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## **Perceiving a haptic experience: how augmented reality could increase willingness to buy without physically touching products**

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### **Abstract**

The advent and rise of technologies (social media, augmented reality, virtual reality, beacons, etc.) is completely re-shaping boundaries between physical and digital retailing. Consumers are now offered the opportunity to live an enriched experience where the physical and digital elements of the shopping experience are intrinsically linked, mixed and interconnected, and stimulate all their five senses. Recent technological advancements (i.e. haptic technology, potentially complemented with augmented reality) have further reshaped this environment by offering consumers the possibility to live a “digitalized” touch-based experience with products. While this technological trend is already in action, there is still a lack of research on this topic, and the retail sector is far from understanding the implications these technologies might have on the shopping experience. This study is a first attempt to contribute to fill this research gap. Specifically, it presents and discusses a conceptual model aimed to analyse, through a field experiment, whether and how haptic perception can influence, via augmented reality technology, the consumers’ willingness to purchase.

*Keywords:* Augmented reality; Sensory marketing; Multichannel; Omnichannel; Touching.

### **1. Introduction**

Until recent years, consumers were able to fully appreciate a product only by touching and seeing its physicality. Nowadays, this is not necessarily true. The rise of digital technologies has profoundly transformed the retail sector (Pantano and Viassone, 2015), significantly challenging/changing the way consumers live their shopping experience. In this scenario, the need to touch the item is more and more dematerialised, and mixing effects are introduced in the way consumer experience their shopping. Will this dematerialisation necessarily generate positive effect or not? Could this impoverish, rather than enrich, the shopping experience, especially of products that are usually bought after a rich “touching-based” encounter (i.e. clothes)? Academicians and retailers need to question this and identify new digital-oriented strategies to cope with the potential impoverishment that a fully dematerialised experience could generate, hampering the shoppers’ willingness to purchase (Hagberg, Sundstrom and Egels-Zandén, 2016).

So far, literature on digital transformation and sensory marketing have not yet found a real solution to overcome this managerial aspect (Krishna, Cian and Sokolova, 2016; Hilken et al., 2017). With these aspects in mind, this study aims to cover this theoretical and managerial gap by presenting and discussing a theoretical study examining whether and how haptic perception, via augmented reality technology, influences the consumers’ willingness to purchase. In the upcoming weeks the

conceptual model will be tested through a field experiment on a sample of Italian consumers from GenY.

## **2. Literature review**

### **2.1 Haptics perception vs haptics sensation**

Touch has been always considered by scholars as one of the first and most important senses humans develop (Krishna, 2012). In fact, the embryo starts to experience the world by touching the womb-environment; smell, taste, hearing and vision are developed later. A further evidence of this can be found in Harlow (1958)' study, where it was found that infant macaque monkeys prefer to stay close to a surrogate mother able to provide warmth, rather than staying close to the one able to provide nutrition. Montagu (1986) showed that when considering babies, the feeling to be touched and massaged is preferred over other types of senses stimulation.

In an attempt to understand whether different individuals have the same "Need For Touch" (NFT), Peck and Childers (2003) created a specific scale which consists of two different sub-scales aimed to measure respectively instrumental NFT and autotelic NFT. On the one hand, instrumental NFT is related to functionality for a specific object (e.g. to buy a product). In this sense, a typical item in this scale might be "*The only way to make sure a product is worth buying is to actually touch it*". On the other one hand, autotelic NFT captures compulsive and emotional touch, i.e. "*Touching products could be fun*" (Krishna, 2012, p. 337). In their study, Peck and Childers (2003) found that for "high NFT individuals" the possibility to touch a product before the purchase increases their positive feelings about the object, while decreasing their sense of frustration. On the contrary, for "low NFT individuals" touching the product or not made no difference in the attitude toward the product and in the subsequent willingness to buy it.

Recent research has found that just imagining the touch experience (i.e. without actually touching the product) could increase perception and positive feelings toward the item, thus implying that both physical and digital/virtual touching play a relevant role in the shopping experience (Brasel and Gips, 2014; Brasel and Gips, 2015). In this context, it is worthy to underline that sensation and perception are two different stages in the consumer decision making. Specifically, existing literature refers to sensation when the stimulus involves the receptor cells of a sensory organ (biochemical and neurological); on the other one hand, perception refers to the "apprehension of the mind or senses", namely the awareness or, rather, the understanding of sensory information (Krishna, 2012). Hence, it appears that a haptic perception does not need touching an item; on the contrary, it is sufficient that the individual has a clear image of it in mind in terms of materials, emanated heat, and physical factors. Based on the aforementioned arguments, we propose the following hypothesis:

*HP1: Tactile perception (vs. non-tactile perception) of a product increases the willingness to buy a product.*

### **2.2 Memories of products and willingness to buy**

The sense of touch can be stimulated by different converging sources of information, which come from skin receptors and external environment. These inputs vary according to many aspects, such as type, size, meaning and familiarity of objects. In this vein, what we usually call “touch” is considered a euphemism for inter-sensory achieving of information. Each item emits a vibration, called “*Friction-induced vibrations*”, which allows individuals to “recognise” a product (Cesini et al., 2018). Furthermore, skin receptors also convey information by texture, pressure, temperature, pain and light touch, allowing passive touch (e.g. movement) to also receive inputs.

