

The Art of Hue: Colors Shaping User Experience

By Sanchita Mathur, Namrata Sharma and Amith Krishnan



Colors weave narratives in our lives, silently shaping our emotions and decisions. As per research, 62-90% of product consideration is based on colors (Gopikrishna & Kumar, 2015). This underscores the pivotal role that colors play in capturing attention, eliciting specific emotional responses, and ultimately influencing consumer choices.

In the realm of digital interfaces, color functions as a superhero within a designer's toolkit. Join us as we explore the psychology of colors, dissect industry-specific applications, and reveal how strategic color choices can significantly enhance user experience, driving conversions and satisfaction.

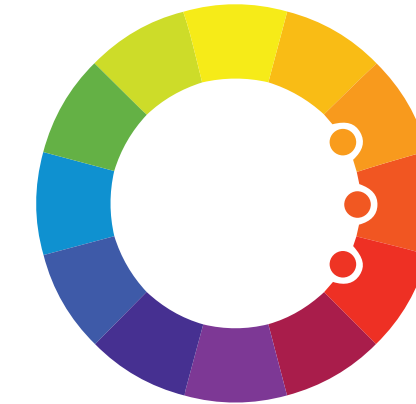
Understanding the Psychology Behind Colors

Beyond aesthetics, colors play a profound role in the emotional and cognitive impact of designs on users. Colors act as subtle triggers, eliciting subconscious reactions that significantly shape mood and play a pivotal role in the decision-making process of users (Huang et al., 2008). With an infinite array of color combinations, selecting the right hues for an interface becomes a challenging task. In addressing the complexity of choosing optimal color combinations for interfaces, designers and developers rely on the invaluable color wheel as a fundamental tool. The color wheel serves as a crucial instrument in creating environments that promote user well-being and engagement, empowering designers to navigate the intricate landscape of color selection with precision.

Monochromatic Schemes, include using different shades of same color, as seen in Paypal's calming blues, evoke elegance.



Analogous Schemes, includes using similar colors like red and orange, create unity and coherence.



Complementary Schemes, includes using opposite colors like bold red and green, demand attention.



Triadic Schemes, includes balancing colors like yellow, blue, and red, offer unity and vibrancy.

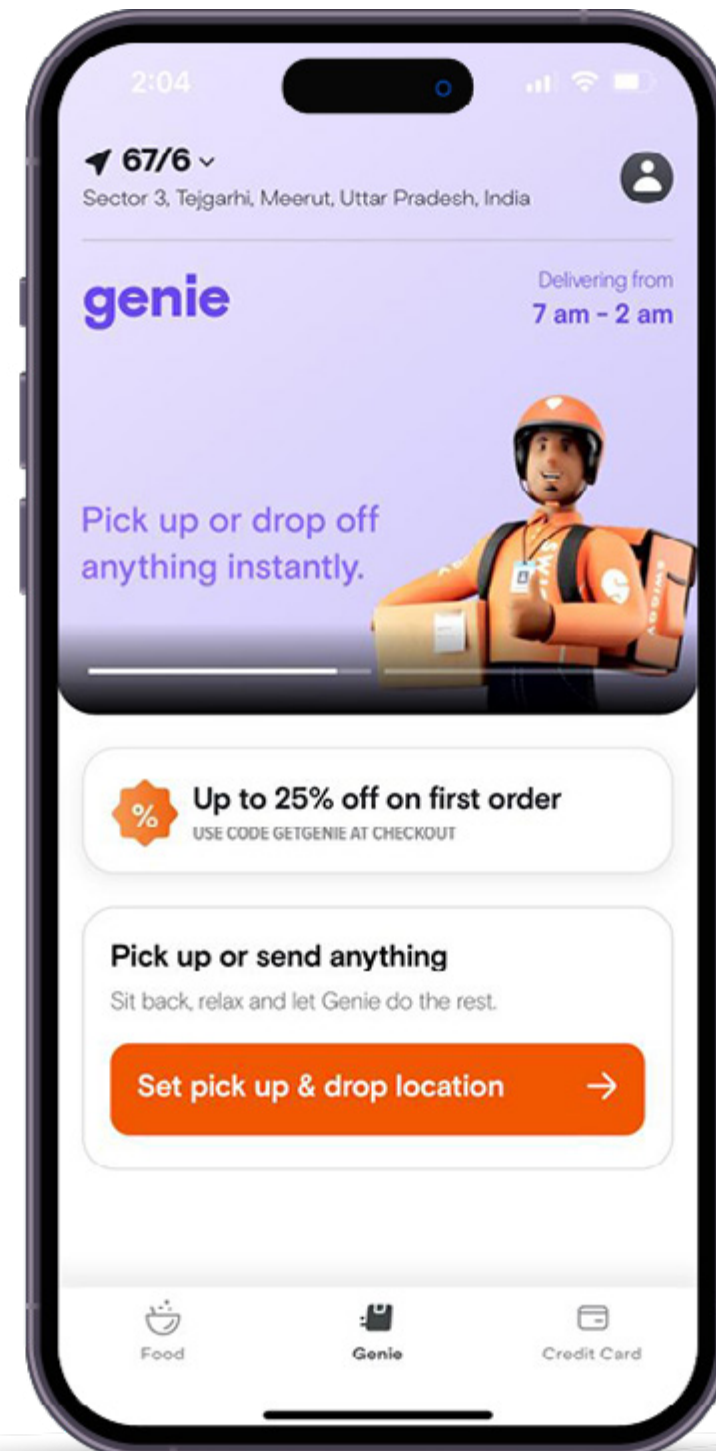


Unraveling the Impact of Colors on Mood and Mindset

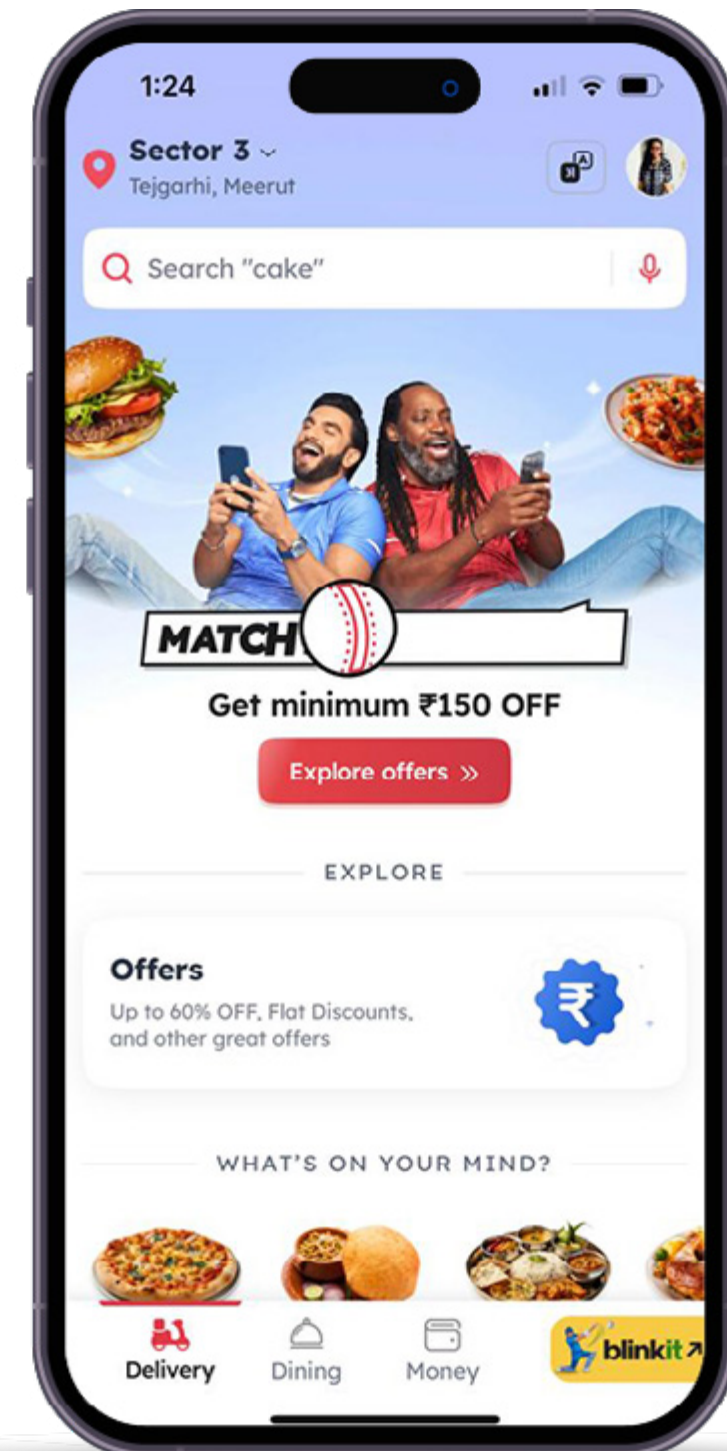
Colors aren't just visual elements; they're emotional catalysts. When employed appropriately in user interface, colors can have a significant impact on both conversion rates and user experience by influencing user's psychological states.

