

# Skeuomorphic vs. Flat Design: The Style of the Call-to-Action Button and the Usage Mode affect Banner Ad Click-Through

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Recently user interface design style moves from skeuomorphic towards flat design emphasizing minimalism. The flat user interface design style, however, does not provide the affordance cues as readily as the skeuomorphic design and may also reduce visual interactions. It is not clear whether this difference may result in an effect on user clicking behavior on UI elements. Of particular interest is the usage of UI elements in web page banner ads, the estimation of ad performance and cost hinges on users' click through behavior. Important theoretical and practical implications are expected if the click through behavior and underlying psychological processes are indeed affected by the UI design for the call the action (CTA) information in banner ads. We conducted a simulated webpage reading experiment during which the eye position was tracked. The design of the CTA button in banner ads was manipulated to explore its effect on ad click-through behavior and whether this effect was due to users' mental simulation lengthening visual attentional deployment. The click-through rate and the total fixation duration (on ad) were both higher for ads comprising the skeuomorphic than the flat CTA buttons. Furthermore, these effects applied to the leisure viewing but not target directed viewing condition. The total fixation duration also significantly mediated the effect of UI design style. Current findings show how deep understandings of user behavior may enhance design optimization for business goal achievement.

**Keywords:** *ad click-through, usage mode, eye movement, user experience, user interface*

## Extended Abstract

The prevalent user interface design style for webpages and apps has been moving from a skeuomorphic design toward a flatter, more minimalist design. The skeuomorphic design depicts user-interface (UI) elements (e.g., a button) as 3D objects using depth-inducing features that support user interactions, whereas flat designs use flat, colored shapes with little affordance (in the sense of Gibson, 1977) for user actions. Affordance is preferable in UI design as it enhances users' intuitive understanding of interface interaction (Norman, 1988), yet the flat design has recently gained popularity due to aesthetic and resource considerations. It is unclear, however, whether the change in UI design style has had significant effects and, if so, whether the effects are due to the lack of affordance. These questions are of particular importance when the design concerns the call-to-action (CTA) message buttons in banner ads.

In such cases, users' click-through actions are directly used for computing cost and revenue advertising (ad) metrics. The current study thus examines whether the design (skeuomorphic vs. flat) of CTA buttons affects banner ad viewing behavior, clicking actions, and ad attitudes. It also tests whether the possible effects result from affordance and/or visual processing (due to the difference in visual details between skeuomorphic and flat designs). Moreover, we examine whether users' usage or browsing mode (Hoffman & Novak, 1996) moderates the effect of design style. In the experiential usage mode, users conduct visual controls in a bottom-up fashion, thus allowing the UI design style to impact their viewing behavior, actions, and attitudes. In contrast, the goal-directed usage mode is associated with top-down control of visual attention, which reduces the effects of UI design styles.

## Methods

We conducted a simulated webpage reading experiment using eye-tracking. The CTA message type (no CTA vs. skeuomorphic CTA vs. flat CTA) and viewing mode (experiential vs. goal-directed) were manipulated in a 3×2 mixed design. The users' ad-clicking rates, ad attitudes, experienced mental simulation, and eye tracking metrics were the dependent measures. The participants viewed 18 web articles at their leisure while looking for content of interest (experiential mode) or looking for specific contents to answer questions (goal-directed mode). One target banner ad and two filler ads were presented next to each article. The participants were informed that the study was about ad preferences and webpage reading and that they could click on any ads that were of interest.

## Results

The ad clicking percentage was higher for ads adopting the skeuomorphic design than the flat CTA design. Furthermore, the usage mode and design style of the CTA button had interactive effects on the total

fixation duration and the total number of fixations. Both the duration and number of fixations were higher for the skeuomorphic than the flat design when participants engaged in the experiential (leisure viewing) mode of usage, but not in the goal-directed mode. A bootstrapping analysis showed that the total fixation duration significantly mediated the effect of design style on ad clicking percentage in the experiential condition. The mediating effect of mental simulation was not significant.

## Conclusions

The findings show that users' web browsing behavior depends on their viewing or usage goals as well as the UI design style. The visual details of the skeuomorphic CTA button seem to facilitate visual engagement and/or comprehension, which increases ad clicking behavior during the experiential viewing mode. The findings do not support the role of affordance or mental simulation in the effects of design style. These findings demonstrate that a deeper understanding of psychological processes underlying user behavior can enhance design optimization and improve business goal achievement.