Unlocking the Potential of the Salesperson in the Virtual Fitting Room: Enhancing the Online Retail Experience for Fashion Brands

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In the last decade, online shopping has become increasingly popular, as evidenced in the global growth of e-commerce and m-commerce. Alongside these developments, it is important to ensure customer satisfaction and requirements. The integration of smart technologies with service design and applications introducing the virtual fitting room are on the increase and are contributing to the fierce competition between online retailers. However, there is little understanding about the most effective way to use this technology and how it can transform services touchpoints, particularly for fashion brands. Considering this, the current study compares and contrasts virtual fitting room models found in the literature with examples from popular websites. This paper introduces the concept of the salesperson in the virtual fitting room and provides recommendations as to how this can be explored in the future, from a design perspective.

Keywords: Virtual Fitting Room, Salesperson, Service Dominant Logic, Fashion Brands

Introduction

In the last decade, online shopping has become increasingly popular, as evidenced in the global growth of e-commerce and m-commerce. Alongside these developments, it is important to ensure customer satisfaction. Applications introducing the virtual fitting room have been on the rise nourishing the fierce competition between online retailers. Today, consumers can try clothes on from their homes, without having to go into a physical store. This provides another layer of complexity for the overall consumer experience on e-commerce websites. Systems like triMirror[1], for example, provide a personalised experience for consumers, allowing them to try clothes on a 3D avatar with the same body features as the consumer.

Online shopping offers a dominant alternative to traditional retail shopping, rendering imperative for online retailers to seek ways to improve customer experiences (Mallapragada, Chandukala and Liu, 2016). Improving the customer experiences online can be particularly challenging for fashion brands, where the product aesthetics and product fit matter. Recent literature identified wrong size or bad fit of online cloths as key obstacles to online shopping (Liu, Burns and Hou, 2013; Syazwan, Noraidah and Tengku, 2018). One way of improving customer experiences for fashion brands would be to introduce virtual technology systems that would allow customers to virtually try on the selected garments. This idea, however, presents a number of challenges as virtual systems need to be useful and easy to use in order to create positive customer experiences (Kang, 2014).

Considering these trends in shopping and the current challenges posed by 3D virtual rooms, the aim of this paper is to make recommendations to fashion retailers to integrate virtual rooms into their services. It focuses specifically on the role of the sales person who is crucial for improving the quality of the shopping experience, as it is the sales person who can also co-create with the customer (Le Meunier-FitzHugh, Baumann, Palmer and Wilson, 2011). Although online fashion retailers use 3D fitting rooms on their websites, there is little reflection on and research into how they can be improved and what could make consumers use this type of tool. For example, have the fashion brands developed strategies to use 3D virtual fitting rooms, and if so, how can they be improved, both of which are research questions that guide this study.

Following an in-depth literature review, this paper compares and contrasts virtual fitting rooms from the marketing literature and websites that work closely with fashion brands, such as; *Metail, Model my Outfit, 3d-a-porter, SenseMi, triMirror*. The contribution of this paper is a critical review of the literature in this area and recommendations for the application of 3D virtual fitting rooms in fashion service design, including a discussion on the role of the salesperson in this context.

Literature Review

The 3D Virtual Fitting Room

Although the 3D technology had a slow start in the fashion industry and only in the last few years fashion brands have made efforts to adopt this technology in retailing (Clarke and Wilhelm, 2011), nowadays, most of the virtual fitting rooms seek to incorporate 3D technology. The 3D technique provides a 360 degree view of the model and aims to increase customised demand (Olaru, Spanachi, Filipescu and Salistean, 2014) and improve efficiency in the purchasing process (Lee, Ma, and Choi, 2013). The virtual 3D fitting room constitutes an interactive platform between the fashion brand and the customer that aims to reduce the bad fit rate and enhance overall confidence and satisfaction in the purchasing process (Lee et al., 2013).

Different from 2D environments that are flat by nature, 3D worlds provide another dimension of interaction (depth); this tends to be associated with the perception of realism since our world is 3D by nature (Cao, 2014). If applied in interactive media, 3D has the potential to change consumers perceptions. For instance, high realism perceptions tend to influence brand preferences positively (Grigorovici and Constantin, 2004).

The virtual fitting system allows customers to select and virtually try on different clothes. Customers simply need to create a private profile and add their body measurements or choose an avatar close to their body type. Studies have shown that compared with traditional stores, online retailers that use virtual technology tools are able to increase interaction on their website and increase online apparel sales (Lee et al., 2013). However, at the same time, having a 3D fitting room in the website does not imply that consumers would have an enjoyable experience. It is possible that consumers are not familiar with the technology, thus the use of the virtual fitting room is simply depends on the actual usefulness of the tool (Kang 2014). Consumers would use the virtual fitting room with a purpose (to buy the product), and not because it could be enjoyable. The use of the virtual fitting room may also depend on the customers level of ego involvement. Customers with a high level of ego involvement are found more inclined to use the virtual fitting room (Kang, 2014). Similarly, in a recent study on the use of virtual fitting rooms on fashion brand websites, (Beck and Crie, 2018) found virtual fitting rooms to significantly increase customers intention to buy the product and customers intention to demonstrate superiority through the quality experience created by this tool. On the basis of all the above considerations, using the virtual fitting rooms to create compelling brand experiences for the fashion customers can be considered crucial in the online setting.