For instance, warm colors like red, orange, and yellow can bring about feelings of warmth and comfort but can also signify passion or anger. In popular food delivery applications like Swiggy and Zomato, the Call to action buttons are in such colors to stimulate the appetite and create a feeling of hunger and excitement.

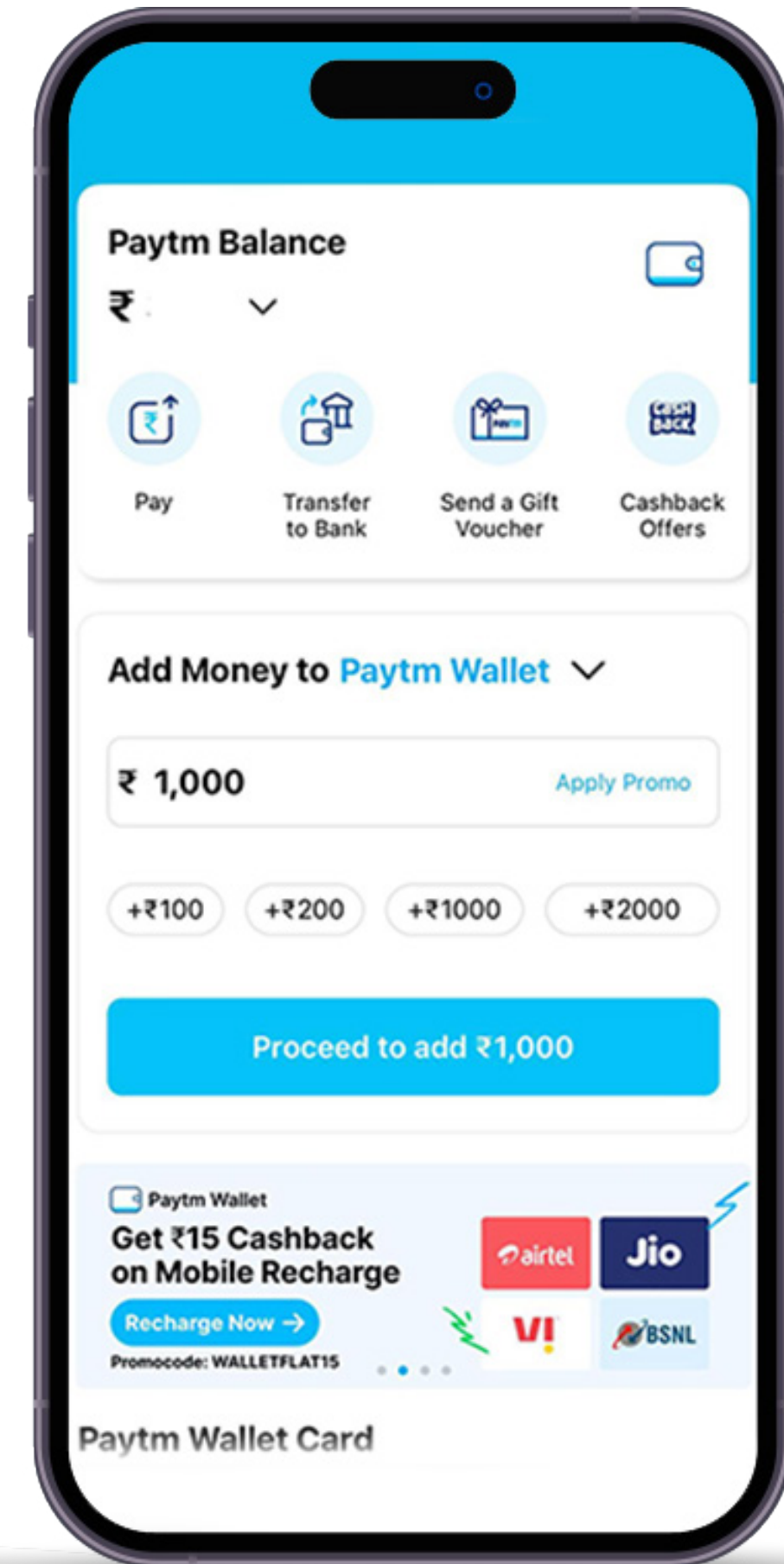
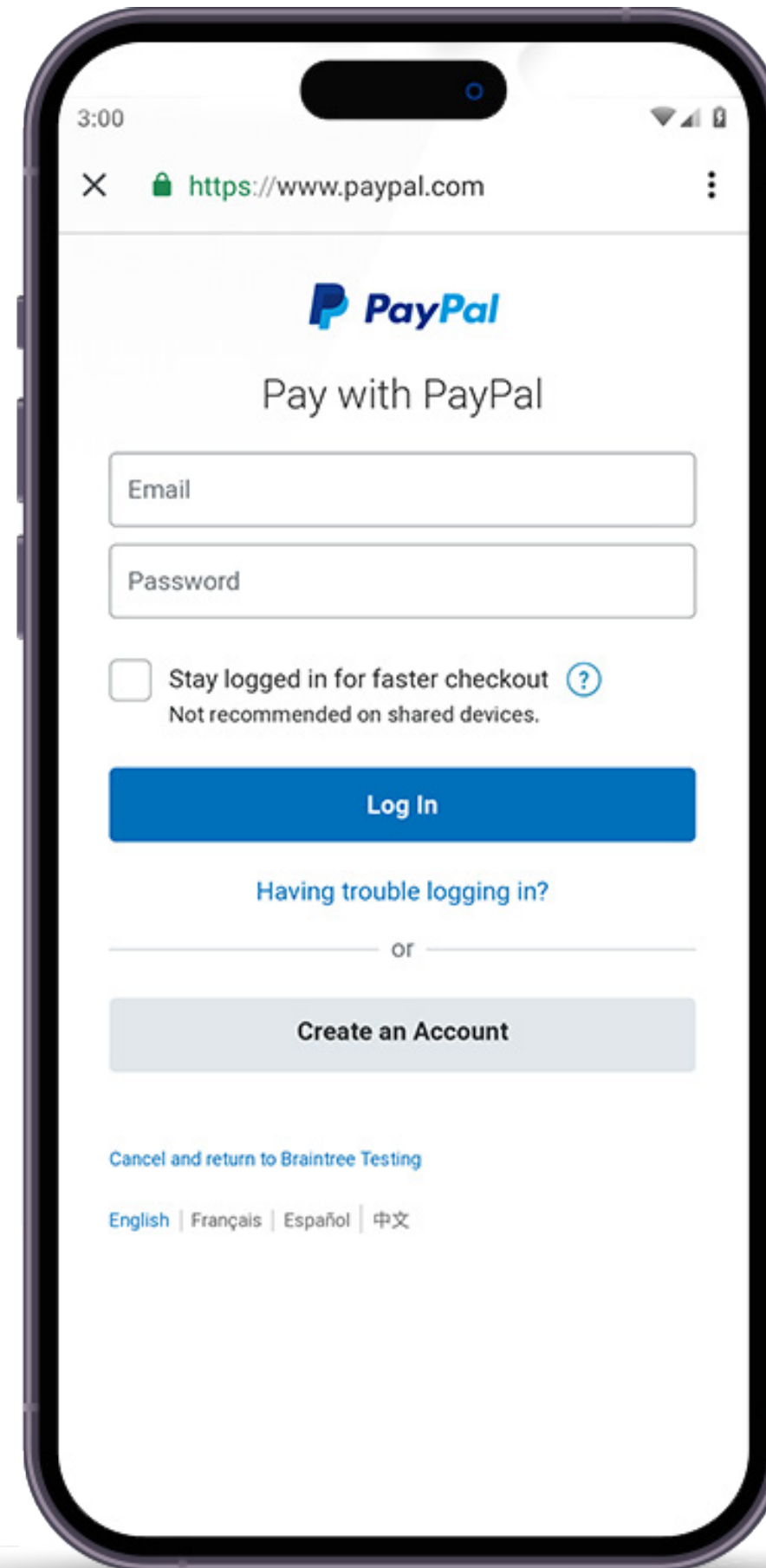
Swiggy



