2017). The future of retailing. *Journal of Retailing*, *93*(1), 1-6.

Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Publications.

Henderson, L. W., Knight, T., & Richardson, B. (2013). An exploration of the well-being benefits of hedonic and eudaimonic behaviour. *The Journal of Positive Psychology*, *8*(4), 322-336.

Horne, D. A., & Horne, D. R. (2002). Database marketing: When does good practice become an invasion of privacy?. In *American Marketing Association. Conference Proceedings* (Vol. 13, p. 480). American Marketing Association.

Inman, J. J., & Nikolova, H. (2017). Shopper-facing retail technology: a retailer adoption decision framework incorporating shopper attitudes and privacy concerns. *Journal of Retailing*, *93*(1), 7-28.

Javornik, A. (2016). Augmented reality: Research agenda for studying the impact of its media characteristics on consumer behaviour. *Journal of Retailing and Consumer Services*, *30*, 252-261.

Joseph, S. M., & Flynn, L. R. (2015). Offline and Online Atmospherics: Toward a Typology of Online Environmental Cues. In *Marketing, Technology and Customer Commitment in the New Economy* (pp. 63-68). Springer, Cham.

Judge, T. A. and Bono, J. E., "Relationship of Core Self-Evaluations Traits--Self-Esteem, Generalized Self-Efficacy, Locus of Control, and Emotional Stability--With Job Satisfaction and Job Performance: A Meta-Analysis," *Journal of Applied Psychology*, 86, 1, (2001), 80-92.

Kakatkar, C., & Spann, M. (2019). Marketing analytics using anonymized and fragmented tracking data. *International Journal of Research in Marketing*, 36(1), 117-136.

Kleijnen, M., De Ruyter, K., & Wetzels, M. (2007). An assessment of value creation in mobile service delivery and the moderating role of time consciousness. *Journal of Retailing*, 83(1), 33-46.

Kim, Y. H., Kim, D. J., & Wachter, K. (2013). A study of mobile user engagement (MoEN): Engagement motivations, perceived value, satisfaction, and continued engagement intention. *Decision Support Systems, 56*, 361-370.

Kim, D., Park, K., Park, Y., & Ahn, J. H. (2019). Willingness to provide personal information: Perspective of privacy calculus in IoT services. *Computers in Human Behavior*, *92*, 273-281.

Kindt, E. J. (2013). The Criteria for the Correct 'Balancing of Rights'. In *Privacy and Data Protection Issues of Biometric Applications* (pp. 631-743).

Klasnja, P., Consolvo, S., Choudhury, T., Beckwith, R., & Hightower, J. (2009, May). Exploring privacy concerns about personal sensing. In *International Conference on Pervasive Computing* (pp. 176-183). Springer, Berlin, Heidelberg.

Korzaan, M. L., & Boswell, K. T. (2008). The influence of personality traits and information privacy concerns on behavioral intentions. *Journal of Computer Information Systems*, *48*(4), 15-24.

Kulviwat, S., Bruner II, G. C., Kumar, A., Nasco, S. A., & Clark, T. (2007). Toward a unified theory of consumer acceptance technology. *Psychology & Marketing*, *24*(12), 1059-1084.

Laukkanen, T. (2016). Consumer adoption versus rejection decisions in seemingly similar service innovations: The case of the Internet and mobile banking. *Journal of Business Research*, *69*(7), 2432-2439.

Lee, C. P., & Shim, J. P. (2006). An empirical study on user satisfaction with mobile business applications use and hedonism. *Journal of Information Technology Theory and Application*, *8*(3), 6.

Lee, H. H., Fiore, A. M., & Kim, J. (2006). The role of the technology acceptance model in explaining effects of image interactivity technology on consumer responses. *International Journal of Retail & Distribution Management*, *34*(8), 621-644.

Lee, M. K., Cheung, C. M., & Chen, Z. (2007). Understanding user acceptance of multimedia messaging services: An empirical study. *Journal of the American Society for Information Science and Technology*, *58*(13), 2066-2077.

Magni, M., Taylor, M. S., & Venkatesh, V. (2010). 'To play or not to play': A cross-temporal investigation using hedonic and instrumental perspectives to explain user intentions to explore a technology. *International journal of human-computer studies*, *68*(9), 572-588.

