

Understanding Online Product Presentation Through Mobile Augmented Reality

Pratik Tarafdar

Abstract

With the growing need for digital disruption of the online shopping environment using

2000; Javornik, 2016a; Jiang & Benbasat, 2007; Nah et al., 2011; Suh & Lee, 2005), the potential impact of emerging AR technology on consumers is relatively scant (Huang & Liu, 2014; Javornik, 2016a).

Kim and Forsythe (2009) found that 25 percent of online shoppers abandon their shopping carts. A lack of sensory experience (similar to the direct product examination) has been attributed to this problem. As a result, online retailers are gradually turning to sensory experience enabling technologies. Such technologies generate sensory inputs through interactive product visualizations (visual support) and haptic interfaces (tactile support) in the online shopping environment. These sensory inputs serve as a proxy for the sensory experience encountered during direct product examination. AR, with its ability to imitate the direct product experience, is undoubtedly a sensory experience enabling technology. However, AR, as an information artefact, has not been able to ameliorate the feeling of uncertainty.

Studying the novelty of AR in augmenting sensory experience and its scope in transforming online product presentation is a broad research gap that needs to be addressed (Dacko, 2017; Yim et al., 2017). More importantly, for AR to be a valuable tool in digital commerce, it is essential to address how the novel affordances of AR can benefit online retailers and product marketers. In this dissertation, we try to address the above gaps by defining immersive technology and its various types (i.e., the virtual reality and augmented reality), elaborating the technological affordances of AR in e-commerce and subsequently investigating their potential in uplifting the online retail value. We focus particularly on mobile AR. The dissertation is divided into three studies, as follows.

The first study gives a brief introduction of AR and its contemporary applications in online retail. Then, using a natural experimental study of the sales history of a popular retail platform,

we investigate the influence of AR-based presentation of different products in online stores on consumer purchase behaviour. Our findings indicate that the immersive experience in AR significantly influences product purchases under the condition of high product uncertainty. Therefore, this implies that AR affordances are useful for online retailers to enhance sales when there is a great degree of uncertainty associated with product purchase.

To corroborate our findings in the first study and unpack the black-boxed relationship between immersive interfaces and consumer behaviour, we conduct a randomized controlled experiment in the second study. Using the second experimental study, we test hypotheses involving various psychological constructs as the dependent variables to understand how AR

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effectiveness of shopping experience in product understanding and reduces the risk perception associated with the online product purchase. Consistent with our first study, the effects are found to be higher under the condition of high product uncertainty. Therefore, AR-based product presentation stimulates the sensory experience which caters to enhanced cognitive information processing to mitigate the concerns of product uncertainty.

In the third study, we attempt to understand user interaction behaviour during AR experience and its relationship with human emotion. AR transforms the online product presentation from the pictorial representation to virtual interaction with the products. The virtual product interaction facilitates online retailers to detect product-related emotion through affective computing. We use an observational study to analyze user-interface interaction (in the AR environment) and develop predictive relationships for product-related emotion. We observe that the various characteristics of the touch gestures during mobile AR-based product interaction can infer the emotion associated with it. This study highlights how AR affordances can be exploited to improve the overall valuation of the e-retail settings.

Our research contributes to the expanding body of knowledge studying the impact of immersive technology on customer experience. In particular, this dissertation contributes to the nascent and growing body of work exploring the promise of AR technologies for online retailing (Dacko, 2017; Hilken et al., 2017; Javornik, 2016b; Yim et al., 2017). The findings delineate the potential of AR affordances to improve the online product presentation and emphasizes its role in e-commerce. They support the theoretical aspects of AR affordances and reify the understanding of the diverse forms of immersive technology. Our research offers several practical insights for the product marketers, the online retail managers, and the e-commerce platform designers to devise strategies that leverage the potential of AR technology in online retailing.

References

- Agarwal, R., & Karahanna, E. (2000). Time flies when you re having fun: Cognitive absorption and beliefs about information technology usage. *MIS Quarterly*, 24(4), 665–694.
- Dacko, S. G. (2017). Enabling smart retail settings via mobile augmented reality shopping apps. *Technological Forecasting and Social Change*, 124, 243–256.
- Hilken, T., Ruyter, K. D., Chylinski, M., Mahr, D., & Keeling, D. I. (2017). Augmenting the eye of the beholder: Exploring the strategic potential of augmented reality to enhance online service experiences. *Journal of the Academy of Marketing Science*, 45(6), 884–905.
- Huang, T. L., & 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.
- Javornik, A. (2016a). Augmented reality: Research agenda for studying the impact of its media characteristics on consumer behaviour. *Journal of Retailing and Consumer Services*, 30, 252–261.
- Javornik, A. (2016b). It s an illusion, but it looks real! Consumer affective, cognitive and behavioural responses to augmented reality applications. *Journal of Marketing Management*, 32(9–10), 987–1011.
- Jiang, Z., & Benbasat, I. (2007). The effects of presentation formats and task complexity on online consumers product understanding. *MIS Quarterly*, 31(3), 475–500.
- Kim, J., & Forsythe, S. (2009). Adoption of sensory enabling technology for online apparel shopping. *European Journal of Marketing*, 43(9), 1101–1120.
- Nah, F. F., Eschenbrenner, B., & DeWester, D. (2011). Enhancing brand equity through flow and telepresence: A comparison of 2D and 3D virtual worlds. *MIS Quarterly*, 35(3), 731–747.