Zomato



Alternately, cool colors like blue, green, indigo, and violet evoke sensations of quietness, trust, and contemplation, making blue a popular choice in fintech brands like Paytm, Paypal, Phone Pe and Stripe.

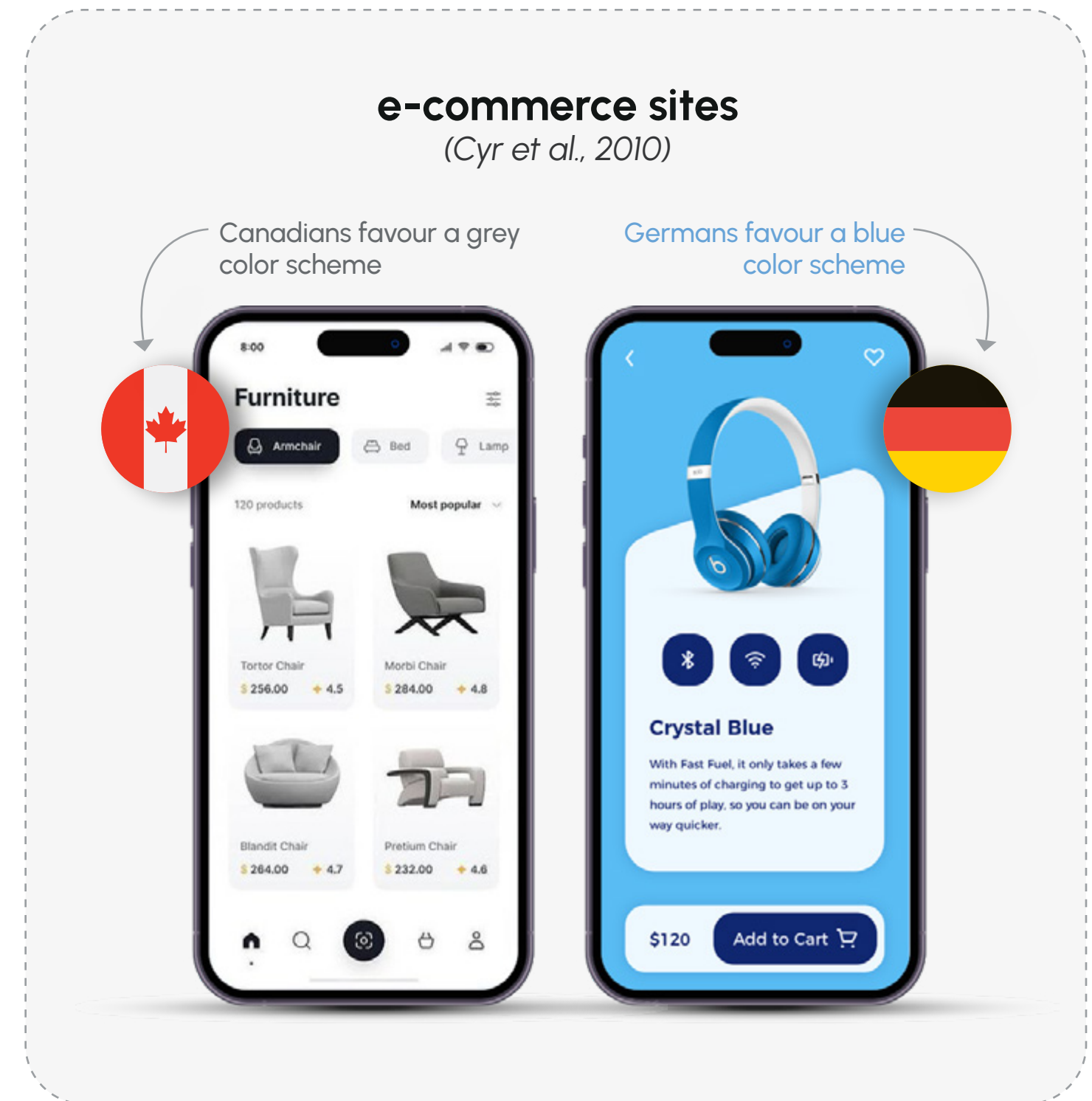


Designing for Diversity: Cultural Difference

Colors carry cultural significance, and designers should be aware of these meanings when creating products. In the online realm, where consumer trust is delicate the ineffective use of color may impede consumer satisfaction (Latomia & Happ, 1987).

