The effects of online tactile information source for low-touch products on consumer responses

Carmela Donato
Department of Business and Management, Luiss University, Rome, Italy, and
Maria Antonietta Raimondo
Universita degli Studi della Calabria, Arcavacata di Rende, Italy

Abstract

Purpose – This paper aims to analyze the effects of web communities vs company websites in providing tactile information considering different types of product in terms of touch diagnosticity (low- vs. high-touch products).

Design/methodology/approach – Three experimental studies were conducted to examine the effect of online information sources (i.e. web communities vs. company websites) in providing tactile information on consumer responses, considering the moderation role of product type in terms of touch diagnosticity (low- vs. high-touch products, Study 1), the moderating role of type of information (tactile vs. generic, Study 2a); and the moderating role of need for touch (NFT) (Study 2a and 2b).

Findings – While previous research converges on the idea that the provision of a written description of tactile properties deriving from the product usage is particularly effective for products for which tactile information is diagnostic and for individuals high in NFT, the results demonstrated that the presence (vs. the absence) of the description of the tactile properties provided by web communities (vs. company websites) matters for those products for which touch is not diagnostic and for individuals low in NFT.

Practical implications – The findings have particular relevance for emerging brands intending to commercialize their products in the digital environment. These companies should be present in web communities to describe a product's tactile characteristics, especially if not diagnostic.

Originality/value – This paper significantly contributes to a better understanding of a little studied area, namely, consumer responses toward haptic compensational strategies providing haptic cues (e.g. written description of tactile information along with pictures of products) aiming at compensating for the absence of touch, underlining the differential influence of online sources of tactile information on consumer responses across different types of products.

Keywords Websites, Need for touch, Dual-process approach, Online information source, Touch, Web communities

Paper type Research paper

Introduction

The impossibility to physically inspect products through the touch is one of the main deterrents of online shopping (Lee and Park, 2014; González-Benito *et al.*, 2015; Overmars and Poels, 2015; Pino *et al.*, 2019). Despite the usage of specific functions to simulate the physical contact with the product (e.g. picture zooming; Peck *et al.*, 2013) and to reduce uncertainty about product performance (Greenleaf and Lehmann, 1995), consumers are still hesitant to shop online and may decide to just examine the product through websites, but finally buy it in the physical store (Cho *et al.*, 2006; Pino *et al.*, 2019). A possible way to overcome these limits is the presence of written descriptions of product tactile characteristics (Mooy and Robben, 2002; Fan *et al.*, 2013; Coyle and Thorson, 2001) that can approximate the direct experience (Nowlis *et al.*, 2004) and improve consumers understanding of the products (Li *et al.*, 2003; Jiang and Benbasat, 2007a, 2007b). Indeed, previous literature shows that, when the direct contact with a product is absent, the description of its tactile characteristics may positively affect consumer behavior (McCabe and Nowlis, 2003; Peck and Childers, 2003a). Earlier contributions also demonstrate that, owing to its greater perceived reliability, user-generated information about products disseminated spontaneously among users in web communities is able to influence consumer buying intentions more than firm-generated information provided through company websites (Mudambi and Schuff, 2010; Punj, 2013).

Now, imagine that you are looking on the Web for a product of an emerging or an unknown brand. Thus, you start to check the product description provided by the firm or shared by previous users through comments or reviews and you read that it is "nice to touch." How will this information affect your attitude and intention? And for which kind of product would

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you prefer to have such information? This research aims to answer to these questions by analyzing the effects of web communities vs. company websites in providing tactile information and considering different types of product in terms of touch diagnosticity (low- vs. high-touch products). Additionally, the paper investigates under which conditions such effects occur by considering a control condition (i.e. the absence of tactile information) and the moderating role of need for touch (hereafter: NFT; Peck and Childers, 2003b).

Across three experimental studies, and in line with dual-process theories, we showed that, for low-touch products, for which haptic information is not diagnostic, tactile information provided by a web community (vs. a company website) positively affects consumer responses as the source is perceived as more reliable. Conversely, for high-touch products, for which tactile information is diagnostic, there is no difference in consumer responses between the two online tactile sources of information. Additionally, we found that the greater impact of web communities (vs. company websites) providing tactile information (vs. generic information) for low-touch products on consumers' willingness to buy and brand attitude holds only for consumers low in NFT, considering both a consumer forum and a more realistic scenario (i.e. an online store hosting consumers reviews).

The remainder of this paper is organized as follows. First, we develop the conceptual background and research hypotheses by focusing on the importance of online tactile information and the diagnosticity of such information for different product types and consumers. Subsequently, we report the empirical evidence that provides support for our conceptualization. Finally, we present the theoretical and practical implications of our results and discuss both limitations and directions for further research.

