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Enhancing the online decision-making process by using augmented reality: A two country comparison of youth markets

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ABSTRACT

Although online stores extend the traditional offer of the brick and mortar ones, the limited possibilities to virtually try the product before the effective buying makes the online purchase decision a complex process for consumers. Therefore, online retailers face new challenges for supporting consumers consisting of the introduction of advanced technologies such as augmented reality systems. The present study investigates the effect of augmented reality technologies on consumer behaviour within the online retail environments, by comparing two different cultural settings. Drawing upon the technology acceptance model (TAM), new constructs related to the technology characteristics (e.g. quality of information, aesthetic quality, interactivity, and response time) developed a new conceptual model. This model has been tested for a new technology for virtual try-on (a smart mirror for virtual glasses). Focusing on young consumers, data collected in Italy and Germany yielding a total of 318 participants was used. Findings across these two markets reflect cross-market similarities, but also dissimilarities, related to consumers' motivation to employ augmented reality systems for supporting their online purchase decision. These insights should prove helpful to retailers in better manage the online channels, that could be easily extended to the mobile one.

1. Introduction

Due to the rapid advancements in technology, also retailers are increasingly aware of the benefits of technological innovations providing a variety of systems, such as such as self-service technologies equipped with interactive touch screen displays, 3D virtual reality systems, mobile apps, etc. (Sha et al., 2013; Papagiannidis et al., 2014; Blázquez, 2014; Demirkan and Spohrer, 2014; Dennis et al., 2014; Rese et al., 2014; Pantano, 2016). Past literature in consumer behaviour largely investigated the role of these innovations in consumer decision-making, by considering the new technologies as decision support systems and drivers of positive evaluations of the shopping experience (including satisfaction, enhanced purchase decisions, and of loyalty to retailer) (Koufaris, 2002; Fiore et al., 2005a, 2005b; Hernandez et al., 2009; Kim et al., 2011). Although these studies provide evidence of the extent to which consumers are influenced by the new technologies available in retail settings, this study emphasises the promising role of augmented reality. While it has been successfully introduced in other sectors like tourism to influence consumers buying decisions (in terms of the choice of the destination) (Chung et al., 2015), the benefits of augmented reality in retail settings is still under investigated.

When it comes to e-commerce adoption industries selling in particular high-involvement products such as clothes tend to lag behind (Blázquez, 2014). The lack of direct experience in touching, feeling, smelling and trying on an item makes the evaluation difficult and may negatively affect enjoyment and the purchase decision (Beck and Crié, 2016; Blázquez, 2014; Merle et al., 2012). Major concerns and problems are fit and size (Kim, 2016; Lin and Wang;, 2016; Shin and Baytar, 2014), or matching with other items (Chen and Wang, 2010). Virtual try-on systems, as application of augmented reality for retailing, can overcome the main limitation of online channels related to the possibility to try the products before the effective buying (Baum and Spann, 2014). Although their promising benefits for allowing consumers to save time and enjoy more the shopping experience, these systems are emerging as a promising line of inquiry for new researches in online retailing (e-tailing) and e-commerce (Dey and Sandor, 2014). In the meantime, technological progress that provides technologies with new capabilities (i.e. high realistic interfaces and interaction modalities) has increased (Sekhavat, 2016) and retailers become aware of the importance of innovating within the process (Pantano, 2014).

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Table 1
Studies on acceptance of image interactivity technology and virtual-try ons.

