Impact of Web Augmented Reality Product Presentation on Consumer behaviour

With global e-retail revenue projected to reach 6.54 trillion US dollars in 2022 and the Covid-19 pandemic wreaking havoc on physical shopping, retailers today are hard-pressed to create superior customer online experiences. This however is easier said than done as mental intangibility, which is the consumer's inability to imagine the experience of using the presented product is higher when seeing a picture on a website than in a physical store. Research conducted on this topic so far agrees with the same as the inability to interact with the product and imagine it made consumers more hesitant with online purchases and increased the number of returns.

An interesting solution to help consumers imagine the experience of a product sold online is augmented reality (AR). AR which has fast gained traction is essentially one where a user downloads a mobile app containing realistic 3D models of products which can then be embedded into the user's environment. They can then walk around the embedded 3D product model and interact with it like they would in a real store. Extant AR research has shown it to be very promising with increased purchases, brand recall, and product liking. Despite these results, AR was not adopted by the masses, with marketing practitioners attributing this to the app download barrier a user would have to go through when compared to browsing a product online. One way of overcoming this app download barrier is Web Augmented Reality (WebAR), a novel technology through which a consumer can experience a product in AR on a mobile browser, without the need to download a separate app. This independence from apps as per the advocates of WebAR democratises AR to the masses and has already been tested in commercial usage by brands such as Coca-Cola, Huggies and Dell. Our research on AR and WebAR however revealed three key problems.

1. The claims of increased accessibility from WebAR against app-based AR has not been tested in research
2. There exists a void in research on the acceptance of new technology such as WebAR. This effectively prohibits researchers from making comparisons between WebAR and app-based AR.
3. AR research up to date has only tested the main effects between variables with very little focus on the mediating effects between variables. The surveys were also self-reporting surveys, with room for bias.

The main goal of this research project, therefore, is to assess WebAR's impact on consumer behaviour. To achieve this we propose the following objectives.

1. Developing a WebAR website identical to a mobile app that offers the ability to experience products in AR. The research team will then measure the ease of use for both, compare them and publish the results via an article.
2. Researching the acceptance of WebAR by consumers, using a questionnaire that measured the acceptance of app-based AR. The research team will then compare the findings and publish a discussion on them via an article
3. Researching how interactions with the 3D model in AR can moderate the relationship between the quality of the 3D model and imagining the product. This research will be based on self-reporting surveys and biometric measurements to overcome biases

We expect our work with WebAR to raise several interesting results for retailers, consumers and AR researchers. For retailers, confirmation of the ease of use would be motivation to consider switching their product presentation from static images to AR using WebAR, at a lower cost. Understanding the factors behind acceptance and the psychological underpinnings behind imagining the product after WebAR product presentation can also help increase sales. From a consumer perspective, experiencing products in WebAR will reduce the uncertainty of decision making and encourage its widespread adoption as the download barrier does not exist anymore. This will in turn lead to larger sales volumes and reduce the rate of returns. In terms of contributions to science, we will be the first to have researched the ease of use of WebAR, its acceptance and to have compared the results against that of app-based AR. Our research discoveries from article three are also expected to make important contributions to science via an increased understanding of the psychological underpinnings of how consumers imagine products after AR product exposure. Such research using data gathered through survey and biometric data is novel and is bound to reveal new information to drive science and practitioner knowledge. We also expect the successful usage of WebAR in our e-commerce research to motivate its use in other industries as AR is a cornerstone technology of Industry 4.0, with wide application potential in education, training and advertising.