Brand experiences

The proliferation of brands in the marketplace has increased customers choice set of brand options. Nowadays customers are empowered to choose among various brand options and have ample options to switch. In this competitive and dynamic environment one of the key concerns for marketers is how to design brand strategies that build and support brand commitment. Past literature has examined various drivers of brand commitment, but much of the recent literature has focused on brand experience as a key driver of brand commitment (Brakus, Schmitt, Zarantonello, 2009; Das, Agarwal, Malhotra and Varshneya, 2019). Brand experience provides critical points of interaction for multisensory stimulations that can engage customers with a brand (Das et al., 2019).

Brand experiences are also defined as "subjective, internal consumer responses (sensations, feelings, and cognitions) and behavioural responses evoked by brand-related stimuli that are part of the brand's design and identity, packaging, communications and environments" (Brakus et al., 2009, p.53). In other words, brand experiences are the outcome of consumers perceptual or behavioural interactions with various brand stimuli such as logos, colour, packaging and advertisements (Das et al., 2019). Brand experiences can also lead to pleasurable behavioural and attitudinal outcomes i.e., high perceived brand value, brand endorsement, brand commitment (Brakus et al., 2009) aversion from switching to alternative brands (Chaudhuri and Holbrook, 2001), repeat purchase and habitual behaviour (Zarantonello and Schmitt, 2010). Intuitively, a positive brand experience would lead to brand commitment (Das et al., 2019). However, there are arguments in the literature to suggest that the relationship is mediated by cognitive and affective aspects (e.g., relationship quality, credibility and emotions) (Francisco -Maffezzolli et al., 2014). In a recent study on the antecedents to brand commitment in the apparel industry, (Das et al., 2019) found brand passion to mediate the relationship between brand experience and brand commitment. Based on the attachment-aversion theory the more the perceived brand and self-distance and the notable the brand meaning is the more consumers feel connected to the brand (Das et al., 2019), which can in turn lead to a stronger need for attachment with the brand i.e., brand passion (Albert, Merunka and Valette-Florence, 2013).

Since brand experience is about creating multisensorial experiences through different stimulations (Das et al., 2019), it provides ways for consumers to engage with the brand. Thus, 3D virtual fitting environments could provide more in-depth experiences for consumers. In fact, developing customer engagement opportunities is crucial to improve the quality of online shopping (Ha and Stoel, 2012). This can also improve the experience consumers have with the brand. For instance, interactivity, presence and immersion can influence brand experience (Mollen and Wilson, 2010). However, this does not mean that high interactive websites would necessarily be engaging for consumers. As stated by Mollen and Wilson (2010), a website can have many interactive features, but if it is not relevant for the consumer, it will not create consumer engagement. Thus, 3D virtual rooms need to have a clear purpose.

There is also an opportunity for fashion brands to explore consumer satisfaction in online environments. In his principal work on the cognitive antecedents and consequences of satisfaction decisions, Oliver (1980), define satisfaction as customers psychological response following the post-purchase experience of the product compared with the pre-purchase expectations. Thus, narrowing the gap between what customers perceive and what customers expect is a key point to achieve the success in online retailing. Fierce competition between online stores, makes it necessary for retailers to look for a new breakthrough and make some changes that can not only attract potential customers but also minimize companies' cost. Thus, by adding more multisensorial layers of interaction could impact the quality of the shopping experience.

Quality of the Shopping Experience

A large body of previous literature shows the importance of understanding customers individual needs as well as their attitudes and satisfaction level with online purchasing (Mosteller, Donthu, and Eroglu, 2014). Many people have been dissatisfied with their online shopping experience mainly due to the bad fit of the clothes following the purchase (Cordier et al., 2003; Liu et al., 2013). A key element to attract more customers to meet their individual satisfaction and finally develop their intention of online shopping is to increase the quality of their shopping experiences (Ha and Stoel, 2012). The quality of online shopping is defined as consumers' attitudes and viewpoints on what e-retailers provide them both in product and service (Ha and Stoel, 2012; Shiau and Luo, 2012). Past studies have focused on the use of virtual technology to reinforce consumers' purchasing intention. For instance, Lau et al., (2013) have found a positive relationship between the attraction to the site and the use of virtual technology. Virtual technology was found to significantly change the online experience from the in-store experience. The focus on the quality of experience is fundamental since the interactive element of 3D virtual fitting rooms alone is not enough to convey consumer engagement (Mollen and Wilson, 2010; Kang, 2014). In order to improve the use of 3D virtual fitting rooms, service providers need to consider a combination of usefulness with consumer perceived value. For instance, online retailers could reinforce "good value for money", by providing price comparisons within the 3D virtual fitting room (Kang, 2014). Another way to improve service quality using virtual technologies online is through the use of chronological interactions. This perspective coined as *narrative experience* could influence consumers through content, graphic style and navigation structure (Huang and Liu, 2014). In fact the way the information is presented to the consumer through different types of media influences the way consumers search for information (Klein, 1998). Thus, if searching for information takes time and effort and if the media is not