Conceptual background and research hypotheses

Online touch information

Previous literature has underlined the crucial role of the sense of touch (Major *et al.*, 1990; Ackerman *et al.*, 2010) that allows consumers to obtain information about the surface and other spatial information of commodities. Several scholars have analyzed the impact of physical touch in different marketing contexts, as interpersonal touch (Crusco and Wetzel, 1984; Hornik and Ellis, 1998) or product taste (Hornik, 1992) . Moreover, Peck and Childers (2003b) demonstrated that haptic orientation is an individual difference variable reflecting consumers' NFT, which is defined as their "preference for the extraction and the utilization of information obtained through the haptic system" (p. 431) and has two underlying dimensions: instrumental, related to the need of touching products driven by a purchase goal, and autotelic, related to hedonic motivations and to touch products as an end in and of itself. Recently, Jha *et al.* (2019) showed that the instrumental and autotelic dimensions of NFT moderate the evaluation of haptic and nonhaptic products in different purchase environments. Other studies found a positive relationship between touch and both impulse purchasing (Kacen and Lee, 2002; Peck and Childers, 2006) and perceived ownership of the touched object (Peck and Shu, 2009; Maille *et al.*, 2020). Moreover, Streicher and Estes (2015) demonstrated that haptic brand identities can facilitate recognition, consideration and brand choice, whereas Streicher and Estes (2016) showed that touching a given product can influence perception and choice of other seen products. Haptic cues also play a pivotal role in food perception, as taste (Krishna and Morrin, 2008) and perceived naturalness (Labbe *et al.*, 2013). Finally, Yoganathan *et al.* (2019) found that tactile priming statement increases consumers' willingness to pay for an ethical brand online.

Given that the absence of touch is one of the main deterrents of online shopping (Alba *et al.*, 1997; Citrin *et al.*, 2003), previous research has demonstrated that such an absence can be coped with providing tactile information, that is, information on the material properties of products, such as their feel, temperature and weight (Klatzky and Lederman, 1993). Such information can be offered through a written description of the tactile sensations deriving from the usage of the product and/or a visual representation (McCabe and Nowlis, 2003; Peck and Childers, 2003a) available on both company websites and web communities (Bickart and Schindler, 2001).

Company websites are formal sources of information, where firms offer information about products through impersonal one-to-many communication. Many traditional companies moved into e-commerce, still maintaining their physical stores (Lawson, 2001). These companies generally provide well-known brand names, local store delivery and return/exchange facilities through their websites (Nataraj and Lee, 2002); moreover, they offer trust, personal privacy, technical reliability and fast delivery (Schoenbachler and Gordon, 2002). Multichannel company websites are thus likely to reduce the levels of perceived risk even though consumers cannot evaluate products through the touch. However, other single-channel companies started operating only in online setting (Laudon and Traver, 2001). As these companies do not benefit from a physical store, the presented products are supposed to be perceived as riskier. As a consequence, the presence of haptic information is particularly relevant for consumers not having any previous experience with the products. In the present research, we focus on company websites offering their (unknown) brands only in the online setting.

Web communities are informal sources of information, where consumers, organized in groups engaged in computer-mediated interactions around a common interest (Bagozzi and Dholakia, 2002), spontaneously share opinions and experiences about products through interpersonal many-to-many communication based on posts, comments and reviews. The interactive nature of online communities allows consumers to exchange information about product experiences by giving opinions and advices on the quality and usage of products, thereby leading to electronic word of mouth (i.e. e-WOM; Hennig-Thurau *et al.*, 2004) communication (Brown *et al.*, 2007; Park and Cho, 2012). An extensive research stream on e-WOM has analyzed how it works (King *et al.*, 2014; Babić Rosario, de Valck and Sotgiu, 2019) and its effects on consumer behavior (López and Sicilia, 2014; Chu and Kim, 2018) and product sales (Chevalier and Mayzlin, 2006; Babić Rosario *et al.*, 2016), demonstrating that users comments and reviews are influential sources of information for other users (Godes *et al.*, 2005; Pitta and Fowler, 2005).

Both online information sources can provide consumers with tactile information about products before purchasing. However, web communities seem to be more effective in influencing consumer behaviors than company websites (Dhar and Chang, 2009; Mudambi and Schuff, 2010; Senecal and Nantel, 2004;

Punj, 2013). Indeed, previous research shows that information exchanged within web communities through e-WOM reflects the knowledge and the personal experience of other users (Zhu and Zhang, 2010; Liu and Lopez, 2016) and is generally considered to be more reliable than the information provided by the company (Wathen and Burkell, 2002; Fan *et al.*, 2013). Accordingly, some scholars have identified in the sincere concern for other consumers (Hennig-Thurau *et al.*, 2004) and in the willingness to engage in helping behaviors for other consumers (Johnson *et al.*, 2013) primary motivations that lead users to post their opinions about a product online. Being regarded as a more reliable source, it is likely that e-WOM communication has a greater impact on products evaluation of their members (Cheung *et al.*, 2009; López and Sicilia, 2014) and, therefore, that tactile information provided by web communities is perceived as more reliable than the same information provided by a company website and may have a greater impact on consumer responses. However, previous research has not clarified for which type of product, in terms of touch diagnosticity, the provision of tactile information within a web community (vs. a company website) is more effective in influencing consumers' evaluations. Such effect may also vary for consumers with different levels of NFT.

