The Potential of Virtual Reality in the Apparel Industry

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Introduction and Significance. Virtual reality is changing the way we shop. Virtual reality (VR) refers to a computer-simulated environment that can replicate physical presence in places in the real world or imagined worlds (Steuer, 1993). Virtual reality is one of the recent technological advancements that has a powerful potential to be integrated in the fashion industry due to its ability to mimic a real-life shopping experience. Therefore, it is timely to investigate the potential of VR in the fashion industry. This study reports an empirical case study of utilizing VR for apparel store experiences and provides a SWOT (Strengths, Weakness, Opportunities, and Threats) analysis of using VR in the apparel retailing. This study will help both apparel retailers and scholars to better understand benefits and challenges VR uniquely presents.

Empirical Testing with VR Stores. In this case study, the 3D modeling software "SketchUp" was used to create the virtual apparel model stores. Four different stores were designed to simulate apparel stores of different aesthetics (modern, classic, simple, complex). The VR stores were rendered and projected to VR headsets which combine commercial tablets and RFID sensors. The VR store test took place in the virtual reality design lab at the University of Minnesota. The lab is an open courtyard space (25 feet x25 feet) equipped with a truss system that mounts tracking cameras from the ceiling. The tracking cameras detect the user's location and head movement continuously. Forty female undergraduate students were invited to experience the VR stores. The participants wore the headset and were allowed to adjust themselves to the VR environment before the actual store experience. Then, they evaluated the store from the outside first and moved to enter the store and explored one of 4 stores. After the VR session, participants completed the paper-based post exposure questionnaire which included questions related to telepresence and simulator sickness.

Findings and Summary of a SWOT analysis of the use of VR in the apparel industry

1) Strengths: The biggest strength of virtual reality is telepresence experienced by the users. Telepresence refers to the experience of being present in the environment that is created by a set of technologies (Steuer, 1993) and can be measured with items such as "this store would let me easily visualize what the actual store is like". The mean score of telepresence was 5.8 out of 7, indicating highly positive responses. This telepresence is also significantly higher than the level of telepresence experience on a 2D computer

screen which was measured by a pretest (t=4.35, p <.001). Therefore, VR can provide a very realistic shopping experience. Methodologically, VR store experiments allow researchers to collect real-time data unobtrusively (e.g., participants' moving path and eye movement) because what participants saw through a VR headset can be recorded. Moreover, VR can be an excellent tool to enhance customer experience and to engage with customers in a meaningful way. Most of the participants in this study verbally expressed their excitement, curiosity, or fun before and after experiencing the virtual reality apparel store.

2) Weakness: One of the challenges of using VR in the apparel context is the difficulty of developing the models. The complex surface and diverse texture of apparel products make conversion from CAD data to VR objects extremely difficult because of large file sizes, and multiple optimization processes were required to run the models. Due to this technological limitation, it is difficult to place a large number of diverse products. Also, users' simulator sickness associated with VR is another concern. From our test, forty percent of the participants experienced minor to strong symptoms during and after the VR trial.

3) Opportunities: While the use of VR in the fashion industry is relatively new, VR has already proven its effectiveness in a number of fields including gaming, theme parks, and medical areas. The commercial version of VR headsets are readily available in the market, and Facebook and YouTube are providing platforms for users to experience VR technologies. Apparel retailers can take advantage of these existing assets to provide VR experiences to consumers. Also, experiential retailing is gaining importance more than ever and apparel retailers who quickly keep up with this movement with VR will be able to put themselves ahead of the curve.

4) Threats: Apparel retailers may need to invest to keep up with the technological advancements and changes associated with using VR and it may be costly.

Conclusion. This case study provided the advantages and challenges of using VR for apparel retailing. While there are some challenges, the VR technology presents exciting opportunities for apparel retailers. As the technology continues to evolve, the use of VR in the apparel industry will also grow and gain acceptance as not only a promising research tool to understand consumer behavior but also a new shopping experience channel for consumers.

References

Steuer, J. (1993). Defining virtual reality: Dimensions determining telepresence. *Journal of Communication*, *42*(4), 73-93.