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# The Effect of VR and Haptic Feedback Devices on Online Consumer Decision-Making

To properly evaluate *experience products*, consumers should – by definition - be able to experience the product. Often, however, this is not possible in the pre-purchase stage. Either because the product is custom-made upon purchase and can only be tried after having bought it, or because the purchase decision-making happens online, where much sensory information is lacking.

This research aims to show that combining VR and haptic feedback will lead to more informed decisions and comprises two experimental lab studies on consumer decision-making regarding windows. When building or renovating a house, it is challenging to anticipate haptic properties of windows, such as (1) how ergonomically smooth a sliding window can be opened or (2) what the effect would be of investing in extra isolated windows to maintain a comfortable indoor climate. VR creates an immersive environment, allowing for more detailed visualization, while haptic feedback provides a sense of touch. According to mental imagery theory, when consumers are provided with richer sensory information (e.g., through both visual and haptic inputs), they can form more vivid mental images of the product, which leads to better understanding and evaluation. The more sensory information they have, the easier it is for them to imagine how the product would work in real life. This helps consumers feel more confident and satisfied with their decision

The two particular use cases are tested among a sample of 159 consumers in Belgium ($M_{age}$ = 39.77; $SD_{age}$ = 12.34, with 100 of 159 or 62.9% female). Both experiments are between-subjects designed, comparing 2x2 conditions each. Factor 1 represents visual information (i.e., video vs. VR) and Factor 2 corresponds with haptic information that the participant got (i.e., no haptic feedback or simulated haptic feedback). The simulated haptic feedback corresponded to a mechanical force feedback instrument built to simulate the force a consumer would need to open a sliding window in the first use case. For the second use case, the simulated haptic feedback was provided by an off-the-shelf haptic glove the participant could wear, giving haptic feedback on the insulation value of different window glazing types (i.e., double vs. triple).

The experiment was staged with the scenario in which participants were asked to evaluate two alternatives (i.e., type of window sliding system or type of window glazing). We surveyed participants on both their experience with the particular medium (visual and haptic), as well as on the product (i.e., the window sliding system or the type of window glazing). Measures include mental imagery, ease of evaluation, perceived informativeness, multiple customer experience dimensions, processing fluency, satisfaction, and preference. Eye-tracking data were logged.

The empirical results demonstrate positive effects of enhanced visual and haptic inputs on consumer decision-making. Specifically, VR and haptic feedback devices improve mental imagery, ease of evaluation, perceived informativeness, customer experience, processing fluency, and satisfaction. However, for higher-investment products like triple-glazed windows or advanced sliding systems, haptic feedback plays a more crucial role in persuading consumers to invest in options that enhance comfort, such as smoother sliding mechanisms or a better indoor climate.