Malhotra, N. K., Kim, S. S., & Agarwal, J. (2004). Internet users' information privacy concerns: The construct, the scale, and a causal model. *Information Systems Research, 15*, 336–355.

Mani, Z., & Chouk, I. (2017). Drivers of consumers' resistance to smart products. *Journal of Marketing Management*, *33*(1-2), 76-97.

Marbach, J., Lages, C., Nunan, D., & Ekinci, Y. (2019). Consumer engagement in online brand communities: the moderating role of personal values. *European Journal of Marketing,* in press.

Margulis, A., Boeck, H., & Laroche, M. (2019). Connecting with consumers using ubiquitous technology: A new model to forecast consumer reaction. *Journal of Business Research (in press)*.

Martin, K. (2015). Privacy notices as tabula rasa: An empirical investigation into how complying with a privacy notice is related to meeting privacy expectations online. *Journal of Public Policy & Marketing., 34*, 210–227.

Martin, K. D., & Murphy, P. E. (2017). The role of data privacy in marketing. *Journal of the Academy of Marketing Science*, *45*(2), 135-155

Massara, F., Scarpi, D., Melara, R. D., & Porcheddu, D. (2018). Affect transfer from national brands to store brands in multi-brand stores. *Journal of Retailing and Consumer Services*, *45*, 103-110.

Mathwick, C., Malhotra, N., & Rigdon, E. (2001). Experiential value: conceptualization, measurement and application in the catalog and Internet shopping environment. *Journal of Retailing*, *77*(1), 39-56.

Maxham III, J. G., & Netemeyer, R. G. (2003). Firms reap what they sow: the effects of shared values and perceived organizational justice on customers' evaluations of complaint handling. *Journal of Marketing*, *67*(1), 46-62.

McCrae, R. R., & Costa, P. T. (1987). Validation of the five-factor model of personality across instruments and observers. *Journal of personality and social psychology*, *52*(1), 81.

Miltgen, C. L., Henseler, J., Gelhard, C., & Popovič, A. (2016). Introducing new products that affect consumer privacy: A mediation model. *Journal of business research*, *69*(10), 4659-4666.

Miltgen, C. L., Popovič, A., & Oliveira, T. (2013). Determinants of end-user acceptance of biometrics: Integrating the "Big 3" of technology acceptance with privacy context. *Decision Support Systems*, *56*, 103-114.

Mothersbaugh, D. L., Foxx II, W. K., Beatty, S. E., & Wang, S. (2012). Disclosure antecedents in an online service context: The role of sensitivity of information. *Journal of Service Research, 15*, 76–98.

Müller-Seitz, G., Dautzenberg, K., Creusen, U., & Stromereder, C. (2009). Customer acceptance of RFID technology: Evidence from the German electronic retail sector. *Journal of retailing and consumer services*, *16*(1), 31-39.

Norberg, P. A., Horne, D. R., & Horne, D. A. (2007). The privacy paradox: Personal information disclosure intentions versus behaviors. *Journal of consumer affairs*, *41*(1), 100-126.

Ou, W. M., Abratt, R., & Dion, P. (2006). The influence of retailer reputation on store patronage. *Journal of Retailing and Consumer Services*, *13*(3), 221-230.

Pan, Y., & Zinkhan, G. M. (2006). Exploring the impact of online privacy disclosures on consumer trust. *Journal of Retailing*, *82*(4), 331-338.

Pantano, E. (2016). Engaging consumer through the storefront: Evidences from integrating interactive technologies. *Journal of Retailing and Consumer Services*, *28*, 149-154.

Pantano, E., & Naccarato, G. (2010). Entertainment in retailing: The influences of advanced technologies. *Journal of Retailing and Consumer Services*, *17*(3), 200-204.

Pantano, E., & Priporas, C. V. (2016). The effect of mobile retailing on consumers' purchasing experiences: A dynamic perspective. *Computers in human behavior*, *61*, 548-555.

Perry, A. (2016). Consumers' acceptance of smart virtual closets. *Journal of Retailing and Consumer Services*, 33, 171-177.

