

The Importance of Buttons in UI Design and Their Impact on Mobile App Usability: Case Study

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Abstract – Buttons in mobile applications are often overlooked elements of user interface (UI) design, yet they play a critical role in guiding user interactions and ensuring a seamless user experience (UX). This research focuses on the Uber ride-sharing app, highlighting the challenges and implications of button design on its usability. Despite their simple appearance, buttons are vital for effective navigation, and poor design can lead to user confusion, frustration, and even task abandonment. This study identifies specific issues with the Uber app's current button design, particularly the "cancel ride" button, which is difficult to locate and often perceived as disabled by users. By conducting usability tests and proposing a redesign focused on improving button visibility, colour contrast, and hierarchical structure, the study aims to enhance the app's usability. The results suggest that thoughtful button design can significantly improve user satisfaction and reduce errors, especially in critical tasks like ride cancellation. The suggested changes include adding distinct visual cues for secondary and destructive buttons to enhance user experience. Future work will involve conducting usability tests to validate these design improvements and ensure they effectively address the identified issues.

Keywords: Button design, user interface, mobile app usability, Uber, usability testing

I. Introduction

Buttons are essential for enhancing the user-friendliness of applications. Although they may seem straightforward, their design demands careful consideration of size, shape, colour, and placement to optimise functionality. Serving as navigational cues, buttons guide users through the app interface and significantly impact the overall ease of use. Modern mobile devices, with their compact screens, often lead to smaller interaction buttons, which can require precise movements for accurate input and may result in frequent errors. Additionally, mobile device use often involves multitasking, necessitating a user interface tailored to accommodate varying conditions, including touch button sizes and adaptable button styles (Practical UI, 2005).

Studies examining the design elements of touchscreen buttons, such as size, spacing, shape, and visual feedback, have demonstrated notable impacts on input performance for both digit and letter entry tasks. Generally, medium-to-large square buttons improve user performance due to their visibility and ease of interaction, while button spacing shows variable effects depending on task type—differing, for instance, between digit and letter input. Visual feedback alone has minimal measurable impact on performance, but users tend to prefer button designs that enhance ease of use and efficiency. Additionally, different button shapes were found to have comparable mental workload across tasks, suggesting flexibility in shape choices without affecting user stress. These insights offer valuable guidelines for improving touchscreen usability in a range of digital interfaces (Tao, 2017).

Ziwei Ouyang's research explores how button size, graphics-to-text ratio, and icon style affect user interaction in smart home systems for both young and senior users. When conducting a simulated smart home task, Ouyang measured search performance and eye movement to gauge user efficiency and preference. Findings indicate that both button size and the ratio of graphics to text significantly influence performance in both age groups. However, icon style played a more substantial role for seniors. Specifically, older adults preferred larger buttons (20 mm), more prominent text, and skeuomorphic icons, which resemble real-world objects, making them easier to recognize and use. Younger users, on the other hand, favoured slightly smaller buttons (15 mm) with balanced graphics and text, reflecting a preference for more minimalistic design (Yu, 2022).

Jessica Conradi et al. investigated the optimal touch button size for mobile device interaction while walking, examining the effects of button size and movement on performance. They found that smaller buttons, specifically 5x5 mm, resulted in significantly slower interaction times and higher error rates, especially during walking. Larger buttons (11x11 mm and 14x14 mm) performed much better with low error counts and minimal impact from movement. Additionally, neither button size nor walking affected distractor detection. The study concludes that 14x14 mm buttons are most suitable for mobile use while walking, as they maintain high interaction accuracy (Conradi, 2015).

Users sometimes face confusion about their next steps, leading to indecision and delays. Many users interact with app buttons without reading accompanying text, relying on visual cues alone.

Uber, a ridesharing company that connects passengers with independent drivers, relies heavily on its app for facilitating rides. The latest version of Uber's app has issues with its button design, which does not always guide users effectively toward their goals. This is particularly problematic in urgent situations where users need quick access to features.

For instance, when trying to change the destination of a ride, users encountered difficulties due to the poorly visible cancellation option. The app displayed a "Ride details" button that seemed inactive, and the actual cancel option was hidden. This design flaw, featuring a disabled button as a secondary feature, creates usability challenges. The disabled state does not clarify the nature of the issue or provide useful feedback, leading to user confusion and potential frustration.

