Virtual Stores: Post Pandemic Retailing Future

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Abstract: The recent trends of Virtual Reality (VR) technologies and Augmented Reality (AR) are attracting the attention of both consumers and retailers. However, the concept is age old and researchers are still working in the user friendly interface, VR will be the new propaganda for the modern day pandemic problems where users have to maintain social distancing and have a contamination threat. Virtual mirror and in-store sensors which will help the users to navigate the correct way and help those in picking the apt choices which will reduce the exchange scale statistics. Through the virtual technology one can know what type of merchandise is available in the store and what type of material are available for them in particular, through this consumer need not touch the apparel physically but can see the fit and overall appearance of the garment on them virtually. There are several mobile applications available in the app store through which one can get to see the merchandise virtually, but it is still in the infancy stage. Thought the virtual mirror is a big boon through its installation one can restore the crashing economy of apparel sector and indeed can increase the sales as there is no risk of contamination and disease spread. Through this pandemic era this is the best option retailers can grab to enhance user friendly apparel retailing.

Keywords: Covid-19, Virtual try-on, augmented reality, social distancing, fashion assistant.

I. INTRODUCTION

Internet has grown out into a compelling channel for sales of apparel; even perishables are available in the online market now-a-days. Online sales of apparel have exceeded around $1 billion in the year 1999 and have skyrocketed to over $22 billion by 2004 (1). It is expected to reach 10.75 billion USD by 2026.Retailers report a return rate of 20-40 percent of online sales where poor fit is cited as the number one reasonwhereas studies on online buying behaviour of consumers showedthat they cannot try the item and further more consumers are overwhelmed about fit, size, details and appearance when put on etc. these concerns are the main reason for returning the garment after its inability to fulfil the consumers need (2). Consumers mostly purchase the apparel online today based on their previous purchase size and decisions are mostly done viewing the model available in the site to depict the apparels 3D view and garment size charts which are available.

Covid-19the global pandemic has distressed the economy of the textile and apparel world. There are huge losses which are being faced by the retailers and manufacturers. With the increased risk of disease spread and contamination problem everyone is facing constraint in the purchase of the apparel with minimum handling. Even if consumers want to buy the apparel there is a heightened fright of contamination. As the saying goes modern problems require modern solutions the apparel and textile retail outlets needs to focus on the upliftment of their trade with the modern technologies where the user can view him or herself in the dress without even touching them. This will lead to the heightened sales and reduced contamination while following social distancing. Some of the technologies which are been developed so far are the VR and AR technology which are marking their potential in the field of apparel retailing.

In the past few decades the Virtual Reality (VR), Augmented Reality (AR) have attracted the investors in their way, currently many companies like Sony, Samsung, HTC and Google are making huge investment in this VR, AR technologies (3). VR has been a research topic from the past 25 years, whereas AR has been the most recent application (4)

Virtual Reality is the concept which can be traced back to 1960 when Ivan Sutherland had attempted to describe VR as a window where users perceives the virtual work as if felt, sounded real and in which users can experience and act realistically (5). Since then many definitions have been formulated, Fuchs and Bishop (1992) defined VR as a real time interactive graphic model with 3D combined with a display technology that gives the user the immersion in the model work and direct manipulation. Gigante (1993) had described the VR as an illusion of participator in a synthetic environment rather than external observation of such environment. VR mostly relies on the 3D, head-tracker display, hand and body tracking, stereoscopic and binaural sounds and it is very immersive with multi-sensory experience.

There are mainly three types of VR systems which provide the user with higher to lower degrees of immersion:

1. Non-immersive degree system which is the simplest, cheapest type of VR application which uses the desktop to produce images.