Pikkarainen, T., Pikkarainen, K., Karjaluoto, H., & Pahnila, S. (2004). Consumer acceptance of online banking: an extension of the technology acceptance model. *Internet research*, *14*(3), 224-235.

Pizzi, G., Scarpi, D., Pichierri, M., & Vannucci, V. (2019). Virtual reality, real reactions?: Comparing consumers' perceptions and shopping orientation across physical and virtual-reality retail stores. *Computers in Human Behavior*, *96*, 1-12.

Poncin, I., & Mimoun, M. S. B. (2014). The impact of "e-atmospherics" on physical stores. *Journal of Retailing and Consumer Services*, *21*(5), 851-859.

Priporas, C. V., Stylos, N., & Fotiadis, A. K. (2017). Generation Z consumers' expectations of interactions in smart retailing: A future agenda. *Computers in Human Behavior*, *77*, 374-381.

Renko, S., & Druzijanic, M. (2014). Perceived usefulness of innovative technology in retailing: Consumers′ and retailers′ point of view. *Journal of retailing and consumer services*, *21*(5), 836-843.

Roy, S. K., Balaji, M. S., Quazi, A., & Quaddus, M. (2018). Predictors of customer acceptance of and resistance to smart technologies in the retail sector. *Journal of Retailing and Consumer Services*, *42*, 147-160.

Russell, C. A. (2002). Investigating the effectiveness of product placements in television shows: The role of modality and plot connection congruence on brand memory and attitude. *Journal of consumer research*, *29*(3), 306-318.

Sathye, M. (1999). Adoption of Internet banking by Australian consumers: an empirical investigation. *International Journal of bank marketing*, *17*(7), 324-334.

Scarpi, D. (2012). Work and fun on the internet: the effects of utilitarianism and hedonism online. *Journal of interactive marketing*, *26*(1), 53-67.

Sethuraman, R., & Parasuraman, A. (2005). Succeeding in the Big Middle through technology. *Journal of Retailing*, *81*(2), 107-111.

Sirohi, N., McLaughlin, E. W., & Wittink, D. R. (1998). A model of consumer perceptions and store loyalty intentions for a supermarket retailer. *Journal of Retailing*, 74(2), 223-245.

Sun, Y., Wang, N., Shen, X. L., & Zhang, J. X. (2015). Location information disclosure in location-based social network services: Privacy calculus, benefit structure, and gender differences. *Computers in Human Behavior*, *52*, 278-292.

Taddei, S., & Contena, B. (2013). Privacy, trust and control: Which relationships with online self-disclosure?. *Computers in Human Behavior*, 29(3), 821-826.

Thakur, R. (2016). Understanding customer engagement and loyalty: a case of mobile devices for shopping. *Journal of Retailing and Consumer Services, 32*, 151-163.

Tifferet, S. (2019). Gender differences in privacy tendencies on social network sites: a meta-analysis. *Computers in Human Behavior*, *93*, 1-12.

Trepte, S., Scharkow, M., & Dienlin, T. (2020). The privacy calculus contextualized: The influence of affordances. *Computers in Human Behavior, 104*.

Turel, O., Serenko, A., & Bontis, N. (2007). User acceptance of wireless short messaging services: Deconstructing perceived value. *Information & Management*, *44*(1), 63-73.

Turel, O., Yuan, Y., & Connelly, C. E. (2008). In justice we trust: predicting user acceptance of e-customer services. *Journal of Management Information Systems*, *24*(4), 123-151.

Van de Sanden, S., Willems, K., & Brengman, M. (2019). In-store location-based marketing with beacons: from inflated expectations to smart use in retailing. *Journal of Marketing Management*, 35(15-16), 1514-1541.

Van der Heijden, H. (2004). User acceptance of hedonic information systems. *MIS quarterly*, 695-704.

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management science*, *46*(2), 186-204.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. MIS Quarterly, 27(3), 425-478.

Wakefield, K. L., & Barnes, J. H. (1996). Retailing hedonic consumption: a model of sales promotion of a leisure service. *Journal of Retailing*, *72*(4), 409-427.

Walz, A. M., & Celuch, K. G. (2010). The effect of retailer communication on customer advocacy: The moderating role of trust. *Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior*, *23*, 95.