accessible, then it would ultimately influence consumer decision-making in a negative way. Thus, if by using a 3D virtual fitting room it is not possible to find relevant information and if the experience is not seamless, then consumers would not perceive it as beneficial. Therefore, the quality of the shopping experience is related to both pragmatic and hedonic aspects of the service. That is, the features of the service (through characteristics like content, presentation, functionality and interactivity) would evoke both pragmatic and hedonic perceptions (Hassenzahl, 2005). For instance, pragmatic aspects are utilitarian and related to the manipulation of the service/product, whereas hedonic aspects are related to pleasure and attributes such as stimulation, identification and evocation (of memories) (Hassenzahl, 2005). This means that for an effective use of 3D Virtual Fitting Rooms in fashion websites and mobile apps, usability and pleasurable experiences should be key challenges. However, this might be attached to the familiarity with the device and context. For example, consumers might shop via mobile/tablets or using a computer desk at home (or work). Thus, these variables are also important to consider.

From a service design perspective, it is crucial to consider experiential touchpoints points. In this case, there are three spaces that compose service experience: backstage, frontstage (or frontline) and auditorium (the actual customer experience and customers) (Zomerdijk and Voss, 2010). In this case, the frontstage is composed of physical environment, service employees and the service delivery. If considering that e-commerce utilises a virtual environment, then this changes the service frontstage considerably. In the case of fashion retailers, this aspect overlooks the role of the sales person. Thus, this shows a potential limitation and opportunity for 3D virtual fitting rooms to improve.

The Value of the Salesperson in the Shopping Experience

A service oriented organisation requires by its nature personal interaction between salesperson and customer. The role of the salesperson is continually developing following the changes in the environment. The global marketing shift from Goods Dominant Logic (G-D) to Service Dominant (S-D) logic had fundamental implications for the role of the salesperson in the sales process and overall customer shopping experience. Adopting the S-D logic requires staff to develop additional skills that will elicit needs at both the values in exchange and value in use stage. This new sales process goes beyond selling goods and services to co-produce attributes of the customer usage process (Le Meunier-FitzHugh, Baumann, Palmer and Wilson, 2011).

Traditionally the sales process required the salespeople to persuade customers to buy the business goods and services (Sharma 2007). The more complex modern sales environment demands creating value by delivering integrated solutions (Brady, Davies and Gann, 2005), which means selling a combination of products and services adjusted to satisfy customers' particular needs (Davies, Brady and Hobday, 2007). The advent of relationship marketing and S-D logic requires sales staff to become more sensitive to the needs of their customers, adjust integrated solutions for specific customer groups. Under the new customer centric logic (S-D logic) the salesperson is responsible for aligning the internal and external resources to satisfy customer needs and build long-lasting relationships with the customer (Sheth and Sharma, 2008). Therefore, the salesperson has various roles, i.e., trusted partner that seeks to provide solutions, customer consultant and relationship manager (Sharma, 2007). The salesperson with his ability to co-create the customer shopping experience and at the same time communicate views of the product to underpin product/service innovations constitutes a strategic capability for the business (Le Meunier-FitzHugh et al., 2011). In fact, the importance of co-creation of value in services that utilise smart technologies has been emphasised repeatedly and should be addressed as an important research agenda in service design. The success of the future organisations will dependent on their ability to create new business models based on smart devices provision and shift from product-based to solution-based models (Wuenderlich, Heinonen, Ostrom, Patricio, Sousa, Voss and Lemmink, 2015).

The concept of value under the S-D logic is also context specific and relative to the other experiences, not only determined by the customer (Vargo and Lusch, 2004; Vargo and Lusch, 2008). Therefore, it is proposed that introducing the salesperson in the virtual fitting room would enhance that experience. However, there is limited or no research in this area. Thus, this study aims to address this gap and to explore the current and potential future applications of 3D fitting rooms by fashion brands.