For this reason, the term “haptics” was used to designate the proprioceptive and kinaesthetic inputs (i.e. movement) provided by touch in exploring the surrounding world. Once the individual has been exposed to the haptic experience, his/her memory code different information spatially so that they can be recalled later. During this process, information is coded in short-term memory, providing different levels of efficiency in recognition and recall. Following the principle of economy of coding, the more parsimonious are the inputs, the greater is the likelihood for individuals to recall. Hence, once individuals touch a certain item, they develop product familiarity which, in turn, helps them recode information more parsimoniously. Then, the tasks (temporary memory) involve longer-term memory, such as the redundancy of converging information, which could have greater or lesser implications.

Based on the aforementioned considerations, it appears that the sensation of the product is able to affect memory and the specific memory individual can have of it. In turn, the feelings experienced during the sensory encounter with the product might be able to influence the willingness or unwillingness to buy a product. Hence, the following hypothesis is proposed:

*HP2: The effect of tactile perception on the propensity to buy is mediated by the memory of the product.*

### **2.3. Augmented reality and touch perception in retailing**

Existing retail-related literature considers touch as an important step of contact with products (Krishna, 2012). In fact, traditional retailing is based on physical experience, where the contact with the object increases consumers’ trust and positive feelings. Moreover, literature states that the sensation of touch in retailing is able to increase purchase intentions along with psychological ownership in consumers’ mind (Spence and Gallace, 2011).

Thus, with the increasing digitalisation and usage of digital devices in store, along with the increasing prevalence of online business (Hilken et al., 2017), touch and in particular its haptic perception (i.e. the awareness of touch sensorial information) are becoming more and more important. Referring to a digital retail ecosystem, touching products during the pre-purchase step is quite impossible (Serravalle, Vanheems and Viassone, 2019; Petit et al., 2019). Thus, literature on this topic opens to two different aspects, where the first one (a) is linked with the physical contact with the device surface and the other (b) is the utilisation of digital technology to simulate touch, activating sense of perception. In the first case, some studies, such as Brasel and Gips (2014), have been conducted to demonstrate a positive effect between touching iPad

screens and consumers' willingness to buy a product. Thus, the desire to purchase an item positively increases using haptic touch during a mobile retailing advertising. On the second case, the increasing digitalisation is creating many technologies to simulating touch, like for example, the use of haptic gloves. In particular, augmented reality (AR) is able to simulate the real environment, showing items with the possibility to be superimposed on reality. An example of this smart technology (Pantano, 2009) was made by Ikea Place, where consumers can place furniture in their home with the usage of an AR application downloaded on their personal smartphone. Based on the aforementioned considerations, it could be argued that digital simulation with AR technology might be able to positively increase the willingness to buy; this might happen thanks to the fact that AR could help create a more engaging experience when compared to a simple and static picture as on websites. Moreover, the possibility to visualise a 3D product may affect consumers' memories, activating the process of remembrance of a single item. Thus, the following hypotheses are proposed:

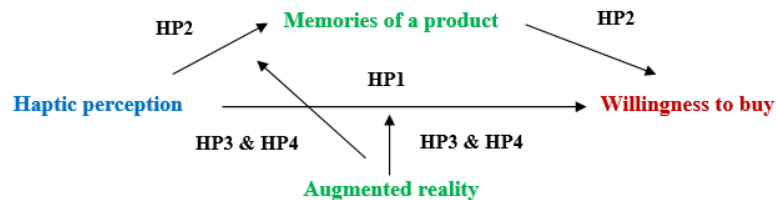
*HP3: The introduction of augmented reality positively increases the product memories*

*HP4: The introduction of augmented reality positively increases the willingness to buy the product*

### 3. The conceptual model

Based on the above literature review, this study suggests the conceptual model showed in figure 1. The model postulates three positive relationships.

Figure 1: Conceptual model



Source: Authors' elaboration

The first relationship is proposed between haptic perception and willingness to buy with a direct effect (HP1) of the independent variable (IV) on the dependent variable (DP), which could be positively moderated by the introduction of the augmented reality technology (HP3). The second relationship refers to the positive influence of the IV (haptic perception) on the DV (willingness to buy) with an indirect effect of the mediator (M), i.e. the memories of a product (HP2). Lastly, this relationship could be positively moderated by the introduction of augmented reality during the purchase experience, simulating the haptic material of clothes for instance (HP2).

#### **4. Conclusions, limitations and further studies**

This study presents and theoretically discusses a conceptual model aimed at deepening our understanding about whether and how haptic perception can influence, via augmented reality technology, the consumers' willingness to purchase a product. The model will be tested with a 2X2 field experiment conducted on Italian consumer from GenY. Specifically, four different scenarios will be framed to analyse two different conditions: the usage (or non-usage) of augmented reality and the possibility to touch the screen; this latter condition is consistent with the literature arguing that a haptic experience can be also elicited by touching a screen and providing the prospective shopper with product-related images (Brasel and Gips, 2014). By doing this, the study will significantly advance the current body of knowledge. Firstly, by deepening our understanding about the role that haptic perception might have in shaping higher willingness to buy, this study will add fresh and new knowledge in the research field related to sensory marketing. Secondly, it will provide new insights on how augmented reality might exert a moderating effect over the haptic touch-willingness to buy relationship, thus further deepening the scientific debate on digital transformation. By doing this, the study will be also of great value from a managerial point of view. Hence, retailers managers are suggested to make use of immersive and haptic technologies to further enhance the shopping experience (especially during the online encounter) while reducing the frustration and dissatisfaction consumers might experience due to the lack of a materialised product touch.

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