Diagnosticity of touch information: product type and need for touch

We maintain that the type of product moderates the relationship between online touch information sources and consumer attitude, by distinguishing between low- vs. high-touch products that differ in the extent to which they possess salient material properties, that is, in the importance of touch (Lederman and Klatzky, 1987; Peck and Childers, 2003a, 2003b). Dual-process theories of persuasive communication (e.g. elaboration likelihood model – Petty and Cacioppo, 1981; and heuristic-systematic model – Chaiken, 1980) provide the background for our predictions. These theories propose that consumers process information based on either a central route (that requires considerable effort) or a peripheral route (that implies using mental shortcuts). The central route implies high motivation and/or ability in processing the information and corresponds to those situations in which consumers think attentively and take a decision after a careful consideration of all given information. Conversely, the peripheral route implies low motivation and/or ability in processing the information and corresponds to those situations in which consumers do not think carefully and use shortcuts (i.e. heuristics) to make judgments.

For low-touch products, tactile information is not diagnostic during product evaluation. Consumers will follow a peripheral route because they are less motivated to have tactile information about the product and will, therefore, use the perceived reliability of the information source as a heuristic. Under such conditions, the source of information (web communities vs. company website) is more relevant than the information itself (i.e. the description of tactile characteristics). Therefore, we expect that, for low-touch products, tactile information provided by a web community (vs. a company website) will increase the perception of reliability that, in turn, will produce higher consumer attitude toward the product. For high-touch products, tactile information is diagnostic during product evaluation. Consumers will follow a central route because they are more motivated to have tactile information about the product and will, therefore, not use the perceived reliability of the information source as a heuristic. Under such conditions, the source of information is less relevant than the (diagnostic) tactile information itself. Therefore, we expect that, for high-touch products, there is no difference in the perceived reliability between the two sources of tactile information, and thus in terms of consumer attitude toward the product. Of importance, we hypothesize that such a differential effect of the online tactile information sources (web community vs. company website) for low rather than high-touch products occurs both as a direct effect of information source and product type on consumers' attitude (*H1*) and through the effect of such two factors on perceived reliability (*H2*). Formally, the following hypotheses are postulated:

H1. The effect of online tactile information sources on consumer attitude toward the product is moderated by the type of product. Specifically, for low-touch products, tactile information provided by a web-community (vs. a company website) increases consumer attitude, while for high-touch products there is no difference in consumer attitude between the two sources of online tactile information.

H2. Perceived reliability mediates the interaction effect of online tactile information source and product type on consumer attitude toward the product.

We also maintain that the effects of online tactile information sources on consumer responses may vary depending on consumers' NFT. As already stated, NFT is an important personal trait related to diagnosticity of touch information that has been demonstrated to influence online shopping (González-Benito *et al.*, 2015; Lee *et al.*, 2017; Pino *et al.*, 2019; Jha *et al.*, 2019). In particular, previous research found that consumers high in NFT – namely, those consumers for which the absence of tactile experience generates a greater frustration and a lower trust in product evaluations compared to low-NFT counterparts (Peck and Childers, 2003b) – are more likely to rate the quality of high-touch products lower than consumers low in NFT (Rodrigues *et al.*, 2017; San-Martín *et al.*, 2017; Kühn *et al.*, 2020). We expect to find similar effects also for low-touch products. In particular, we predict that the positive effect played by a web community (vs. a company website) in providing tactile (vs. generic) information for a low-touch product on consumers' responses holds only when consumers present a low NFT. Those consumers are likely to follow a peripheral route of processing information. Conversely, for consumers that present a high NFT and are therefore very sensitive to tactile information, the provision of tactile information by a web community (vs. a company website) is not expected to influence their responses toward low-touch products (*H3*) as they still prefer the physical inspection of the product and consequently are more likely to follow a central route. Formally, the following hypothesis is postulated:

H3. Compared to company websites, web-communities providing tactile (vs. generic) information for low-

touch products positively influence consumers' purchase intentions and brand attitude, but only for consumers low in NFT.