Reference	Application	Object of research	Investigated research dimensions	Data collection	Control group	Sample size	Participants
Li et al. (2001)	3-D visualizations	Bedding material, laptop computer, ring, and watch	Formation of product knowledge, perception of presence, treatment of affordances	Concurrent verbalization, laboratory controlled environment, survey	None	30	US university students
Li et al. (2002)	Product website	Video camera (Experiment 1) Watch and jacket (Experiment 2)	Presence, product knowledge, brand attitude, and purchase intention	Experimental task in a university laboratory, survey	Ex 1: 3-D vs. 2-D Ex 2: 3-D vs. 2-D and product type (geometric vs. material)	60 (Ex 1)	US university students
Fiore and Jin (2003), Fiore et al. (2005b)	Guess.com	Apparel	Global attitude toward on-line store, willingness to purchase, willingness to return to the online store, willingness to patronize (Fiore et al., 2005b: optimum stimulation level, arousal, pleasure)	Experimental task in a university laboratory, survey	None (mix-and match condition)	103	US university students
Fiore et al. (2005a)	www.imaginariX.com	Apparel	Telepresence, experiential value, instrumental value, attitude towards the online retailer, willingness to purchase from the online retailer, willingness to patronize the online retailer	Experimental task in a university laboratory, survey	High level of IIT (models, back views, interactive product / product and product try-on features) Low level of IIT	206	US university students
Lee et al. (2006)	www.imaginariX.com	Apparel	Utilitarian shopping orientation, hedonic shopping orientation, perceived usefulness, perceived ease of use, perceived enjoyment, attitude towards the online retailer, behavioural intention	Experimental task in a university laboratory, survey	Level of IIT	206	US university students
Kim and Forsythe (2007)	Apparel shopping simulation	Apparel	Perceived usefulness, perceived ease of use, attitude towards using, intention to purchase, reuse, and revisit	Online survey after completing a shopping simulation	3D rotation views Virtual Try-on	978	US national sample of online shopper, 19 and older (3000)
Kim and Forsythe (2008a) (2009)	My Virtual Model™, Viewpoint™	Apparel	Perceived usefulness, perceived ease of use, perceived entertainment, attitude towards using, actual use, post-use evaluation, technological anxiety, innovativeness	Online survey after completing a shopping simulation	2D/alternate views, 3D rotation views, virtual try-on	354	US university students (3000)
Kim and Forsythe (2008b)	Virtual Try-on (High level of IIT: models, zoom in on product features, rotate and view the product from different angles, view the product in a variety of colors)	Apparel	Perceived usefulness, perceived ease of use, perceived entertainment, attitude towards using, actual use, post-use evaluation, technological anxiety, innovativeness	Online survey after completing a shopping simulation (try on a top, an outerwear item, and a pair of pants)	Male / female	491	US national sample of online shopper (2000)
Yang and Wu (2009)	My Virtual model™	Apparel	Vivideness, interactivity, telepresence, utilitarian value, hedonic value, risk, satisfaction, purchase, rebrowse	Online survey after completing a shopping simulation	None	302	Taiwanese respondents from a survey portal
Merle et al. (2012)	Modified version of My Virtual model™	Apparel	Virtual-try on self-congruity, body esteem, confidence in apparel fit, hedonic value, utilitarian value, purchase intentions	Experimental task in a university laboratory, survey	Mix-and match condition, non-personalized condition, personalized condition highly personalized condition	152	Female students from a European Business School
Shin and Baytar (2014)	Mock website	Apparel	Models' bodies (actual vs. ideal), body satisfaction (low vs. high), concerns about garment fit and size, intention to use virtual try-on technology	Online survey after completing a shopping simulation	2 × 2 between-subject factorial design	249	Female US university students
Huang and Liao (2015)	Augmented reality interactive technology (ARIT)	Apparel	Perceived usefulness, perceived ease of use, perceived aesthetics, service excellence, perceived playfulness, consumers cognitive innovativeness, sustainable relationship behaviour, presence	Online survey after completing a shopping simulation	None	220	Taiwanese university students
Beck and Crié (2016)	Website	Apparel (experiment 1) Glasses (experiment	Perceptual specific curiosity, online (Ex 1) / online (Ex 2) patronage intention, offline (Ex 1) / offline (Ex 2) patronage intention, diversive	Experimental task in a university laboratory, survey (Ex 1), online survey after completing a	Experiment 1, 2: e-catalogue, magic mirror based on augmented reality	228 (Ex 1) 241 (Ex 2)	European university students (Ex 1), consumers (Ex 2)

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