Methodology

The study used the key words "3D fitting system", "Virtual fitting room" "Virtual Dressing Room" and narrowed down the focus of analysis on several key conceptual papers i.e., Cordier, F., Seo, H. and Magnenat-Thalmann, N. (2003). Made to Measure Technologies for an Online Clothing Store. *Journal of IEEE Computer*

Graphics and Applications, 23, (1),38-48. Pereira, F. Silva, C. and Aves, M. (2011). Virtual Fitting Room Augmented Reality Techniques for e-Commerce. *in Enterprise Information Systems , 220*, 62-71. Zuo, P. and Zhao, Y. (2011). A design of 3D Modelling virtual fitting project for online shopping, Industrial Engineering and Engineering Management (IEEM), 1893-1897. The study also compared and contrasted five virtual fitting room websites, i.e., *Metail, Model my Outfit, 3d-a-porter, SenseMi, triMirror* which are accessible in fashion retail market. For that, we have analysed the main design features from the websites' services and their applications. We have looked at the main page and areas that describe the services provided by the 3D virtual fitting room tools. These were summarised in Table 1.

Findings and Discussion

A review of the literature has highlighted several important studies. Zuo and Zhao (2011) have designed a clear frame chart to explain step by step the process of how consumers can input their body measurements, choose the clothes they like and try them on. Cordier et al. (2003) have established a web application architecture based on existing models and 3D technology for online clothing store. In a more recent study Pereira et al., (2011) proposed a framework by applying a virtual fitting room for online retailing in three different contexts i.e., Augmented Reality (AR), Computer Vision and Image Processing (Pereira et al., 2011). They also put forward the application of virtual dressing room flowchart which uses "Upper Body Detector" and "Hand Detector" to display the new dress.

Zuo and Zhao's (2011) model focuses on the detailed measurements in order to give consumers a more accurate selection of clothes size. In a similar line, Cordier et al., (2003) established an integrated web application architecture for online clothing store with includes clothing design, pattern derivation and 3D fitting service and attaches great importance to body measurement. Pereira et al., (2011), on the other hand, showed that the virtual fitting room can apply Augmented Reality (AR)techniques to online retailing; although this technique does not require the user to manually input their measurement, it uses a specialised digital cameras and Adobe Flash technologies, which might be difficult for middle aged people or people with low technical knowledge to use it. All three papers as well as more recent papers following the 6th International Conference on Electrical Engineering and Informatics (ICEEI) in 2017, focus on simplifying the user interface of the virtual fitting room for the user, but with no consideration for the humanising aspect of the virtual fitting room. Syazwan, Noraidah, Tengku (2018), following a systematic procedure of searching related literature on virtual fitting rooms, also confirmed the main issues to be the usability and profound emotional elements connected with the application. Syazwan et al. (2018) proposed a new virtual fitting room model based on the Unified Theory of Acceptance and the Use of Technology that aims to enhance usage intention through effectiveness, efficiency, satisfaction of usage and positive emotional arousal. However, the latter conceptual paper does not provide empirical evidence on how to achieve this. On the other hand, recent marketing literature examines the role of the virtual fitting room as a tool to increase online and offline exploratory behaviour, patronage and purchase intentions. Beck and Crie (2018) have found that the virtual fitting room specifically increases curiosity about the product, intention to patronise (online and offline) and intention to purchase (online and offline). The latter strengthens the importance of the virtual fitting room in the quality of customer experience and the quest for further research on the subject.

Whilst analysing virtual fitting room websites, we have encountered many similarities within the services provided by each website. All websites provided the service of 3D fitting room for both online and physical stores. Personalisation was an important design feature provided by these websites. For example, in the website *Metail*, customers can enter their measurements and edit skin colour and hair style and choose to virtually try on clothes from a variety of fashion brands. Similarly, the *Model my Outfit* virtual dressing room allows consumers to create a personal avatar and try on clothes from different fashion collections. In both cases, customers have to enter their measurements manually, while at the same time there is no point of contact with the brand or other customers to enhance the engagement with the medium or to reinforce confidence over the purchase process (see Table 1). This might be an issue that should be tackled in a long-term since consumer engagement should be a key concept for brands to succeed. Thus, by just having a cutting edge technology as part of the service might not be enough for 3D virtual fitting room providers to survive competition and the market.

For example, in 2010 "Fits.me", a robotics application virtual fitting room, was the first to partner with the UK luxury shirt retailer Hawes and Curtis to assist customers to virtually try on a mannequin before buying the

product. Following the introduction of the virtual fitting room, Hawes and Curtis' return rate dropped substantially from its already low rate of 4% to 2,99% (Baldwin, 2016). The virtual fitting room start-up "Fits.me" closed in 2018, three years after it was bought by the Ratuken Group (Fits.me, 2018). This shows that although there is a huge trend towards the use of 3D virtual fitting rooms in online retail, it might be difficult to scale and sustain this type of service in a long-term. Compared to the other websites mentioned in our analysis (*Metail*, *Model my Outfit*, *3d-a-porter*, *SenseMi* and *triMirror*), Fits.me has not included a variation of tools and it is possible that because of that the company had to shut down in 2018. Thus, possible reason for the closure of Fits.me could be the potential for innovation. If considering the other websites cited in our analysis (Table 1), none of the services mentioned the capacity to include the salesperson within the offered services. In fact, the tools mentioned by the websites in Table 1 are quite similar and it is difficult to distinguish their unique selling points, which may rely on technological advances such as algorithms or 3D body scanning. However, none of the websites analysed have specified developments on the services provided to the online and physical retail stores and brands. Therefore, there is still a huge potential for companies to invest on the development of services and touchpoints that utilise this technology with more proficiency. This could include new services and possibly new partnerships with brands and design consultants. Also, there could be a potential to develop tailored services according to different types of products and brands across the globe.