Empirical studies

Studies overview

We tested our conceptual framework in three experimental studies. Study 1 was aimed at investigating *H1* and *H2* for a pair of low- and high-touch products. Study 2a was aimed at analyzing the effect of online sources of tactile information (web communities vs. company websites) for low-touch products using a control condition (i.e. the absence of tactile information) and investigating the moderating role of the NFT, thus testing *H3*. Moreover, Study 2a examined consumers' willingness to buy (hereafter: WTB) as another DV. In Studies 1 and 2a, we operationalized the web community source considering a consumer forum. Finally, Study 2b was aimed at generalizing previous results for low-touch products, considering a more realistic scenario (i.e. consumer reviews available on an online store) and analyzing brand attitude as additional DV. In each study, we blocked the exposure time of the experimental scenarios for a minimum of 50 s to ensure that all relevant information contained in each scenario's description has been read and understood by participants. The extended versions of the scenarios used in all the studies are available upon request.

Pretest

To select the products to use in our experimental studies, we firstly showed to two Web-retailing experts a list of 20 commodity products [1] and asked them to select two everyday products generally sold online for which the perceived importance of touch has a low or high level, respectively. Following our instructions, the experts converge in indicating the scarf and the keyring as high-/low-touch products, respectively.

After that, we selected a picture from Google images for each selected product and conducted a pretest where 30 subjects (13 females, M_{age} = 26.37, SD = 4.18) were asked to evaluate the two products, shown in a random order, in terms of the perceived importance of touch (1 = not at all important; 7 = very important). Results of a repeated measures ANOVA confirmed that the keyring received the lowest evaluations ($M_{keyring}$= 2.77; SD = 1.70) and the scarf the highest evaluations (M_{scarf} = 6.37; SD = 1.03). Moreover, the keyring and the scarf significantly differ in terms of the perceived importance of touch ($t(29) = -10.26$, $p = 0.00$).

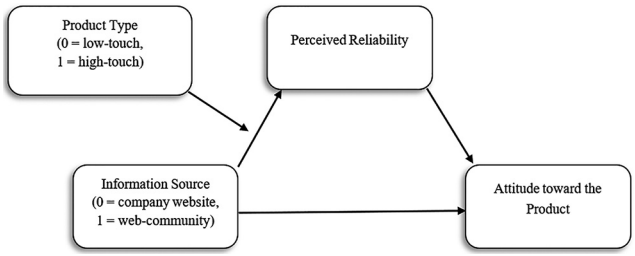
Study 1

Study 1 was a lab study aimed at testing *H1* and *H2*. We used a 2 (online tactile information source: web community vs. company website) × 2 (type of product: low- vs. high-touch products) between-subjects design. In total 133 students (72 males, M_{age} = 22.69, SD = 1.46) participated in the study in exchange of a bonus course credit. Participants were randomly assigned to one of four experimental scenarios: the description of a low-touch product (i.e. a keyring) given by the users of a fictitious web community (i.e. *Look&Accessories*) or by the company website of a fictitious brand (i.e. Class); the description of a high-touch product (i.e. a scarf) given by the users of a web community (i.e. *Look&Accessories*) or by the company website of a fictitious brand (i.e. Class). In each description, the same tactile information about the products (e.g. texture, weight, tactile pleasantness, feel) was provided. After that, attitude toward the product was measured. In particular, participants were asked to indicate how much they liked the product (1 = not at all, 7 = a lot), their general orientation toward it (1 = negative, 7 = positive) and to what extent they considered the product desirable (1 = not at all, 7 = a lot). The three items were averaged in an overall attitudinal score (α = 0.86; M_{att} = 4.04, SD_{att} = 1.18). Moreover, perceived reliability was measured by asking participants to what extent they perceived the description of the product on each scenario as reliable ("To which extent do you believe that the description of the "Class" keyring is reliable?" 1 = not at all, 7 = a lot). Finally, participants answered to two manipulation checks of information source (1= company; 7= users) and touch importance (1 = not at all important; 7 = very important), then they were asked demographic questions (i.e. age and gender), were debriefed and compensated.

Results. Manipulation checks were successful for both information sources ($M_{community}$ = 4.12, SD = 1.16; $M_{website}$ = 2.29, SD = 1.53; $F(1, 131) = 26.69$, $p < 0.01$; $\eta_p^2 = 0.99$) and touch importance (M_{scarf} = 5.18, SD = 1.18; $M_{keyring}$ = 3.16, SD = 1.36; $F(1, 131) = 80.28$, $p < 0.01$; $\eta_p^2 = 1.00$). A two-way ANOVA on the previously computed attitudinal score revealed a significant direct effect of both the information source ($M_{community}$ = 4.27, SD = 1.08; $M_{website}$ = 3.74, SD = 1.25; $F(1, 129) = 6.43$, $p = 0.01$; $\eta_p^2 = 0.05$) and the product type (M_{scarf} = 4.56, SD = 0.09; $M_{keyring}$ = 3.64, SD = 1.20; $F(1, 129) = 26.30$, $p < 0.001$; $\eta_p^2 = 0.17$). More importantly, the main effects are qualified by a significant interaction effect between the two independent variables ($F(1, 129) = 4.05$; $p = 0.05$; $\eta_p^2 = 0.03$). In line with *H1*, planned comparisons indicated that, for low-touch products, consumer attitude is higher when tactile information is provided by a web community than a company website ($M_{community\_keyring}$ = 4.02, SD = 1.17; $M_{website\_keyring}$ = 3.18, SD = 1.08; $F(1,129) = 12.10$, $p = 0.001$; $\eta_p^2 = 0.09$), whereas for high-touch products there is no significant difference in terms of consumer attitude toward the product ($M_{community\_scarf}$ = 4.60, SD = 0.08; $M_{website\_scarf}$ = 4.51, SD = 1.06; $F(1,129) = 0.12$, p = ns; $\eta_p^2 = 0.001$).