2. Immersion degree system where a complete simulated experience supported by several sensory output devices such as head mounted displays (HMDs) for enhancing the stereoscopic view of the user through the users head movements as well as audio devices.
3. Semi-immersive degree, which is a combination of the above two where the user is provided with a stereo image of the 3Dscene viewed on a monitor using a perspective projector couples with the head positioning of the user (7).
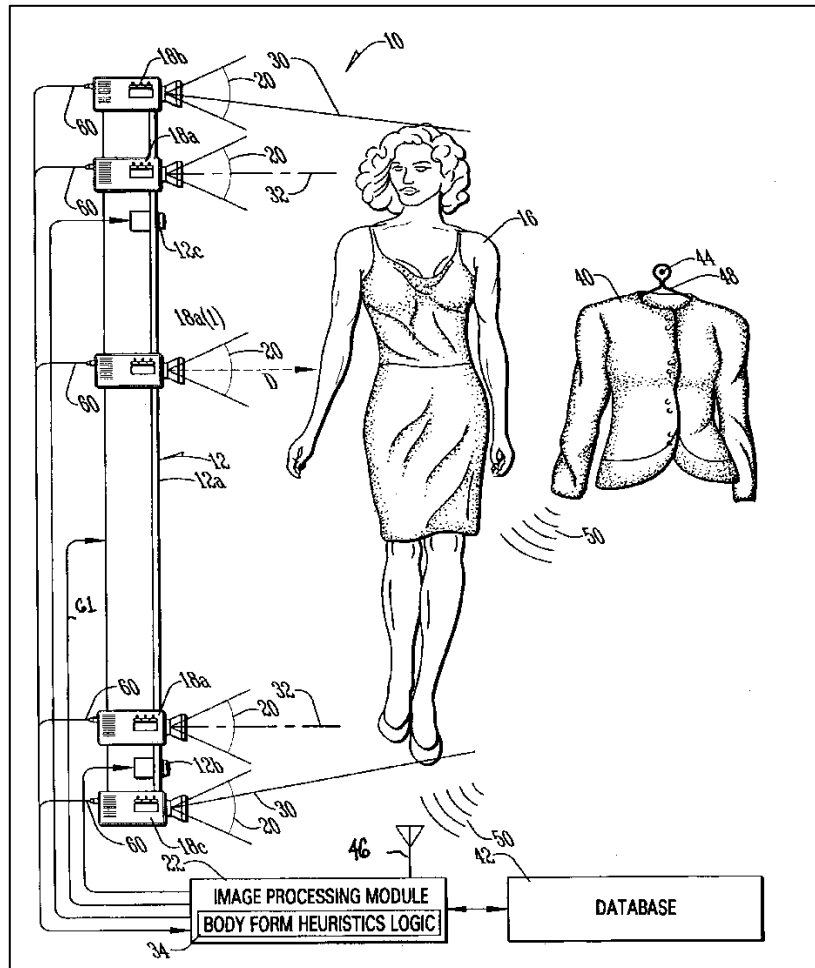

Fig:1 Depicts the working of the virtual mirror with different sensory positions

Higher technological systems have showcased the closest experiences to that of reality giving the user the illusion of that he or she is being the part of that technological non-mediation or present in the virtual environment feeling it like the real environment (8).

Furthermost with the higher immersions systems, with respect to the other systems one can give the possibility to add several sensory outputs which allows more interaction in coordination with the actions of the user which were perceived as real (9).

Augmented Reality is the interactive experience with the objects resides in the real world through a computer-generated enhanced interface. This is formed due to multiple sensory modalities which include visual, haptic, auditory, somato-sensory and olfactory. In general it can be viewed as the system which fulfils all the three basic functions like a combination of the real world to virtual world, real time interaction and an accurate registration of 3D virtual and real objects (10).To run AR, system should have a camera to track the user's movements for merging the virtual objects with the visual display.

The global market of the virtual mirror is expected to grow rapidly with a double digit CAGR during 2021-2025. Because of the growing technologies the customers are trying to save the time on shopping and enhance their experience without touching the garment and getting the accurate fit. Retail market segment is dominating the market and over the next five years it will grow into a huge demand by virtual fitting technology. As VR technology allows the user-friendly interface in view with pandemic this technology can be used as a good effort for social distancing and minimising the handling of clothes by user reducing the risk of contamination. Till now with the market split by region Europe, America and some Asian countries are leading with this virtual mirror (11).
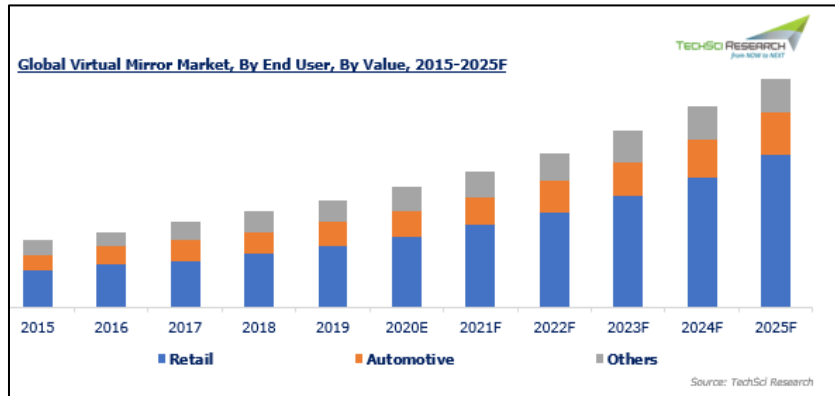
Fig:2 Depicts the Virtual Mirror in-store interface

Virtual Fitting Rooms

A simulated process where computer vision enabled camera or scanner captures the consumers' body shape and size and reflects in form a mannequin on the screen display and allows them to see the clothes which will fit even before deciding the purchase. Through this there will be no unnecessary touching and wasting of time roaming around the store without idea. This is the quick process where one can see in an instant that what he or she wants is available in store or not.