Table 1. A Comparison of Virtual Fitting Websites and Digital Services in the UK

Virtual fitting websites and digital services	Design features	Reference
Metail	3D virtual body representations that consumers can access online through mobile phones and websites. The service also provides data analytics for fashion retailers	https://metail.com/
Model my Outfit	3D virtual body representations that could be personalised according to different body shapes that consumers can select from a list	http://myvirtualmodel.com/
3D-a-porter	3D body scanning, magic mirrors and 3D virtual fitting services. Most services can be used from distance and online (consumers are not required to visit the physical store)	http://3d-a-porter.com/services/3d-virtual-fitting-room/
SenseMi	Online fitting room for websites, virtual dressing mirror, virtual makeover and smart table in stores. It uses augmented reality features, using camera and 3D projections	http://sensemi.com/
triMirror	In-store and online experiences for consumers through 3D virtual clothes and mobile solutions. This tool uses algorithms and 3D modelling to provide precision	https://www.trimirror.com/

Recommendations and future work

Although there are few studies examining the effects of salespersons to consumers (Rapp, Baker, Bachrach, Ogilvie and Skinner Beitelspacher, 2015), our work is the first to focus on the relevance of a digital salesperson in the virtual fitting room. A recent development by Amazon strengthens the argument for further research on

the merits and challenges of having a salesperson in the fitting room. In 2017 Amazon launched Amazon's Echo Look camera (Alexa), a personal robot stylist that helps the customers choose clothes that best fit their body type and accentuate their best features. This study offers initial insights into the merits and challenges of the virtual fitting room and although the research design is appropriate for the nascent state of the virtual fitting room, future research should seek to refine the use of the salesperson in the virtual fitting room, once the latter has been more widely adopted in practice. The current status of many virtual fitting room websites, is largely dysfunctional with many customers lacking the technological skills hesitating to use them. Customers will either have to have a ruler at hand to take their measures, or know their figure and choose from basic but not specific mannequin types. The mechanical instead of emotional nature of the medium often results in lack of trust as customers need to input their measurements individually, and yet no technical support and no recommendations by anyone, the experience may result in loosing time without any gain. Despite all the challenges, such tools as the virtual fitting room are found to increase online intention to try, and even patronise behaviour and enhance purchase intentions (Beck and Crie, 2018). The additional feature of a salesperson in the virtual fitting room is believed to enhance the aesthetics of the online store, particularly for luxury brands. The present study answers to the quest of fashion brands on how to maintain uniqueness and convenience. Liu et al., (2013) study highlighted convenience as the key motivating factor influencing customers shopping desire. The virtual fitting room can be particularly convenient way of trying on clothes for customers who are not located close to the luxury stores and is not convenient to access them. The present study also compliments existing literature on how image interactivity can improve the online brand experience (Beuckels and Hudders, 2016) and transfer the traditional sensory experience into the online environment (Okonkwo, 2009). Li, Daugherty and Biocca (2001) found that interactivity features on websites enhance the value of the product and promote customer engagement. Altarteer, Charissis, Harrison and Chan, (2013) in their research on the interactive virtual reality shopping and the impact in luxury brands found that 3D models of luxury goods enrich the user experience and lead to higher levels of trust. Beuckels and Hudders (2016) recommend to online luxury retailers a more interactive approach through the use of 3 dimensional visualisation, increasing luxuriousness of the product indirectly, leading in higher levels of involvement and enjoyment for the customer. The presence of the salesperson in the virtual fitting room would promote engagement with the brand, strengthen customer's trust in the purchase process and reduce the returns because of bad fit. The customer-salesperson relationship is particularly valuable for fashion brands, as apparel brands are hugely popular, people tend to display strong feelings of attachment often translated to brand passion and managers are recently putting more effort to create and maintain emotional attachment to apparel brands (Das et al., 2019). Several service design recommendations on how to achieve this, include an avatar. The salesperson could be represented by an avatar that could give suggestions for the user. For example, the presence of an avatar in games can evoke positive attitudes towards a brand, particularly across cultures (Choi, Yoon and Taylor, 2015). This means that the presence of a 3D avatar in the 3D virtual fitting room would also need to be tailored according to the users' needs. It is also possible that this could change according to the perceptions towards the character considering gender, voice, behaviour and level of realism. If fact, the level of realism or human-likeness is another aspect to consider. For example, people who perceive human-like "robots" (or 3D images) as "humans" would have a positive attitude towards it, but then this attitude would reach a state in which the perception of human-likeness would decrease and people would feel "strange" about, evoking a sense of repulse towards it (Mori, MacDorman and Kageki, 2012). Another option could be adding the salesperson in form of recorded videos, which would have then a "real" person giving advices. This could be done by real personal stylists or even celebrities. Thus, future research in the area is needed in order to understand which technique is more efficient in order to improve service design of 3D virtual fitting rooms.