Then, to test *H2*, we conducted a mean centered moderated mediation analysis (Model 7 of PROCESS macro; Hayes, 2017), considering information source as independent variable (website = 0, web community = 1), type of product as moderator (low-touch = 0, high-touch =1), the perceived reliability as mediator and the overall attitude score as dependent variable. Indeed, we expect that, for low-touch products, web communities providing tactile information are perceived to be more reliable than the company website, whereas for high-touch products the description of tactile characteristics does not influence perceived reliability irrespective of the source providing it (Figure 1). Results showed that both information source ($b = 0.48$, SE = 0.22; $t = 2.13$; $p = 0.04$; $r^2 = 0.03$) and type of product ($b = 0.92$, SE = 0.26; $t = 3.60$, $p < 0.001$; $r^2 = 0.09$) have a significant

Figure 1 Mediation-moderation model tested in Study 1



effect on perceived reliability. Moreover, the interaction between information source and type of product is not significant (b = −0.49, SE = 0.34, t = −1.43, p = 0.15; r^2 = 0.02). However, in line with our conceptualization, simple slopes analysis showed that, for low-touch products, web communities are perceived as more reliable than the company website (b = 0.25, $p < 0.05$), whereas for high-touch products information source does not affect the perception of reliability (b = −0.01, p = ns). Considering attitude score as dependent variable, both reliability (b = 0.52, SE = 0.09; t = 5.87; $p < 0.001$; r^2 = 0.21) and information source (b = 0.39, SE = 0.18, t = 2.16; p = 0.03; r^2 = 0.03) have a significant effect. Moreover, there is a significant indirect conditional effect of information source on attitude for low-touch products equal to 0.25 [95% CI: 0.02, 0.55]. Conversely, for high-touch products the indirect conditional effect is not significant [95% CI: −0.28, 0.26]. We can thus confirm our conceptualization that, for low-touch products, a web community is perceived as more reliable than the company website, thus increasing consumers' attitude. Instead, for high-touch products, there is no difference in terms of perceived reliability and thus on consumers' attitude between the two information sources.

Our results did not take into account the level of product involvement. As a consequence, one may infer that consumers have a relatively higher involvement for high-touch products (i.e. scarf) compared to low-touch products (i.e. keyring).

To rule out this alternative explanation and therefore to show that our results are driven by touch importance and not by product involvement, we conducted a post-test where 52 undergraduate students (14 females, M_{age} = 20.84, SD = 0.64) were asked to evaluate the two products used in Study 1 in terms of their perceived involvement. Product involvement was measured asking participants to which extent they evaluated the product as "attractive," "important," "interesting" and "relevant" (1 = not at all; 7 = a lot). Results of a repeated measures ANOVA confirmed that the two products ($M_{Keyring}$ = 3.91, SD = 0.15; M_{Scarf} = 4.48, SD = 0.18) did not differ in terms of perceived involvement ($\Delta M_{keyring\text{-}Scarf}$ = −0.57, SE = 0.24; p = 0.21).

Study 2a

Study 1 did not include a control condition. We therefore conducted an additional experimental study in which we manipulated the presence (vs. absence) of tactile information focusing on low-touch products. Moreover, according to *H3*, we tested the moderating role of the NFT. Finally, to show that our findings go beyond to just attitudinal changes, we examined WTB as DV.

We used a 2 (online tactile information source: web community vs. company website) × 2 (tactile information: present vs. absent) lab experiment in which 127 students (53 males, M_{age} = 22.63, SD = 1.15) participated in exchange of one bonus course credit. Participants were randomly assigned to one of four experimental scenarios in which the same low-touch product used in Study 1 (i.e. keyring) was described with (vs. without) tactile information by the users of a fictitious web community (i.e. *Look&Accessories*) or by the company website of a fictitious brand (i.e. Class). After that, participants were asked for their WTB the product that was measured through three seven-point Likert items (i.e. "If available I would buy the Class keyring," "If available I could consider to buy the Class keyring," "The likelihood of buying the Class keyring, if available, is high"; α = 0.96; M_{WTB} = 2.58, SD_{WTB} = 1.36) adapted from Dodds *et al.* (1991). Then, their personal NFT (α = 0.90; Peck and Childers, 2003b) was measured. Finally, participants answered to two manipulation checks of information source (1 = company; 7 = users) and touch information (1 = absence of tactile information; 7 = presence of tactile information), then they were asked demographic questions (i.e. age and gender), were debriefed and thanked for their participation.