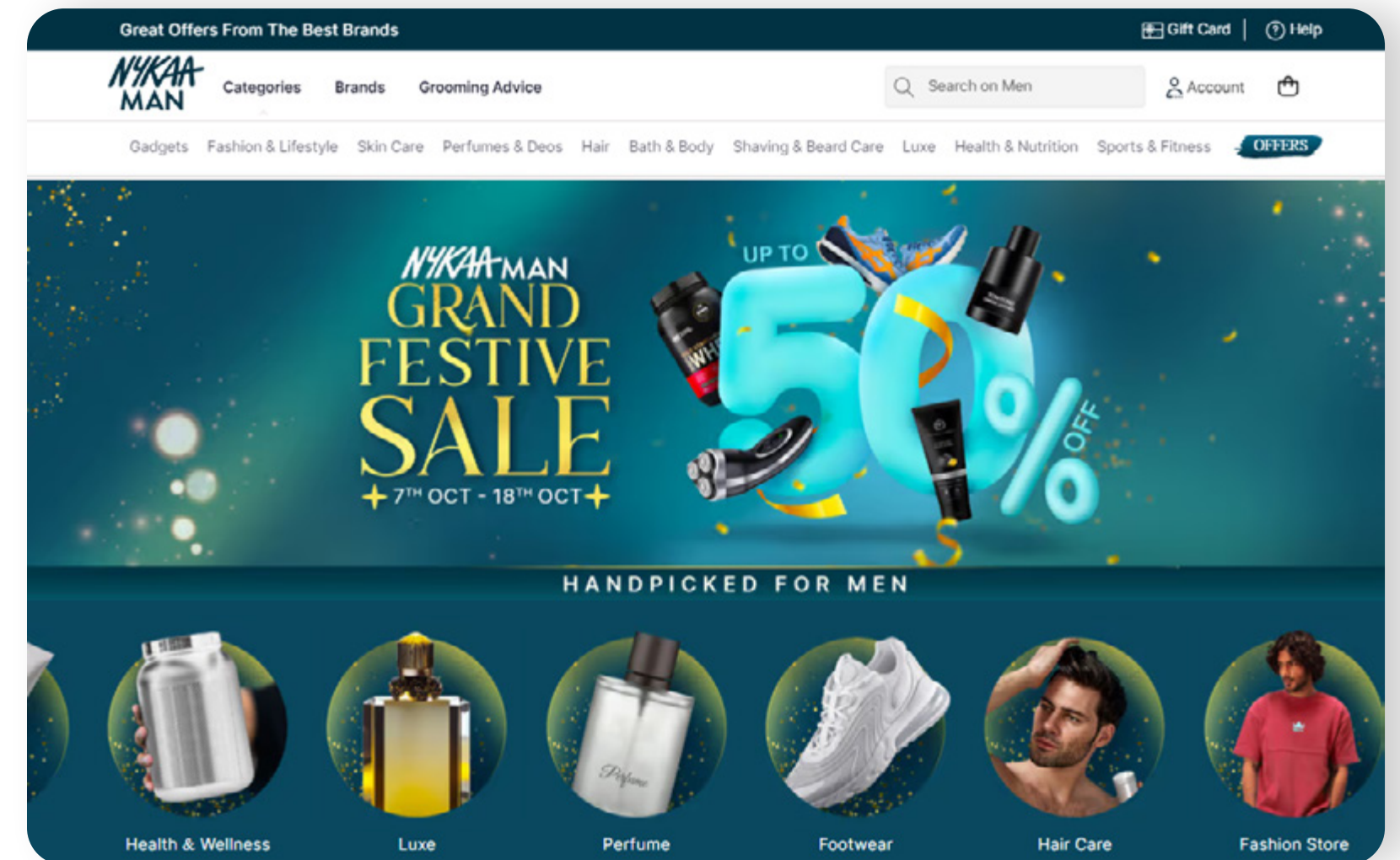
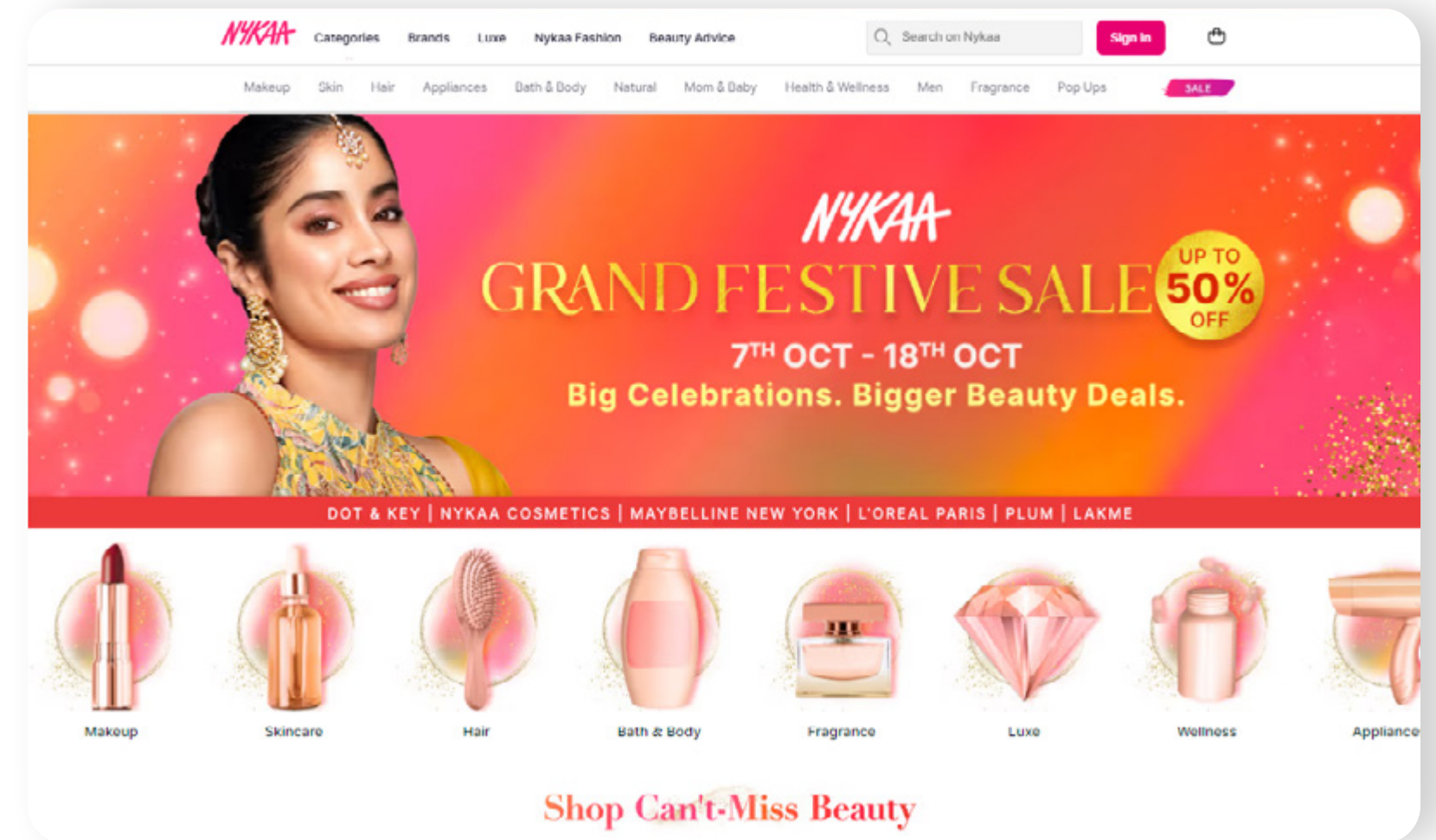
For instance, in case of e-commerce sites, while Canadians favored a grey color scheme, the Germans preferred blue (Cyr et al., 2010).

In Japanese culture yellow is associated with nobility and grace, despite that, in e-commerce sites Japanese participants disliked yellow perceiving it to be unappealing and even leading to distrust (Boor & Russo, 1993). Thereby, designers must be aware of the importance of colors in both the broader cultural context and the specific interface design. They should understand how colors evoke emotions in different cultures.



Gender Difference

Recognizing the importance of gender roles in design is crucial due to notable differences in color preferences between genders, as outlined by (Khouw, 2002). The study reveals that men tend to prefer colors like grey, white, and black, while women lean towards combinations involving red and blue. Nykaa provides a noteworthy example where strategic color usage plays a vital role. The color pink is cleverly employed in their branding to signify products for a female audience, while shades of blue and grey cater to male consumers. This intentional color-coding not only aids in product differentiation but also aligns with the preferences of distinct target demographics. Conversely, some colors, such as Google's use of primary colors like red, yellow, green, and blue, work to bridge gender gaps, contributing to a more inclusive and universally appealing user interface for a positive experience for everyone.



The Chromatic Advantage: Elevating User Experience through Color

In the digital realm, color choices in user interfaces wield significant influence. A study by the Seoul International Color Expo found that over 92% of individuals view color as a crucial factor in their purchasing decisions. Through the strategic curation of colors for essential interface elements, businesses can markedly boost conversion rates while fostering user engagement.

