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Examination of Digital Nudging Scarcity Effect in E-Commerce

TREO Talk Paper

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Abstract

With the onset of the pandemic, online shopping applications have seen a rise in consumer traffic in the past two years. E-commerce sales has grown by 35% year over year, with online penetration remaining 30% higher than pre-Covid levels (McKinsey & Company., 2021). Given the ubiquitous use of e-commerce applications, it becomes increasingly important for e-retailers to optimize the design of their web stores in order to attract consumers and gain competitive advantages. In particular, many e-commerce applications have incorporated digital nudging techniques to subtly change consumers' online choice environments and influence their purchase decisions. One of the commonly used digital nudging techniques is associating scarcity with an online product offering or promotion. Research suggests that in an offline setting, a person's desirability of a product option tends to increase, as the perceived availability of the option decreases (Cialdini, 1993). Nevertheless, because peoples' behaviors in an offline setting can be different from those in an online setting (Schneider et. al., 2018), it remains largely unclear the extent to which digital nudging through scarcity would elicit comparable effects among online shoppers. Furthermore, previous studies indicate that time-related and quantity-related scarcity message can have different effects on consumers' purchase intentions (Aggarwal et al., 2011). Yet, little is known how consumers would respond to these two forms of scarcity differently when they are induced through digital nudging.

In this research, we suggest that scarcity-related digital nudges can influence an online consumer's choice architecture through multiple processes, each of which can produce different effects on the consumer's valuation and intention to purchase a product online. Drawn on the Elaboration Likelihood Model (Petty & Cacioppo, 1986 & Wagner & Petty, 2022), we posit that the influence of the two forms of scarcity-related digital nudging (i.e., limited time vs. limited quantity) can vary at different points along the elaboration continuum. When consumers are unable or unmotivated to assess the core merits of an online product offering, both forms of digital nudging can institute a "scarce-is-good" heuristic and enhance product valuation and purchase intention (Cialdini, 1993). When elaboration is unconstrained to be high or low, the two forms of digital nudging can motivate consumers to scrutinize the reasons of the scarcity. Lastly, when elaboration is high, we suggest that the two forms of digital nudging can serve as a validation of consumers' own valuation of the scarce product option. As compared to digital nudging through limited time, nudging through limited quantity is more likely to be construed as a result of high demand rather than limited supply (Aggarwal et al., 2011). Thus, we suggest that the latter is likely to induce more favorable responses among online consumers than the former.

To test the effects of the two scarcity-related digital nudges on consumers' product valuation and purchase intentions, we plan to conduct vignette-based randomized laboratory experiments as well as an online field experiment. Our research adds to the extant literature on digital nudging. Our findings can help to shed light on how and when scarcity-related digital nudging can influence consumers' purchase decisions in a digital environment. By highlighting the difference in nudging through time-based and quantity-based scarcity, the present research can also help to inform interface designers of why a specific form of scarcity-related nudge would be appropriate for an intended online environment.

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