Results. Manipulation checks were successful for both information sources ($M_{community}$ = 5.71, SD = 1.67; $M_{website}$ = 3.47, SD = 2.03; $F(1, 125)$ = 46.45, $p < 0.001$; η_p^2 = 1.00) and touch information (M_{touch} = 5.57, SD = 1.52; M_{no_touch} = 3.37, SD = 1.62; $F(1, 125)$ = 62.15, $p < 0.001$; η_p^2 = 1.00). Then, we conducted a three-way mean centered moderation analysis (Model 3 of PROCESS macro; Hayes, 2017), considering information source as independent variable (website = 0, web community = 1), tactile information (absent = 0, present = 1) and the NFT score as moderators, and the WTB as DV. Indeed, we expect that product information provided by web communities and containing tactile details increases consumers' WTB but only in case of low NFT. Results showed a significant and positive interaction between information source and tactile information (b = 4.98, SE = 1.86, t = 2.68, $p < 0.001$; r^2 = 0.05), a significant and positive interaction between information source and NFT (b = 0.68, SE = 0.28, t = 2.41, p = 0.02; r^2 = 0.04), a significant and positive interaction between touch information and NFT (b = 0.78, SE = 0.29, t = 2.68, $p < 0.01$; r^2 = 0.05) and more importantly a significant and negative three-way interaction between source information, touch information and NFT (b = −1.22, SE = 0.41, t = −2.99, $p < 0.001$; r^2 = 0.07). The Johnson-Neyman "floodlight" analysis (Spiller *et al.*, 2013) revealed a significantly positive effect of tactile information provided by web communities on WTB for NFT values lower than 2.50 (b_{JN} = 1.93, SE = 0.90, 95% CI: 0.14, 3.72). This evidence allows to confirm our expectations that for customers low in NFT the presence of tactile information in web communities for low-touch products is more effective, as it leads to a higher WTB. However, for values of NFT higher than 4.9 (b_{JN} = −0.99, SE = 0.50, 95% CI: −1.98, −0.12), the effect on WTB becomes significantly negative. Then, looking at the conditional effects of X on Y at values of moderator (NFT), we found that, for values of NFT bigger than 4.40, the absence of tactile information in web- communities generates a higher WTB. A possible explanation of this surprising result could be

that for people high in NFT the absence of haptic experience in online setting is so frustrating that making this absence salient (through the provision of tactile information) generates an opposite effect in terms of WTB. Future studies could shed light on these relationships.

Study 2b

So far, we demonstrated that tactile information provided by web communities is more effective compared to company websites, but only for low-touch products and for individuals low in NFT. Focusing on this specific case, Study 2b was aimed at generalizing previous results by comparing the presence (vs. absence) of tactile information provided by a web community for low-touch products and adopting a more realistic context, namely, consumer reviews available on an online store. Moreover, we analyzed brand attitude as additional DV.

Study 2b used a single factor (tactile information: present vs. absent) between-subject design, conducted among 91 Prolific Academic UK workers (29 males; M_{age} = 30.76; SD = 9.07). Participants were firstly asked to imagine that they had to buy a keyring of a fictitious brand (i.e. Class), and then they were exposed to a fictitious e-commerce website containing consumers' reviews of the keyring. Depending on the condition, the reviews provided (vs. did not provide) tactile information (i.e. light metal material, nice to touch), the latter condition containing only generic information (i.e. metal material, easy to use) about the product. In each description, the same amount of text was provided (Appendix).

Then, brand attitude was measured by asking participants to indicate to which extent they agree or disagree (1 = totally disagree; 7 = totally agree) to the brand attitude scale items adapted from Spears and Singh (2004; "The Class brand is good," "My attitude toward the Class brand is positive," "I react favorably to the Class brand," "I like the Class brand," "I find the Class brand appealing"). The five items were averaged in an overall brand attitude score (α = 0.94, M_{att_brand} = 4.73, SD_{att} = 1.01). Moreover, as in Study 2a, we measured NFT (α = 0.92; Peck and Childers, 2003b) and a manipulation check of touch information (1 = absence of tactile information; 7 = presence of tactile information) was administered. Additionally, as past literature has extensively demonstrated that brand attitude is influenced by perceived product quality (Pappu *et al.*, 2005; Johnson *et al.*, 2006), we decided to measure also this variable using a single item seven-point Likert scale ("I think that the quality of the Class keyring is extremely high," 1 = strongly disagree; 7 = strongly agree). Then participants were asked demographic questions (i.e. age and gender), were debriefed and compensated for their participation.

