Classification of Virtual Fitting Room (VFR) Technology in the Fashion Industry: From the Perspective of Customer Experience

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Introduction With the growth of virtual technologies, consumers today can encounter several innovative touch points in their shopping process. Virtual fitting room (VFR), a simulation technology that provides virtual product trial experience, enables consumers to browse broader collections and try inventories on even in online channels (Gültepe & Güdükbay, 2014; Randazza, 2014). Considering that almost 56% of consumers said lack of touch and feel as the major problem of online shopping, VFR brings great opportunities to the fashion industry (Blazquez, 2014). By translating the in-store fitting experiences to the online space, VFRs provide consumers with additional affective experiences than fulfilling their functional fitting needs (Mulpuru, 2008), as VFR provides sensory elements, which are critical for fashion consumers (Blazquez, 2014). Assuming the simulation is perfect, fashion retailers can greatly benefit from using VFRs in terms of increased online sales and reduced returns resulted from consumers' positive use experience. However, while VFRs have technically been available for a while, they have not been widely adopted by many retailers so far mainly due to potential accuracy concerns of the simulations causing consumers' dissatisfaction with the fitting results (Gao et al., 2014; Kim & LaBat, 2013). A variety of VFR technologies are available in the market place each using different solutions and with different capabilities, making it even harder for retailers to decide on which one to adopt. Therefore, the purpose of this study is to conduct a classification of available VFR technologies from the perspective of consumer experience, particularly cognitive vs. affective experiences.

VFR Technologies The essence of VFR is that consumers "try on" products on virtual models which are simulated based on their body measurements provided by consumers themselves or obtained through devices such as body scanning machines or camera-based technology (Blazquez, 2014; Lomas, 2014). In some type of solutions, the body measurement information can be stored in the database and can be used to make recommendations on matching items, providing ways for firms to personalize and provide pleasurable shopping experience (Marciniak & Bruce, 2007). Consumer experience is "the total of feeling, perceptions, and attitudes formed during the entire process of decision making through interaction with people, objects, processes, and environment," and the environmental stimuli bring either positive or negative affective response (Jain & Bagdare, 2009). Because consumers make cognitive and affective evaluations on stimuli they encounter, it is imperative to understand how the new technology, as a stimulus, comes into play during their shopping journey and how it enhances consumer experience (Schimitt, 2003; Velázquez et al., 2009). Due to the different simulation solutions used by the

various VFR technologies, the consumer experiences rendered by each VFR technology may vary quite significantly, based on consumers' perception toward the attributes such as style, fit, and perceived enjoyment (Fits.me, 2014). The perceptual gap from technological variations in VFR solutions can be problematic as it can bring a differential effect on consumer experiences in terms of accuracy and interactivity (Lee et al., 2010; Yang & Young, 2009).

Approach From the perspective of consumer experience rendered by different technological solutions and devices in the VFR technologies, this study aimed to classify the VFR technologies available in the marketplace. The classification was conducted based on technological variations each solution and device has in terms of the realism of the visually translated figures such as accuracy and attractiveness. The following sources were consulted to obtain data for this study including academic journals, trade magazines, company websites, and other internet sources.

Results First, to bridge the perceptual gap between the actual image and virtual image of consumers, a different degree of realism has been implemented by technological companies where several types of VFR solutions at current stage to enhance consumer experience. Identified solutions include Body lab's triMirror[TM], Metail's MeModel[TM], Fitle's 3D model, EZ face[TM], Zugara, Fits.me[TM], Fitiquette, and etc. Based on the solutions used and the realism of the figures in terms of accuracy and attractiveness, eight types of VFRs were found: 1) VFRs using body scanning device, 2) 3D avatar, 3) 3D customer's model, 4) 3D mannequin which provides fitting room with real 3D simulation, 5) Augmented reality fitting room, 6) Robotic mannequins, 7) Dress-up mannequins for mix-and-match, 8) The real fashion model (Moles, 2015). From Type 1 to Type 5 used actual consumer figures with measurement information, however they differed in terms of accuracy and attractiveness. In contrast, from Type 6 to Type 8 used virtual figures such as virtual mannequin or photo of real model that is somehow similar to the actual consumer's figure. These eight type of technologies represent different levels of realism in the simulation process, hence provide different levels of consumer experiences and satisfaction. They showed technological variations in terms of accuracy and interactivity. In case of accuracy, there were differences between the virtualized body and the tried on clothes. For example, the texture, shapes, sizes, and colors constrained the accurate visualization. In some cases, even the facial expression was expressed on game-like 3D avatar, which is quite unrealistic to reflect actual image. Also, the levels of interactivity differed from image enlargement and mix-and-match technology to a more advanced interactive technology. Then, major fashion retailers adopting each type of technologies were identified. Most of fashion firms utilized Augmented reality (Type 5) to provide VFRs, and some used robotic mannequins and dress-up mannequins.

Conclusion VFR technology can better personalize touchpoints and create seamless experience to consumers by optimizing and enhancing its technological abilities. Through the exploration of potential opportunities and challenges of VFRs by focusing on management of consumer experience, the results of this study can lend implications to both academic research and managerial decisions in the fashion industry urging them to adopt and utilize VFR technology.

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