92%

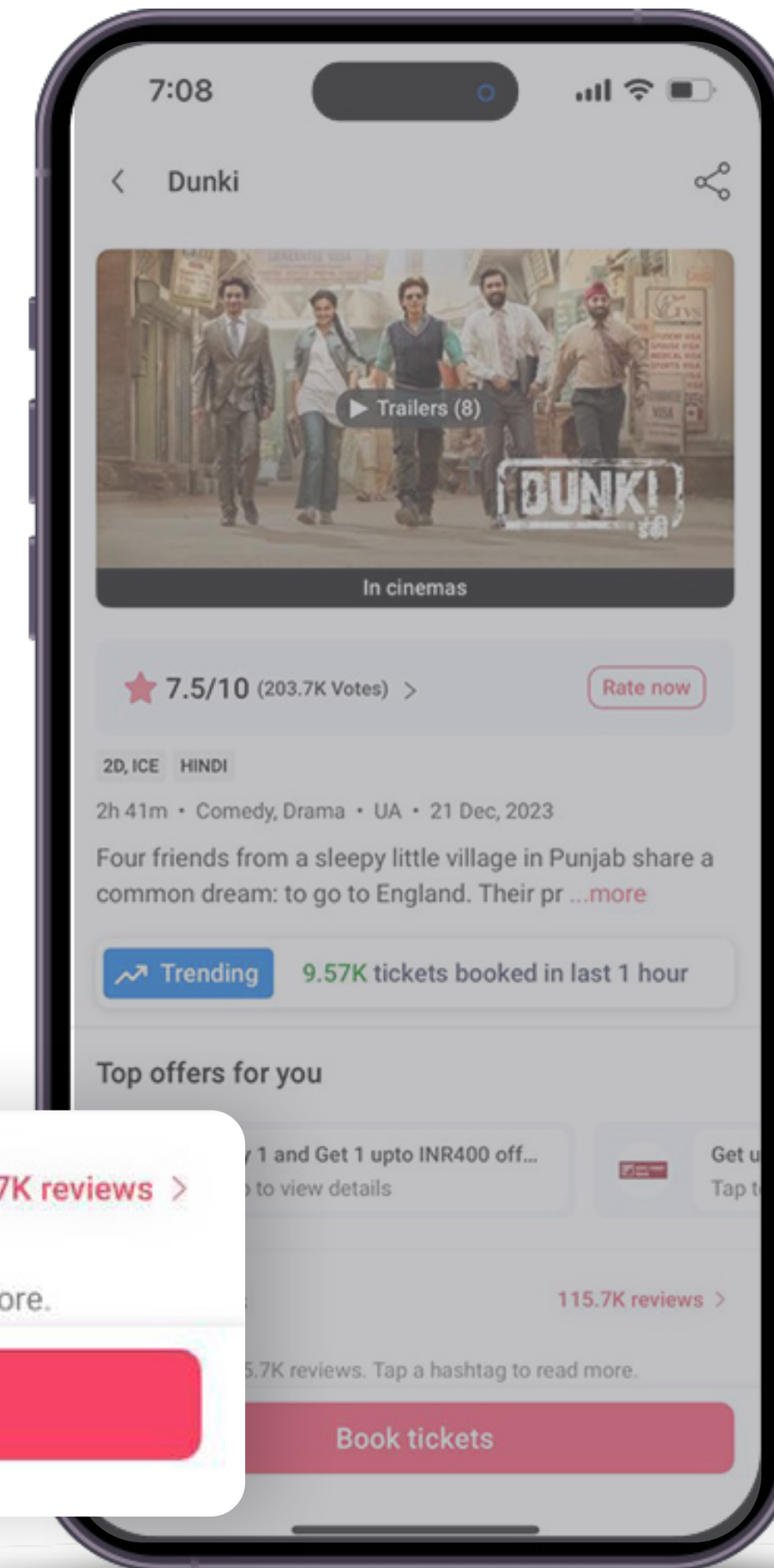
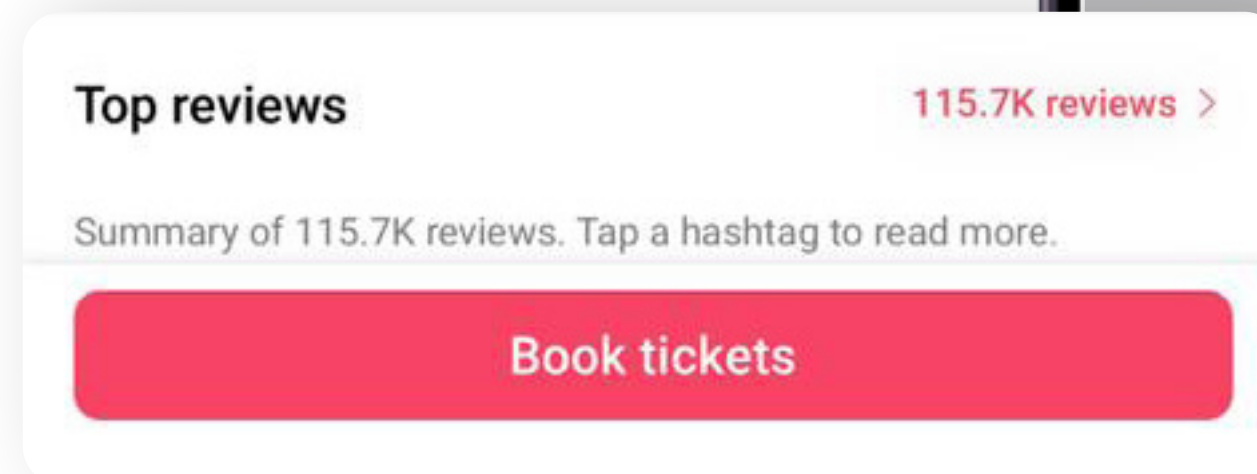
Individuals view color
as a crucial factor
in their purchase
decisions

1

Call-to-Action Buttons: Boosting Conversions with Vibrancy

Book my Show's signature Red especially in call-to-action buttons like **"Book Now,"** catches the eye, compels attention, and drives clicks.

The stark contrast ensures these buttons stand out, transforming casual visitors into active participants.

