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Consumer Cognitive Effort and the Unintended Consequences of Digital Technologies

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Introduction & Background

As consumers, we increasingly encounter analytics-driven marketing and AI whenever we shop for goods or services. From getting groceries and choosing what movie to watch to selecting investment opportunities, these technologies have significantly transformed our decision-making process and behaviour. While digital technologies are primarily designed to aid in the acquisition stage of shopping experiences, the overall impact they have on consumer wellbeing remains unclear. There is limited understanding of how consumers process and integrate a range of reviews, from highly negative (with 1-star ratings) to highly positive (with 5-star ratings) when making purchase decisions, which reviews are prioritised or revisited over time, and how this process relates to cognitive load during decision-making.

Objectives & Approach

This study presents a prototype for capturing continuous data streams of participants' eye movements using webcam technology in a natural browsing context. We used eye-tracking technology (Tobii Spark) to observe how 30 participants interacted with a web demo interface. Participants were asked to review information for three products presented sequentially and choose their preferred product from the website. To isolate the information search process itself, product prices were kept constant, and the products had comparable levels of review detail and average ratings. Eye-tracking data were analysed using fixation- and saccade-based metrics across pre-defined areas of interest (product image, price, details and reviews), allowing us to quantify participants' information search dynamics.

Relevance to Digital Footprints

The digital traces captured during these web interactions offer valuable insights into how consumers navigate, revisit, and ultimately transition from information search to decision making.

Results

Our findings suggest that product images attracted initial attention but received less dwell time than price and product details. Highly positive reviews attracted the greatest visual attention during product evaluation and appeared to influence final product selection. Non-selected products showed greater overall exploration and repeated revisits compared to selected products, suggesting increased comparison and evaluation before rejection. Additional analyses indicated that this pattern was unlikely to be explained solely by presentation-order bias. During the final decision phase, participants frequently shifted attention between multiple products rather than maintaining fixation on a single option. While 19 participants selected the product that received the greatest visual attention, 11 participants did not, suggesting ongoing trade-off evaluation and decision uncertainty.

Conclusions & Implications

Visual elements in our study guide early attention allocation, consistent with evidence that images are processed rapidly and pre-attentively and are often among the first interface components fixated on. Our findings also align with prior research showing that highly positive ratings act as social proof in decision-making. Together, these findings suggest that greater interaction and exploration within digital shopping environments may increase cognitive effort and contribute to decision fatigue, with implications for the design of more user-centred digital interfaces and cognitively efficient digital interfaces, as well as for identifying contexts in which AI-supported systems may be most beneficial during online decision-making.

Keywords

consumer research, eye tracking, cognitive effort, consumer decision-making