Another design recommendation is related to usefulness and familiarity with the 3D fitting room application. For example, consumers might not use the 3D fitting room if it is perceived as "difficult" to use. This aspect focuses the evaluation of this tool around usability issues. Considering this, it would be necessary to develop a set of usability guidelines for 3D fitting rooms. However, usability alone does not guarantee the success of the use of these digital tools. For example, consumers need to feel that these 3D projections are also projections of themselves. Thus, online fashion retailers could benefit from the collection of personal data including not only body measurements but also personality aspects. Although this could evoke a high sense of ego involvement (Kang, 2014), it would also reflect issues around data privacy. Thus, an ethical and "transparent" 3D fitting room tool is also required. Another suggestion is the recording of personal preferences in order to provide a narrative experience. Websites tend to do this by using previous purchase data to give suggestions.

In the case of 3D fitting room, this information could be recorded straightaway and linked to other personal data.

Other design suggestions could be the addition of 3D fitting rooms in Virtual Reality (VR) using headsets (see Figure 1). In the VR environment, consumers could experience the simulation of a "real" fitting room. The difference is that consumers could personalize the fitting room by adding their own features. For example, the fitting room could have a mirror and the decoration from the consumer's bedroom. A salesperson, in this case could be an avatar inside the VR room experience, giving suggestions of outfits, similar to a personal fashion expert. Consumers could also choose to have a salesperson or not talking to them. It could be possible that with future developments in the VR area, consumers could also share their VR room with family and friends.

Figure 1 VR fitting room experience

Future work in this area could address the relationship between the 3D projections and the sense of ego-involvement, particularly through the engagement with the avatar. As mentioned before, a potential research could consider the application of the 3D fitting room in VR applications. This could evoke a sense of belonging and it could influence consumer's purchase intentions. The utilization of 3D virtual fitting rooms could also transform the in-store experience (physical). For example, studies could compare the differences between the real fitting room and the virtual one, highlighting its benefits for the overall consumer experience. It is possible that if the online fitting room becomes each time more immersive, then in-store fitting rooms would need to be transformed or perhaps adapted to include digital touchpoints. For instance, the mirror in the in-store physical fitting room in-store could be connected to the Internet and could give the consumer advices (see Figure 2). Similar systems have been suggested using Artificial Intelligence (AI). For example, consumers can get recommendations from a virtual agent through personalized algorithms (Fu, Liu, Jia, Ma, Meng and Huang, 2017). This opens possibilities for researchers and practitioners to "humanize" algorithms and make them similar to real-world salesperson. Smart mirrors could also enable consumers to call friends and family to ask for their opinion whilst choosing a specific outfit (using services like Skype or social media channels). This could also impact other niche businesses such as for outfits designed for a specific event, such as weddings. With the adoption of this type of technology, it might be possible that consumers could try wedding outfits without having to leave their homes and get them perfectly fitted for the special occasion.
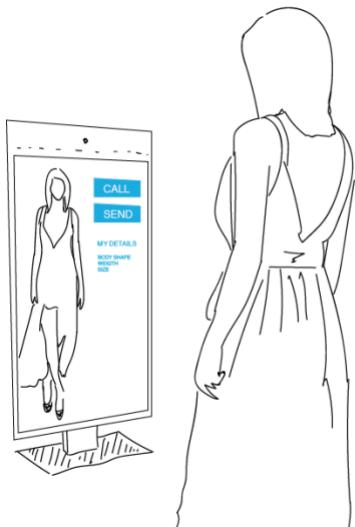
Figure 2 Magic mirror

There are many opportunities to expand this research. For example, the websites and services analysed in our paper did not mention the role of the salesperson in 3D virtual fitting room and the possible connection with other people (e.g. family and friends, personal stylists and so on). This can be a key research agenda for future studies in the impact of virtual technologies in fashion online retailing and brand experience. Other opportunities could explore both technological and behavioural sides of the impact of 3D virtual fitting rooms. For example, designers could collaborate with developers and create prototypes of new 3D virtual fitting rooms that have different types of potential. At the same time, designers can also study the impact of such technologies on consumer behaviour, analysing their engagement and brand experience. Thus, this paper could be a starting point for research in this area. We also expect this paper would be of interest for service providers and designers, willing to explore the potential of 3D virtual fitting rooms, powered by the development of new technologies such as VR and AR.