Objectives of this research

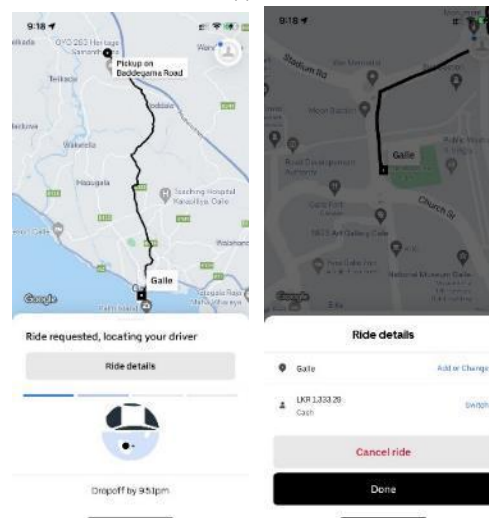
- Understand the importance of buttons in mobile applications.
- Buttons styles and How it affects to the mobile usability
- Suggest a new style guide for buttons to Uber Ride app

II. Research problem

The design of buttons, though seemingly simple, plays a pivotal role in shaping the user experience of an application. In the case of Uber, buttons are not just interactive tools; they are essential for enabling users to efficiently complete critical tasks like booking or cancelling a ride. However, design flaws—such as low contrast, ambiguous labels, and poor placement—can lead to serious usability challenges. This research seeks to explore how the design of buttons in the Uber app affects the user experience and what improvements can be made to enhance usability. A particularly problematic feature is the "cancel ride" button, which users often struggle to locate due to its misleading appearance as a disabled button, owing to its low contrast and unclear placement within the "Ride details" section. This issue goes beyond mere inconvenience, potentially causing user frustration, delays, and financial loss if a ride cannot be cancelled promptly. Additionally, the "Ride details" button, which leads to the cancel option, often appears inactive, further compounding the difficulty in accessing necessary functions. The research will identify these specific design shortcomings and propose targeted solutions to improve the user interface, ultimately aiming to reduce user frustration and enhance the overall experience.

1. What are the specific design flaws in Uber's button layout that impact usability?
2. How do these design flaws affect the user's ability to complete critical tasks?
3. What design changes can be made to improve the visibility and functionality of buttons in the Uber app?
4. How effective are these proposed changes in enhancing the overall user experience?

Figure 1
Screenshots of Uber Mobile Applications



III. Methodology

This study adopts a qualitative research approach, focusing on a detailed analysis of Uber's button design through user observation and usability testing. The research is divided into two main phases: the analysis of the current button design and the development and testing of a proposed redesign. The first phase involves a comprehensive analysis of Uber's existing button layout. This includes examining the visual elements (colour, size, shape), placement, and functionality of buttons within the app. Special attention is given to the "cancel ride" button, which has been identified as a significant pain point for users.

To understand the challenges faced by users, a series of observational studies were conducted. Users were asked to perform common tasks within the Uber app, such as booking and cancelling a ride. Their interactions with the buttons were recorded, with a focus on identifying moments of confusion, hesitation, or frustration. A heuristic evaluation was also conducted to assess the usability of Uber's button design. This involved reviewing the buttons against established usability principles, such as visibility, feedback, and error prevention. The evaluation helped to identify specific design flaws that contribute to the observed usability issues.

Based on the findings from the first phase, a redesign of the button layout was proposed. The redesign focused on improving the visual hierarchy, enhancing colour contrast, and providing clearer labels for critical functions like ride cancellation. A prototype of the redesigned interface was developed using UI/UX design software. This prototype included the new button designs and was used for usability testing.

To validate the effectiveness of the redesign, usability tests were conducted with a sample group of Uber users. Participants were asked to complete the same tasks as in the observation phase, this time using the redesigned interface. Their performance, as well as their subjective feedback, was recorded and analysed to assess the impact of the redesign on usability.

The data collected from both the observation phase and usability testing were analysed to identify patterns and measure the effectiveness of the redesign. Key metrics included task completion time, error rate, and user satisfaction.

IV. Findings

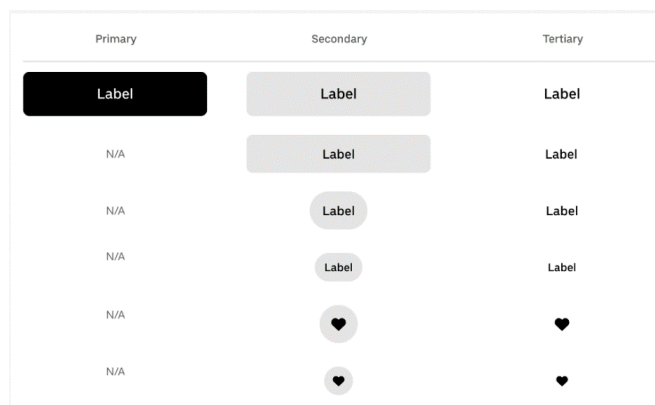
The analysis of Uber’s current button design revealed several critical usability problems. The most significant issue was the low visibility and ambiguous functionality of the "cancel ride" button. Users often mistook this button for a disabled option due to its low contrast with the background and its placement in a secondary menu. This confusion led to frustration, as users struggled to quickly find the option to cancel a ride.