Wang, E. S. T. (2019). Effects of Brand Awareness and Social Norms on User-Perceived Cyber Privacy Risk. *International Journal of Electronic Commerce*, *23*(2), 272-293.

Weijters, B., Rangarajan, D., Falk, T., & Schillewaert, N. (2007). Determinants and outcomes of customers' use of self-service technology in a retail setting. *Journal of Service Research*, *10*(1), 3-21.

White, A., Breazeale, M., & Collier, J. E. (2012). The effects of perceived fairness on customer responses to retailer SST push policies. *Journal of Retailing*, 88(2), 250-261.

Wirtz, J., & Lwin, M. O. (2009). Regulatory focus theory, trust, and privacy concern. *Journal of Service Research*, *12*(2), 190-207.

Wirtz, J., Lwin, M. O., & Williams, J. D. (2007). Causes and consequences of consumer online privacy concern. *International Journal of Service Industry Management, 18*(4), 326–348.

Wolfinbarger, M., & Gilly, M. C. (2003). eTailQ: dimensionalizing, measuring and predicting etail quality. *Journal of Retailing*, *79*(3), 183-198.

Wünderlich, N. V., Wangenheim, F. V., & Bitner, M. J. (2013). High tech and high touch: a framework for understanding user attitudes and behaviors related to smart interactive services. *Journal of Service Research*, *16*(1), 3-20.

Xu, H., Luo, X. R., Carroll, J. M., & Rosson, M. B. (2011). The personalization privacy paradox: An exploratory study of decision making process for location-aware marketing. *Decision Support Systems*, *51*(1), 42-52.

Zhou, T. (2011). The impact of privacy concern on user adoption of location-based services. *Industrial Management & Data Systems*, *111*(2), 212-226.

Zielke, S. (2014). Shopping in discount stores: The role of price-related attributions, emotions and value perception. *Journal of Retailing and Consumer Services*, 21(3), 327-338.

APPENDIX

Table 1

Construct measures

Items	Cronbach alpha	AVE	CR
Privacy	0.96	0.66	0.93
1. I think my benefits gained from the use of this technology can offset the risk of my information disclosure.			
2. The value I gain from using this technology is worth the information I give away			
3. I think the risks of my information disclosure will be greater than the benefits gained from the use of this technology. (R)			
4. I believe that the retailer has adequate security features to protect my privacy			
5. I feel like my privacy would be protected at this retail store			
6. I would feel safe in my shopping experiences with this retail store			
7. I would feel comfortable sharing my information with this retailer			
8. I would feel safe sharing my information with this retailer			
Hedonism	0.84	0.59	0.80
1. This technology would make the shopping experience more entertaining			
2. This technology would be funny by itself, regardless of the products I would eventually purchase			
3. With this technology, I would spend time in a store not because I need something, but just because it would be funny.			
Retailer trustworthiness	0.85	0.65	0.79
1. I admire and respect this retailer			
2. I trust this retailer			
3. This retailer offers high quality products and services			
4. This retailer has a clear vision for its future			
5. This retailer is up-to-date with recent technologies			

Change in retailer's perceived value   -   -   -

1   Compared to what I have to give up, the overall ability of
    this retailer to satisfy my wants and needs is (1 = Very
    low; 7 = Very High)

Distributive fairness   0.87   0.63   0.83

(1 = The retailer; 4 = Both; 7 = The consumer)

1. Given the investments needed to adopt this new technology
    (e.g. time, money), the final outcome would be more
    beneficial to
2. The outcome of the implementation of this new technology
    would be more positive for
3. Considering the inconvenience that this technology might
    cause, the outcome received would be fairer to

Word-of-Mouth   0.93   0.87   0.93

(1 = Much lower than before; 7 = Much higher than before)

1. My willingness to recommend this store to my relatives
    and friends would be … as a result of the implementation
    of this new technology
2. My likelihood of saying good things about this store to my
    relatives and friends would be… as a result of the
    implementation of this new technology

Technology acceptance   0.88   0.73   0.84

1. Assuming that I have access to this technology, I intend to
    use it
2. Given that I have access to this technology, I predict that I
    would use it

Patronage intention   0.93   0.87   0.93

(1 = Much lower than before; 7 = Much higher than before)