References

Albert, N., Merunka, D., and Valette-Florence, P. (2013). Brand passion: Antecedents and consequences. *Journal of Business Research, 66*, (7), 904-909.

Altarteer, S., Charissis, V., Harrison, D., Chan, W., (2013). Interactive virtual reality shopping and the impact in luxury brands. In: Shumaker, Randall (Ed.), Virtual, Augmented and Mixed Reality. Systems and Applications. Springer, Berlin, pp. 221–230.

Baldwin, C. (2016). How Howesand Curtis reduces returns using a virtual fitting room, Essential Retail, available at: https://www.essentialretail.com/analysis/573c6ffaeeec1-how-hawes-curtis-reduces-returns-using-a-virtual-fitting-room/(Accessed: 9th April 2019).

Brady, T., Davies, A., and Gann, D. (2005), Creating Value by Delivering Integrated Solutions, *International Journal of Project Management, 23*, 360-365.

Brakus, J.J., Schmitt, B. H., and Zarantonello, L. (2009). Brand experience: What is it? How is it measured? Does it affect loyalty? *Journal of Marketing*, *73* (3), 52-68.

Beck, M. and Crie, D. (2018). I virtually try it… I want it! Virtual Fitting Room: A tool to increase on-line and off-line exploratory behaviour, patronage and purchase intentions. *Journal of Retailing and Consumer Services*, *40*, pp279-286.

Beuckels, E. and Hudders, L. (2016). An Experimental Study to Investigate the Impact of Image Interactivity on the Perception of Luxury in an Online Shopping Context, *Journal of Retailing and Consumer Services*, 33: 135 – 142.

Cao, Y. (2014). Investigate how 3D fitting technology can create luxury online purchase efficiency in women's wear. University of Southampton, Master Thesis (unpublished).

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

Choi, Y.K., Yoon, S. and Taylor, C.R. (2015). How character presence in advergames affects brand attitude and game performance: A cross-cultural comparison. *Journal of Consumer Behaviour, 14,*(6), pp.357–365. Available at: http://doi.wiley.com/10.1002/cb.1555 (Accessed: 9th April 2019).

Clarke, P. and Wilhelm, W. (2011). 3D in Apparel Design – A Revolution in the Industry. Available at http://www.walterwilhelmassoc.com/news/3D-in-Apparel-Design---A-Revolution-in-the-Industry.cfm (Accessed: 9th April 2019)

Cordier, F., Seo, H. and Magnenat- Thalmann, N. (2003). Made to Measure Technologies for an Online Clothing Store. *Journal of IEEE Computer Graphics and Applications, 23*, (1),38-48.

Das, G., Agarwal, J., Malhotra, N., and Varshneya, G. (2019). Does brand experience translate into brand commitment?: A mediated-moderation model of brand passion and perceived brand ethicality. *Journal of Business Research, 95*, 479-490.

Davies, A., Brady, T., and Hobday, M. (2007). Organizing for Solutions: Systems Seller vs. Systems Integrator, *Industrial Marketing Management, 36,* (2), 183–193.

Fits.me. (2018). Available at: https://fits.me, (Accessed: 9th April 2019).

Francisco-Maffezzolli, E. C., Semprebon, E., and Prado, P.H. M. (2014). Construing loyalty through brand experience: The mediating role of brand relationship quality. *Journal of Brand Management, 21,* (5), 446-458.

Fu, J., Liu, Y., Jia, J., Ma, Y., Meng, F. and Huang, H. (2017). A virtual personal fashion consultant: Learning from the personal preference of fashion. In *Thirty-First AAAI Conference on Artificial Intelligence*.

Grigorovici, D.M. and Constantin, C. (2004). Experiencing Interactive advertising beyond rich media: Impacts of ad type presence on brand effectiveness in 3D Gaming immersive virtual environments. *Journal of Interactive Advertising, 5,*22–36. Available at: http://jiad.org/download5fb3.pdf?p=53, (Accessed: 9th April 2019) .

Ha, S. and Stoel, L. (2012). Online apparel retailing: roles of e-shopping quality and experiential e-shopping motives. *Journal of Service Management, 23*, (2), 197-215.

Hassenzahl, M. (2005). The Thing and I: Understanding the Relationship Between User and Product. In Funology: From Usability to Enjoyment. 1–12.

Huang, T.L. and Liu, F.H. (2014). Formation of augmented-reality interactive technology's persuasive effects from the perspective of experiential value. *Internet Research, 24,*(1), 82–109.

Kang, J.Y.M. (2014). Augmented reality and motion capture apparel e-shopping values and usage intention. *International Journal of Clothing Science and Technology, 26*, (6), 486–499.

Klein, L.R. (1998). Evaluating the Potential of Interactive Media through a New Lens: Search versus Experience Goods. *Journal of Business Research, 41*, (3), 195-203.