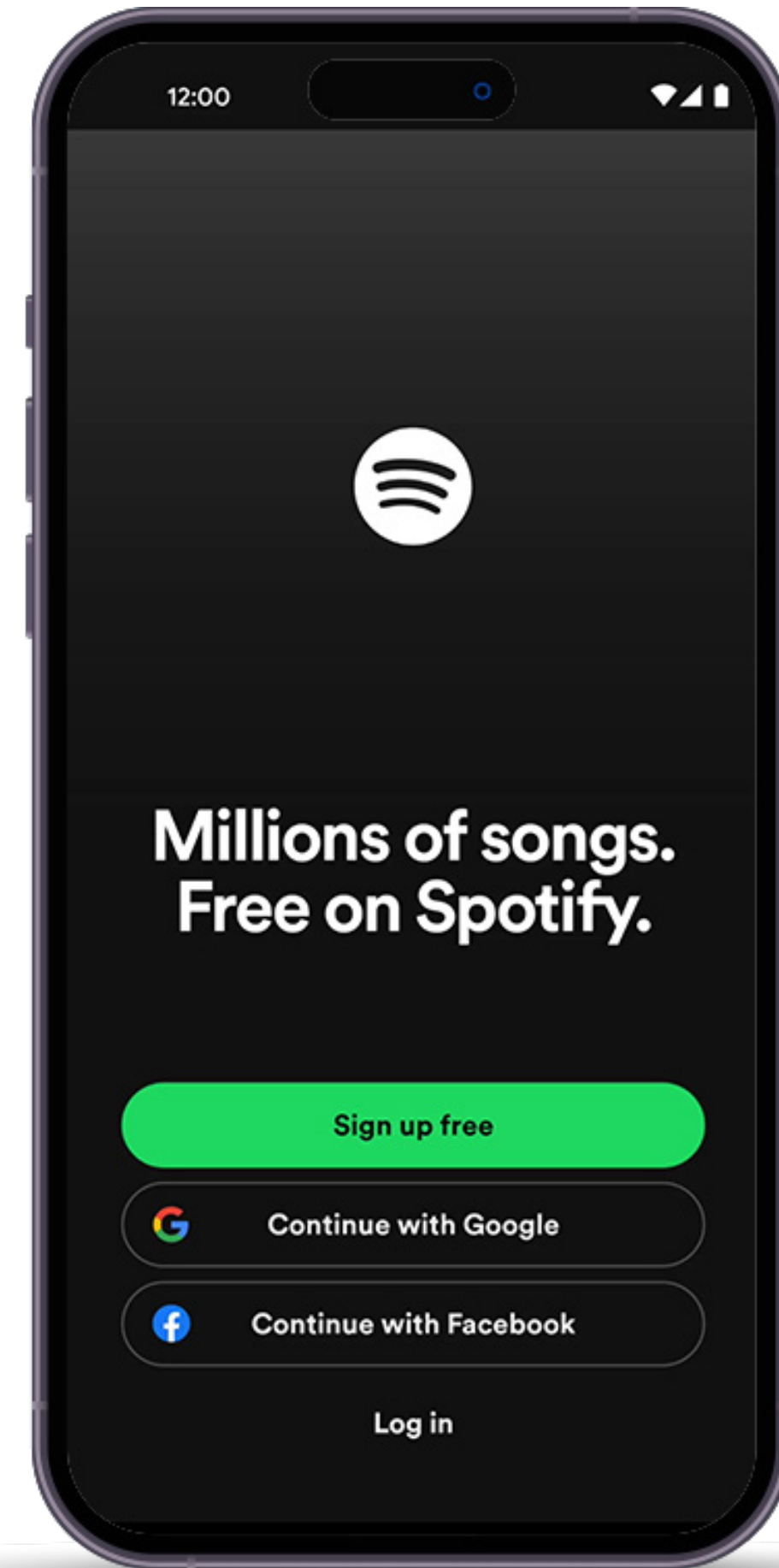


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Contrasting Colors for Visibility and Navigation:

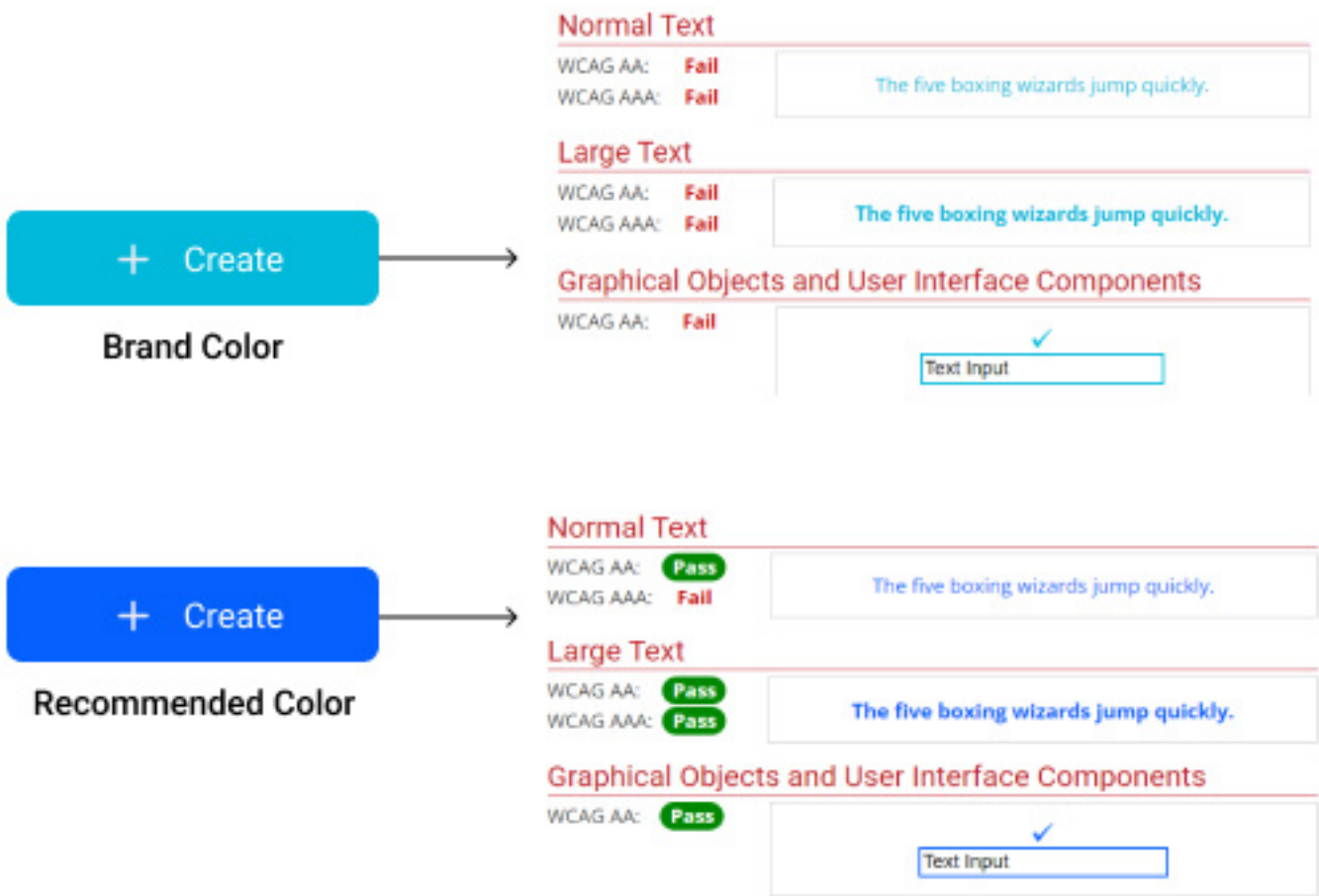
In Spotify's minimalist UI, the dynamic interplay of bold green on a black background creates a vibrant and fresh atmosphere, aligning perfectly with a platform dedicated to delivering the latest tunes to music enthusiasts (Soegaard, 2023).

High contrast aids easy navigation, showcasing how contrasting colors guide attention effectively.



In previous examples, brand colors effectively met design requirements and reflected brand identity. However, often designers are faced with situations wherein the brand colors may not be the most suitable choice for UI elements. In such cases, designers must carefully select UI color palettes to ensure coherency and user engagement.

Take Slack, for instance; while it offers various customizable theme colors, it maintains a consistent blue color for essential actions, ensuring versatility, yet consistency across its different themes.



In our own experience, there were situations where the brand's color (turquoise) lacked contrast, impeding visibility and accessibility in the product UI. To address this, we opted for an Analogous color, shade of blue for the UI elements to ensure optimal visibility and ease of use.



When the brand color is Red (e.g., Coca Cola, Heinz), consider using an analogous color for alert or error messages. In our project with a red brand color, we successfully utilized an amber color enhancing communication effectiveness.

Dark Mode Vs Light Mode

The choice between light and dark color schemes goes beyond aesthetics, impacting user experience in various ways. Facebook and Instagram have reported increased user engagement after implementing Dark Mode. According to their internal studies, users spend 15% more time on the platform when using Dark Mode compared to Light Mode. However, whether to adopt dark mode or light mode depends on the specific product and brand being designed.



Ideally, we should try to provide both options so that it is up to the user's preference. If this is not possible, then it is crucial to take specific conditions into account.

User Comfort and Eye Strain:

Dark mode is preferable for users who engage in nighttime usage, reducing eye strain in low-light conditions.

Light mode is recommended for users in well-lit environments, ensuring optimal visibility and reduced eye strain.

Accessibility Challenges:

Designers should be mindful of the accessibility challenges posed by dark mode, especially for users with myopia or astigmatism. Mitigation strategies should be implemented to address "halation" effects.

Readability and Accuracy:

Light mode is preferable for extensive text, as studies have shown a 26% increase in accuracy when reading text with dark characters on a light background.