Observational studies confirmed that users found the current button layout problematic. Many users hesitated while trying to locate the "cancel ride" button, and the ride details button appears inactive, causing some to abandon the process and seek alternative ways to contact Uber support. This delay can be especially troublesome in time-sensitive situations, such as when a user needs to cancel a ride to avoid charges.

Heuristic evaluation highlighted several violations of usability principles in Uber’s button design. Key issues included poor visibility of the "cancel ride" button, lack of feedback during button interactions, and inadequate differentiation between active and disabled states, as well as issues with the ride details button. These problems contribute to a suboptimal user experience and increase the likelihood of errors.

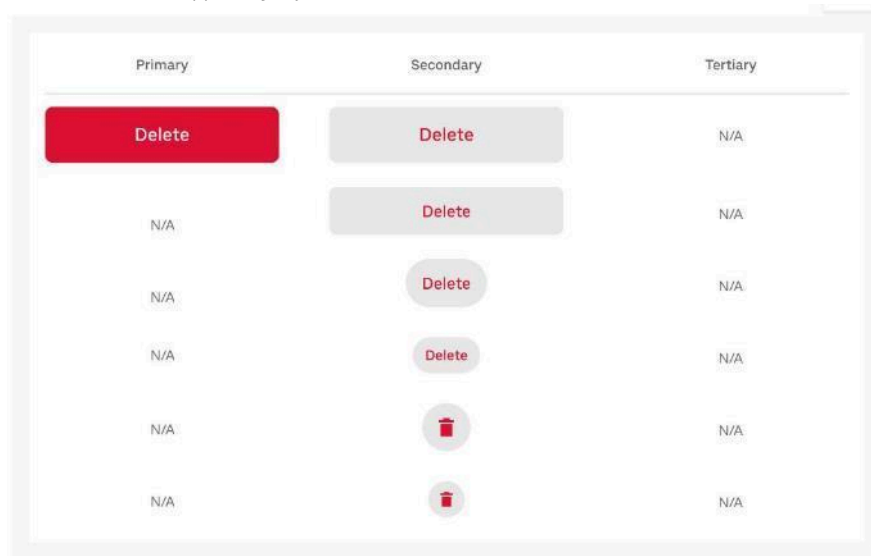
To address these issues, a redesign was proposed to enhance the visual hierarchy and clarity of the button layout. The redesigned system introduced a new secondary button set to improve user experience. Usability tests of the new design demonstrated significant improvements in user performance and satisfaction. Participants were able to locate and use the "cancel ride" button and the ride details button more quickly and with fewer errors. Task completion times decreased, and users reported feeling more confident and less frustrated with the redesigned buttons. Feedback highlighted the importance of clear visual cues and consistent button behaviour in enhancing the app's overall usability.

Figure 2
Uber app design system



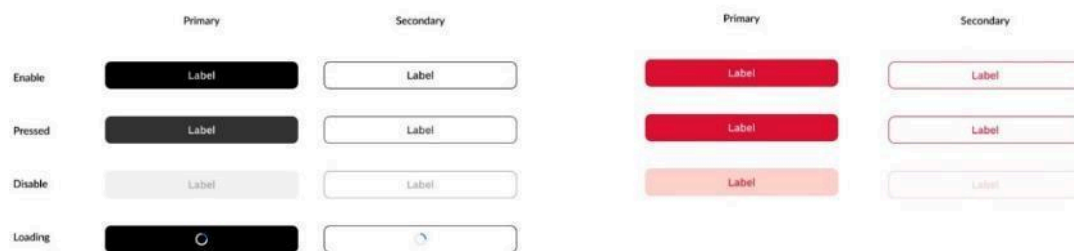
Note. Retrieved from <https://base.uber.com/6d2425e9f/p/756216-button>

Figure 3
Uber app design system



Note. Retrieved from <https://base.uber.com/6d2425e9f/p/756216-button>

Figure 4
Proposed Design System



Conclusion

The findings of this study emphasise the crucial role of thoughtful button design in mobile applications. The redesign of Uber's button layout, which prioritised improvements in visibility, contrast, and functionality, resulted in a more intuitive and user-friendly interface. This research underscores the necessity for ongoing evaluation and refinement of UI elements to ensure they align with user needs and enhance the overall user experience. The study has shown that buttons, often taken for granted, are fundamental to mobile app usability. By identifying significant design flaws that impaired user interaction and led to a negative user experience, the research demonstrated that enhancements in visual hierarchy, contrast, and functionality can significantly improve usability and user satisfaction. These findings have important implications for UI/UX designers. Button design should be an integral part of the overall user experience, rather than an afterthought. Designers need to ensure that buttons are

prominently visible, clearly labelled, and provide appropriate feedback. Furthermore, the study highlights the value of usability testing in uncovering and addressing design issues. Future research could build on this study by examining how button design impacts other aspects of mobile app usability, such as accessibility for users with disabilities. Additional studies could also explore the long-term effects of design changes on user behaviour and satisfaction in real-world scenarios.

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