Results. Manipulation check for touch information was successful (M_{touch} = 5.40, SD = 1.31; M_{no_touch} = 3.98, SD = 1.45; $F(1, 89) = 24.18$, $p < 0.001$; $\eta_p^2 = 0.21$). Then, we conducted a mean centered moderation analysis (Model 1 of PROCESS macro; Hayes, 2017) with tactile information as independent variable (absent = 0, present = 1), the NFT score as moderator, the brand attitude mean score as DV and the perceived quality as a control variable. Indeed, we expect that reviews containing tactile information increase brand attitude but only for consumers low in NFT (Peck and Childers, 2003b). Results showed that both tactile information (b = 1.41, SE = 0.56, t = 2.51, p = 0.01; r^2 =0.07) and perceived quality (b = 0.53, SE = 0.07, t = 8.00, $p < 0.001$; r^2 = 0.42) positively influenced brand attitude, whereas NFT did not (b = 0.12, SE = 0.09, t = 1.29, p = ns; r^2 = 0.02). More importantly, as in Study 2a, the interaction between tactile information and personal NFT is significant and negative (b = −0.29, SE = 0.13, t = −2.15, p = 0.03; r^2 = 0.05). Consistent with our expectations, the Johnson–Neyman "floodlight" analysis (Spiller *et al.*, 2013) revealed a significantly positive effect of tactile information on consumers' brand attitude for NFT values lower than 3.78 (b_{JN} = 0.33, SE = 0.17, 95% CI: 0.00, 0.67). This evidence allows to confirm our previous findings, namely, that for consumers low in NFT the presence of tactile information for low-touch products leads to a higher brand attitude. For values of NFT higher than 3.91 (b_{JN} = 0.29, SE = 0.16, 95% CI: −0.03, 0.62), the effect on brand attitude becomes not significant. As a consequence, compared to generic information, user-generated tactile information about low-touch products positively influences consumers evaluations, but only if they are low in NFT.

Discussion

In this paper, we showed that – if available – the description of tactile characteristics increases consumers' attitude toward these products because of the higher perceived reliability connected to user-generated (vs. firm generated) content. Indeed, for low-touch products evaluation, tactile information is not diagnostic, and consumers use the higher perceived reliability characterizing web communities that provide such information as a heuristic in determining their attitude. For high-touch products evaluation, tactile information is highly diagnostic; consequently, the source reliability becomes less relevant than the tactile information itself, and it is not used as a heuristic in determining consumers' attitude. Therefore, in such a context, consumer rely on the information content regardless of the source. Moreover, we found that the positive effect of web communities (vs. company websites) providing tactile information (vs. generic information) for low-touch products on consumers' WTB occurs only for subjects characterized by a low NFT. Finally, we replicated such result also considering tactile (vs. generic) information provided by consumers reviews available on an online store and measuring consumers' brand attitude as dependent variable.

This paper significantly contributes to a better understanding of a little studied area, namely, consumer responses toward haptic compensational strategies providing haptic cues (e.g. written description of tactile information along with pictures of products) aiming at compensating for the absence of touch, underlining the differential influence of online sources of tactile information on consumer responses across different types of products and individuals. While previous research converges on the idea that the provision of a written description of tactile properties deriving from the product usage is particularly effective for products for which tactile information is diagnostic (Lederman and Klatzky, 1987; McCabe and Nowlis, 2003; Jha *et al.*, 2019) and for individuals high in NFT (Jha *et al.*, 2019; Pino *et al.*, 2019), our results demonstrated that the presence (vs. the absence) of the description of the tactile properties matters for those products for which touch is not diagnostic and

for individuals low in NFT. The found effects proved to be robust across both attitudinal and dispositional outcomes. Moreover, this research contributes to extend the evidence of the greater influence of user-generated content compared to firm-generated content to a specific type of product (i.e. low-touch) and a specific level of an individual trait (i.e. low in NFT) and to demonstrate that individuals low in NFT prefer user-generated tactile information compared to generic one when considering to buy low-touch products.