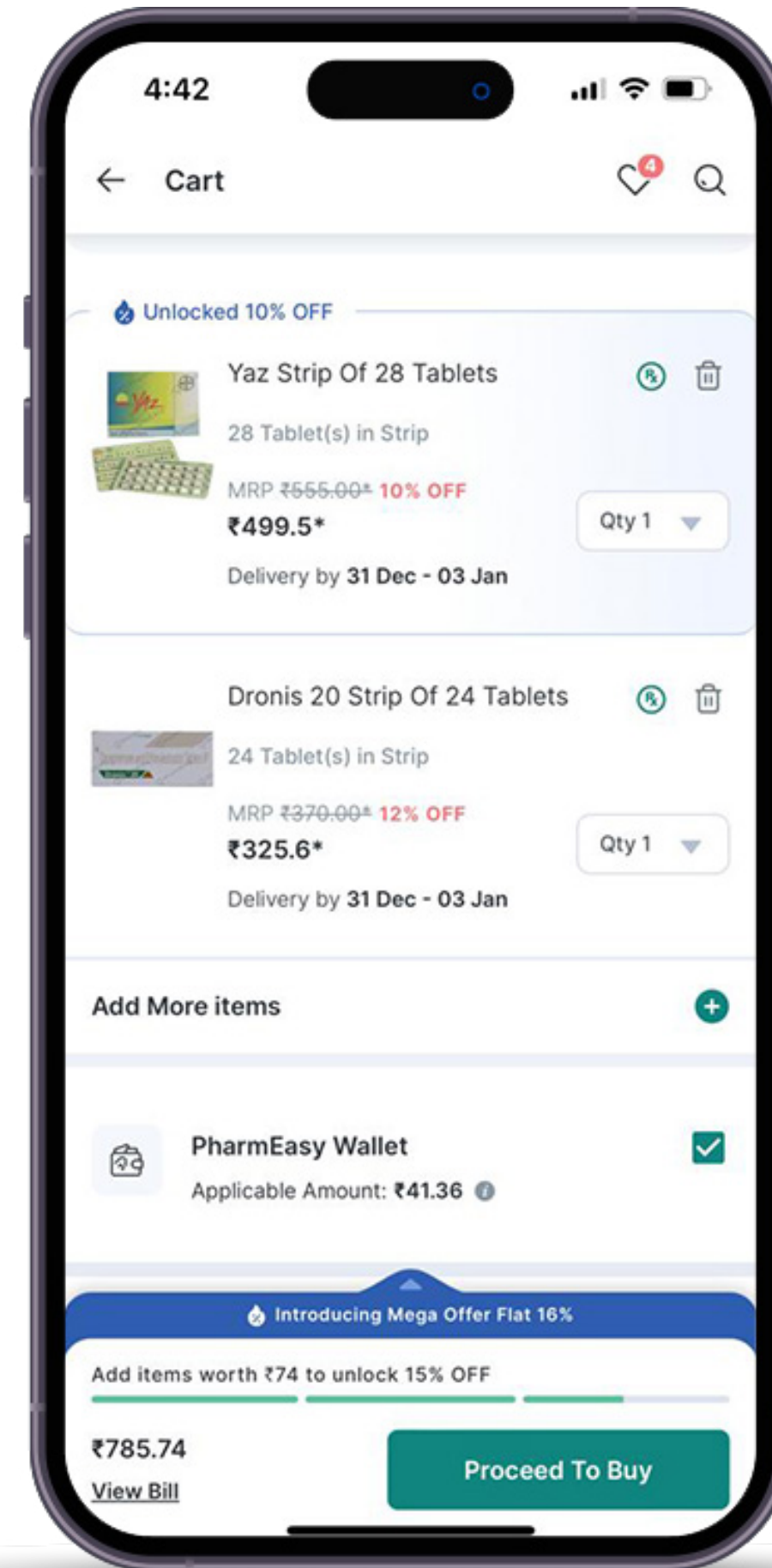
In a project focused on monitoring and reducing carbon emissions for sustainability, we opted for a Dark mode. Visually aligned with the color of carbon, it provided a sleek, premium feel. Functionally, it could save energy, potentially extending battery life for certain types of displays.

Industry-Specific Color Schemes in UI Design

Healthcare Industry

Preferred Colors:

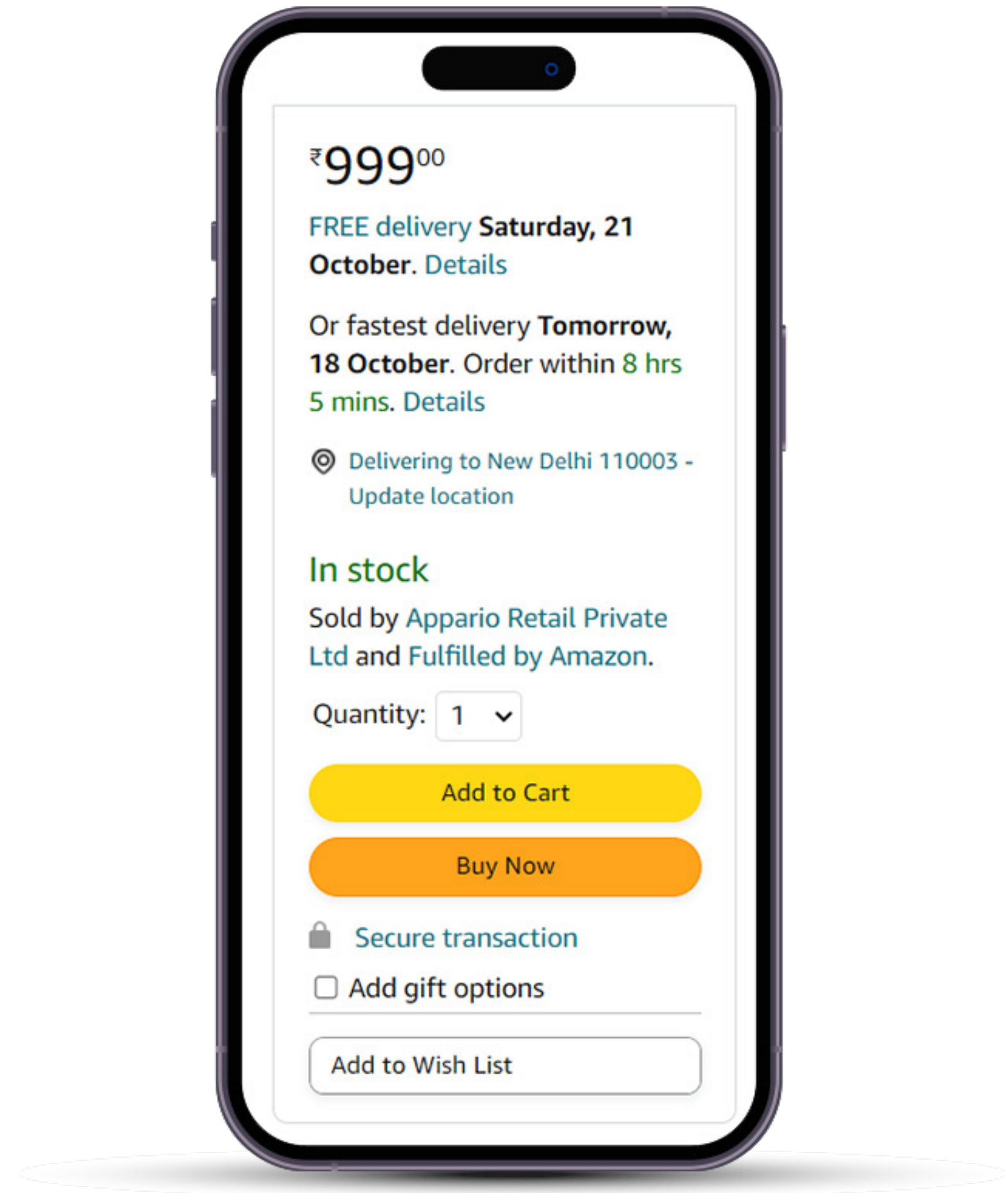
Research suggests that colors such as green and blue have a calming and healing effect, alleviating anxiety and establishing a serene atmosphere (Gupta, 2021)—crucial in healthcare interactions. App like PharmEasy, an Indian online pharmacy, incorporates green into their UI design to impart a sense of calmness to users.