Lau, H., Kan, C., and Lau, K. (2013). How Consumers Shop in Virtual Reality? How it Works? *Advances in Economics and Business,* 1, (1), 28-38.

Lee, Y. Ma, J. and Choi, S. (2013). Automatic pose-independent 3D garment fitting. *Journal of Computer and Graphics*,*37*, (7), 911-922.

Le Meunier-Fitz Hugh, K., Baumann, J., Palmer, R., and Wilson, H. (2011). The Implications of Service-Dominant Logic and Integrated Solutions on the Sales Function. *Journal of Marketing Theory and Practice*, 19, (4), 423-440.

Li, H., Daugherty, T. and Biocca, F. (2001). Characteristics of virtual experience in electronic commerce: A protocol analysis. *Journal of Interactive Marketing, 15*, (3), 13–30.

Liu, X. and Burns, A. and Hou, Y. (2013). Comparing online and in-store shopping behaviour towards luxury goods. *International Journal of Retail andDistribution Management*, 41, (11/12), 885-900.

Mallapragarda, G., Chandukala, S.R. and Liu, Q. (2016). Exploring the Effects of "What" (Product) and "Where" (Website) Characteristics on Online Shopping Behavior. *Journal of Marketing, 80,* 21-38.

Mollen, A. and Wilson, H. (2010). Engagement, telepresence and interactivity in online consumer experience: Reconciling scholastic and managerial perspectives. *Journal of Business Research, 63,* (9–10), pp.919–925. Available at: https://linkinghub.elsevier.com/retrieve/pii/S0148296309002100, (Accessed: 9th April 2019).

Mori, M., MacDorman, K.F. and Kageki, N. (2012). The uncanny valley. IEEE Robotics and Automation Magazine.

Mosteller, J. Donthu, N. and Eroglu, S. (2014). The fluent online shopping experience, *Journal of Business Research*, *67*, (11), 2486-2493.

Okonkwo, U. (2009). Sustaining the luxury brand on the internet. *Journal of Brand Management,* 16, (5), 302-310.

Olaru, S. Spanachi, E. Filipescu, E. and Salistean, A. (2014). Virtual Fitting – Innovative Technology for Customize Clothing Design, *Procedia Engineering, (69)*, 555-564.

Oliver R. L. (1980). A Cognitive Model of the Antecedents and Consequences of Satisfaction Decisions. *Journal of Marketing Research. 17*, (4), 460-469.

Pereira, F. Silva, C. and Aves, M. (2011). Virtual Fitting Room Augmented Reality Techniques for e-Commerce. *in Enterprise Information Systems* , *220*, 62-71.

Rapp, A., Baker, T., Bachrach, D., Ogilvie, J., and Skinner Beitelspacher, L. (2015). Perceived customer showrooming behavior and the effect on retail salesperson self-efficacy and performance. *Journal of Retailing, 91,*(2), 358-369.

Sharma, A. (2007). The Shift in Sales Organizations in Business-to-Business Services Markets. *Journal of Services Marketing, 21*, (5), 326–333.

Sheth, J. N., and Sharma, A. (2008). The Impact of the Product to Service Shift in Industrial Markets and the Evolution of the Sales Organization. *Industrial Marketing Management, 37,* (3), 260–269.

Shiau, W. and Luo, M. (2012). Factors affecting online group buying intention and satisfaction: A social exchange theory perspective, *Journal of Computer in Human Behaviour, 28*, 2431-2444.

Syazwan, N., Noraidah, S.A. and Tengku, S.M.TW. (2018). A Proposed Model for Virtual Fitting Room Based on Usability Profound Emotional Elements. *International Journal on Advanced Science Engineering Information Technology, 8,* (6), 2332-2340.

Vargo, S. L., and Lusch, R. F. (2004). Evolving to a New Dominant Logic for Marketing, *Journal of Marketing, 68,* (January), 1-17.

Vargo, S. L., and Lusch, R.F. (2008). Service-Dominant Logic: Continuing the Evolution. *Journal of the Academy Marketing Science*, *36*, (1), 1–10.

Wuenderlich, N. V., Heinonen, K., Ostrom, A.L., Patricio, L., Sousa, R., Voss, C. and Lemmink, J.G.A.M. (2015). "Futurizing" smart service: implications for service researchers and managers. *Journal of Services Marketing, 29,*(6–7), 442–447.

Zarantonello, L., and Schmitt, B. H. (2010). Using the brand experience scale to profile consumers and predict consumer behaviour. *Journal of Brand Management, 17,* (7), 532-540.

Zomerdijk, L.G. and Voss, C.A. (2010). Service Design for Experience-Centric Services. *Journal of Service Research, 13,*(1), 67–82.

Zuo, P. and Zhao, Y. (2011). A design of 3D Modeling virtual fitting project for online shopping, Industrial Engineering and Engineering Management (IEEM), 1893-1897.