Fig:3 Virtual mirror in Adidas store, Paris

Fashion Assistant In-Home

With the launch of Amazons Echo look, with a virtual assistant Alexa, it takes a full body photo shoot or a video of 6 seconds which will be stored in the gallery and with the help of the Alexa AI the amazon machine using algorithms will help to improve and pick your style. Combined with the AI capabilities it will analyze the fit, color, trend and style components.

Navigation In-store

This application claims to study the customers' behaviour and will help understand various factors that influence the buying behaviour. This will helps the retailers know about the route they prefer in-store and how much time they spend in each section, number of people in store and weather to allow more customers inside or not and finally if someone is stuck for a longer period in a section through AI one can help the customer to pick and move the accurate product with their choices. This type of application will help the retailers to minimize and control the number of customer's in-store to maintain the social distancing and navigate them in out with proper etiquettes.

Walmart have already experimented this system with its 50 stores. Robots are equipped with computer visions and they will help users to navigate and scan shelves and store images and collect data and with algorithm analysis they know what is happening in-store and analyze the missing tags or outdated stock or missing labels etc. with minimum human interaction and enhanced user experience.

By measuring the foot traffic, social distancing can be followed accurately and will help the store to collect data if someone violates the orders. The hardware can be installed within the doors of the store like an automatic door opener and will make both the store and consumers ease of shopping (12).

This trend is expanding its wings and reached into every aspect of the industry, including medical, video games etc. Adidas store has installed a virtual mirror in its store to help the users to enhance their experience, as studies showed that 70 percent of the users wear a wrong shoe size. To overcome this problem and to maintain user loyalty this step has been taken by them. Viewing this it can be predicted that if there is no cost constrain in Indian retail sectors, virtual mirror will be booming its aura all over the retail sector.

II. CONCLUSION

The virtual mirror is a next generation application which will help consumers in an innovative ways for them to visualise and interact with products and brands. It provides efficeint and unique experience for the customers. Increase in-store sales can be seen in view of this pandemic and income from advertising. By gatheringstatistical data market research will provide a huge lap in enhancing the user experience with maintaing social norms and reduce contamination and increase user friendlyness. To reopen and restart the retail sector virtual and augmented reality will be a step forward with benefit to both cconsumers and retailers.

REFERENCES

1. Forrester Research, Apparel's On-line Makeover, Report, May 1999http://www.forrester.com/ER/Research/Report/0,1338,5993,00.htmlGoogle Scholar
2. Brian Beck, Key Strategic Issues in Online Apparel Retailing, yourfit.com, 2000, Version 1.0Google Scholar
3. Castelvecchi, D. (2016). Low-cost headsets boost virtual reality's lab appeal. *Nature* 533, 153–154. doi: 10.1038/533153a Google Scholar
4. Wexelblat, A. (ed.) (2014). *Virtual Reality: Applications and Explorations.* Cambridge, MA: Academic Press. Google Scholar
5. Sutherland, I. E. (1965). *The Ultimate Display. Multimedia: From Wagner to Virtual Reality.* New York, NY: Norton.
6. Gigante, M. A. (1993). Virtual reality: definitions, history and applications. Virtual Real. Syst. 3–14. doi: 10.1016/B978-0-12-227748-1.50009-3 Google Scholar
7. Ware, C., Arthur, K., and Booth, K. S. (1993). "Fish tank virtual reality," in Proceedings of the INTERACT'93 and CHI'93 Conference on Human Factors in Computing Systems, (Amsterdam: ACM), 37–42. doi: 10.1145/169059.169066 Google Scholar
8. Lombard, M., and Ditton, T. (1997). At the heart of it all: the concept of presence. J. Comput. Mediat. Commun. 3. doi: 10.1111/j.1083-6101.1997.tb00072.x Google Scholar
9. Biocca, F., Harms, C., and Gregg, J. (2001). "The networked minds measure of social presence: pilot test of the factor structure and concurrent validity," in 4th Annual International Workshop on Presence, Philadelphia, PA, 1–9. Google Scholar
10. https://en.wikipedia.org/wiki/Augmented_reality
11. https://www.techsciresearch.com/report/global-virtual-mirror-market/3146.html
12. https://emerj.com/ai-sector-overviews/virtual-mirrors-and-computer-vision/
13. Sutherland, I. E. (1968). "A head-mounted three dimensional display," in Proceedings of the December 9-11, 1968, Fall Joint Computer Conference, Part I, (ACM), 757–764. doi: 10.1145/1476589.1476686.