Our results can be added to those of Yazdanparast and Spears (2012), according to which touch search is a form of analytical processing, especially for consumers most reliant on touch. Conversely, for consumers that do not rely on the haptic system for product information, their approach tends to be more relational and less analytical. We found a similar pattern considering both product and consumer characteristics in terms of touch information diagnosticity, by demonstrating that, in the case of high-touch products, for which tactile information is particularly salient, consumers tend to process information analytically relying on content, whereas when considering low-touch products, for which touch is not diagnostic, they rely on the source rather than the content. This is true only for consumers low in NFT. Conversely, for those high in NFT, the provision of tactile information does not influence brand attitude and even generates a lower WTB the product. This latter apparently counterintuitive result could be explained by the fact that, for those customers, the haptic experience is so important that the presence of tactile information, even for a low-touch product, makes the impossibility to touch the product so salient that they perceive frustration and therefore manifest lower WTB. For consumers high in NFT, the provision of a written description of tactile experience related to the product is not sufficient to compensate to such absence. As a consequence, the found results can be applied only to customers low in NFT.

From a managerial perspective, the findings of the present research are particularly useful for emerging brands intending to commercialize their products in the digital environment without a physical store. These companies should encourage users of web communities, such as blog and forum, to provide tactile information about commercialized products, being web communities more influential than company websites presenting the same information. The same recommendation also applies to e-commerce companies hosting a consumers' review section on their websites. Accordingly to our expectations, this effect is verified for those products for which tactile information is not diagnostic (i.e. low-touch products) and for consumers low in NFT. Indeed, these consumers tend to evaluate low-touch products less analytically and the provision of nondiagnostic tactile information on the company website may not be considered useful, but the same information could be perceived as valuable if provided on a web community. Conversely, for consumers high in NFT, the provision of tactile information for low-touch products does not affect brand attitude but surprisingly decreases WTB. For these consumers, companies should provide alternative tools (i.e. more interactive) to decrease frustration deriving from the absence of the physical touch. As a consequence, emerging companies commercializing low-touch products should encourage users to share tactile experiences with the products or incorporate in their websites customers reviews providing tactile information to increase consumers' responses toward these products and to gain a competitive advantage.

For high-touch products, for which consumers tend to have an analytical evaluation process, the provision of diagnostic tactile information from both informal and formal sources does not influence attitude toward the product. In this case, emerging companies do not need to stimulate users of web communities in providing tactile information and could offer such information directly in their websites.

This paper has some limitations that may provide opportunities for future research. Our study did not take into account haptic touch opportunities (e.g. shaking, swiping) offered by mobile advertising (Mulcahy and Riedel, 2020); future research can verify if our findings also hold in the case of an information source (personal or impersonal) that combines both haptic tools with the provision of tactile information about the product. We considered only positive tactile elements of products and referred to a fictitious brand; future research could also consider the impact of negative tactile aspects and real brands. We considered the distinction between high vs. low-touch products; future research could verify the extensibility of results considering different types of products (e.g. search vs. experience) or different types of brands (e.g. mass brand vs. luxury brands). Moreover, further research should verify if our results can be extended to other sensory characteristics, and more specifically to products high and low on other sensory dimensions that need to be described in virtual environments such as taste, sound or scent. Our research showed that the effect of online source of tactile information is based on perceived reliability of the source but did not rule out other potential underlying mechanisms that could explain the found results; further studies can also consider mechanisms such as trust, suspicion or persuasion knowledge. In our studies, we used a forced exposure situation; future field studies could replicate our results considering a real purchase situation and choice as main consumer response. Finally, further research may want to consider attitude toward the online source as a possible covariate.

Note

1 Product list: towel, belt, keyring, curtain, CD-ROM, comb, vase, socks, MP3, laptop bag, bed sheet, agenda, gloves, solar cream, pillow, suitcase, table lamp, pen, scarf, purse.

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Further reading

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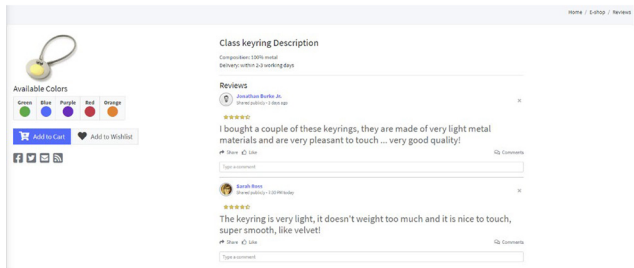
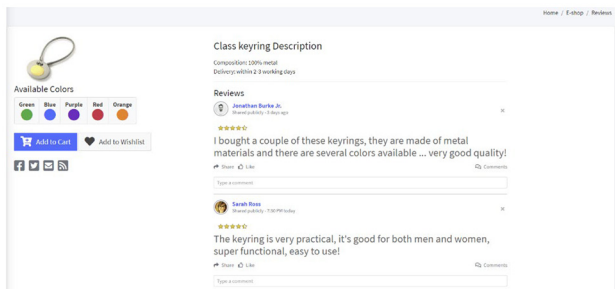
Appendix

Screenshots of the scenarios used in Study 2b

Touch Description



Generic Description



Corresponding author

Carmela Donato can be contacted at: donatoc@luiss.it