1. My willingness to purchase from this retailer would be …
    as a result of the implementation of this new technology
2. My willingness to visit this store in the future would be …
    as a result of the implementation of this new technology

| **Openness** | 0.76 | 0.62 | 0.78 |

1. I have a vivid imagination
2. I am not interested in other people's problems
3. I have difficulty understanding abstract ideas
4. I do not have a good imagination

Sample Stimuli

In the following you will read about a technology **that the retailer Primark might implement** in store in the near future

FACE RECOGNITION

Facial recognition is a technology that combines the data provided by **cameras located inside the store** and analyzes them using **specific algorithms**. Thanks to those algorithms, facial recognition **automatically detects specific characteristics of the consumer**. In fact, when someone passes in front of the camera, it **detects the presence**, identifies the **direction of the person's gaze** and for **how long the person stops** in front of the shelves. Furthermore, the camera identifies the gender, age group, ethnicity and mood of the person. Consequently, facial recognition allows retailers to **interpret consumers' reactions and to see what the customers are looking at**. Thus facial recognition allows retailers, for instance, to **fill the shelves consistently** with consumer behavior.

Now, please watch the video below. Once finished, you will be able to proceed with the questionnaire (the "advance" arrow will appear at the bottom right of the page):

In the following you will read about a technology **that the retailer Nike Store might implement** in store in the near future

SMART MIRRORS

Smart mirrors are **touch and interactive mirrors** that allow other images to be **superimposed on the reflected image as if the mirror were a computer screen**. They are equipped with a **touchscreen and a system for recognizing the products** brought into the fitting room by the customer. With these mirrors, thanks to the **cameras and the use of augmented reality**, customers can **simulate wearing the clothes** and see themselves in the mirror as if they were actually wearing them. Smart mirrors also allow to view product versions different from those worn in the dressing room. They are **synchronized with the store catalog** and also **provide customers with product suggestions** - alternative sizes and colors in store - and allow consumers to independently select the products.

Now, please watch the video below. Once finished, you will be able to proceed with the questionnaire (the "advance" arrow will appear at the bottom right of the page):

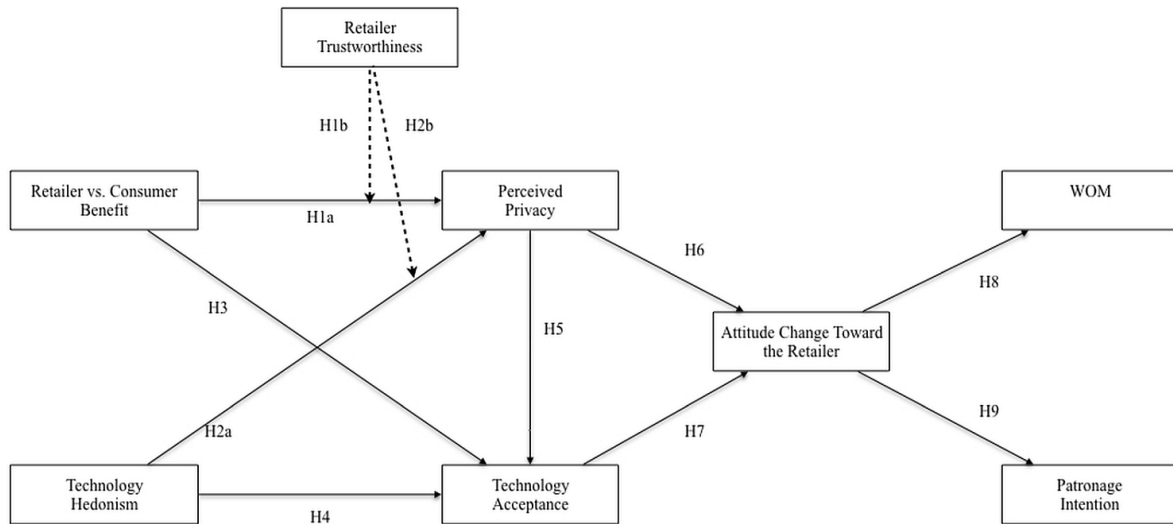**FIGURES RECALLED IN THE TEXT**

Figure 1

Theoretical Model

Figure 2

Model with estimates