Retail Industry

Preferred Colors:

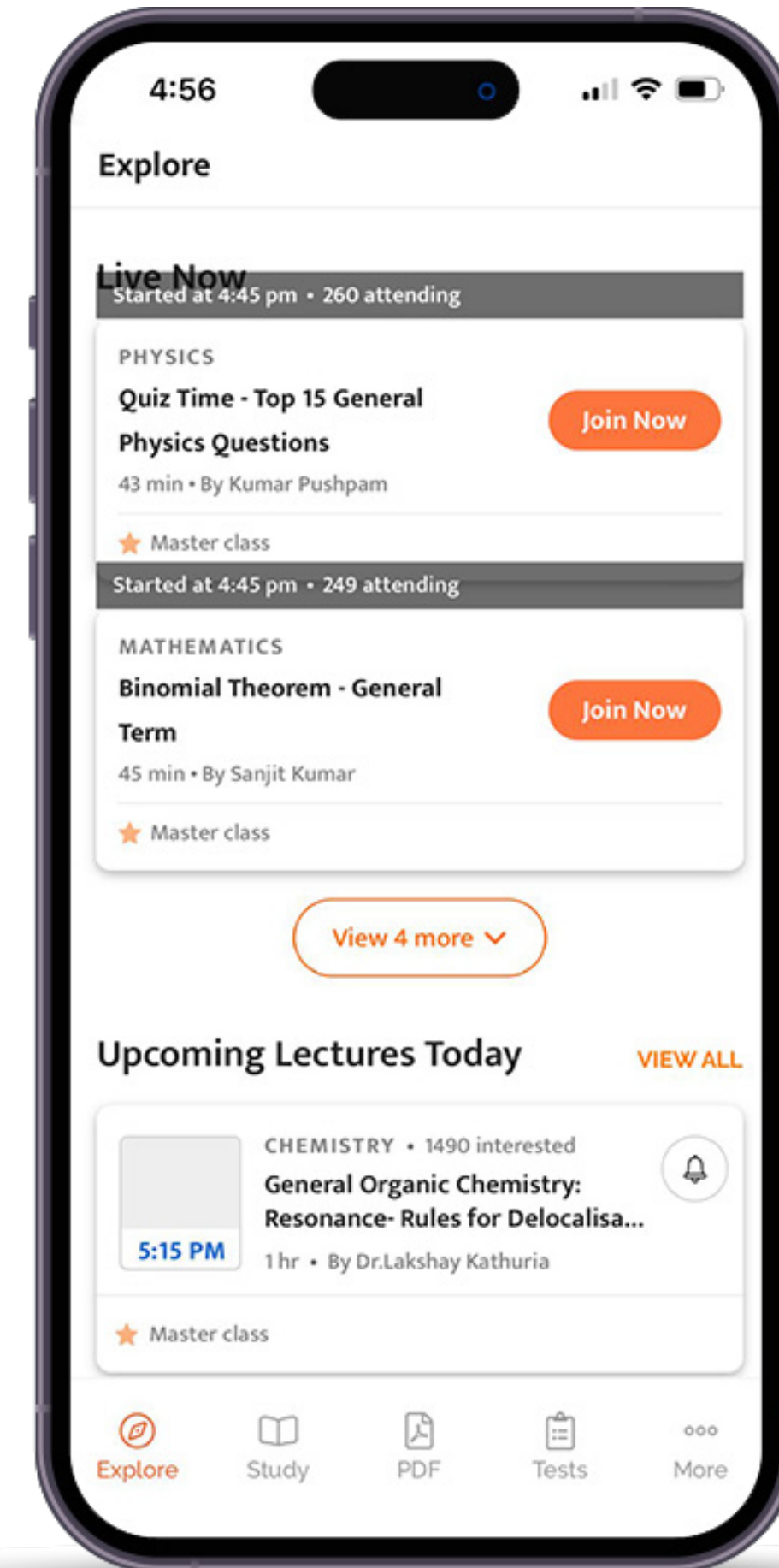
Red captures attention and stimulates urgency (sales, discounts) where as Orange signifies enthusiasm and excitement. Shopping apps like Amazon use these colors in their Primary buttons for creating a visually appealing and engaging shopping experience.



Education Industry

Preferred Colors:

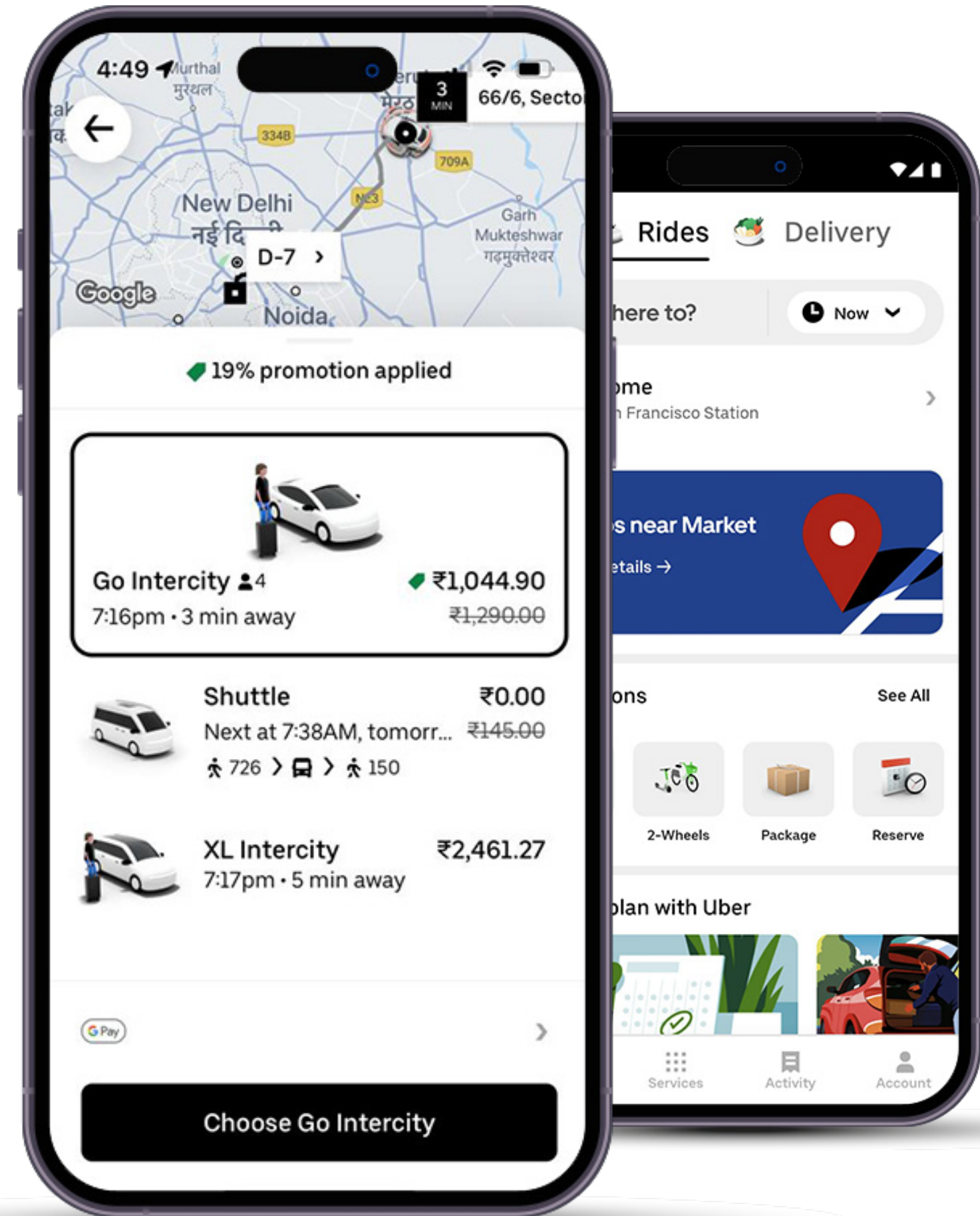
Yellow represents energy and intellect. Online Education platforms like Vedantu uses orange to signify enthusiasm and creativity. Unacademy uses Blue that promotes trust and intelligence.



Transportation and Logistics Industry

Preferred Colors:

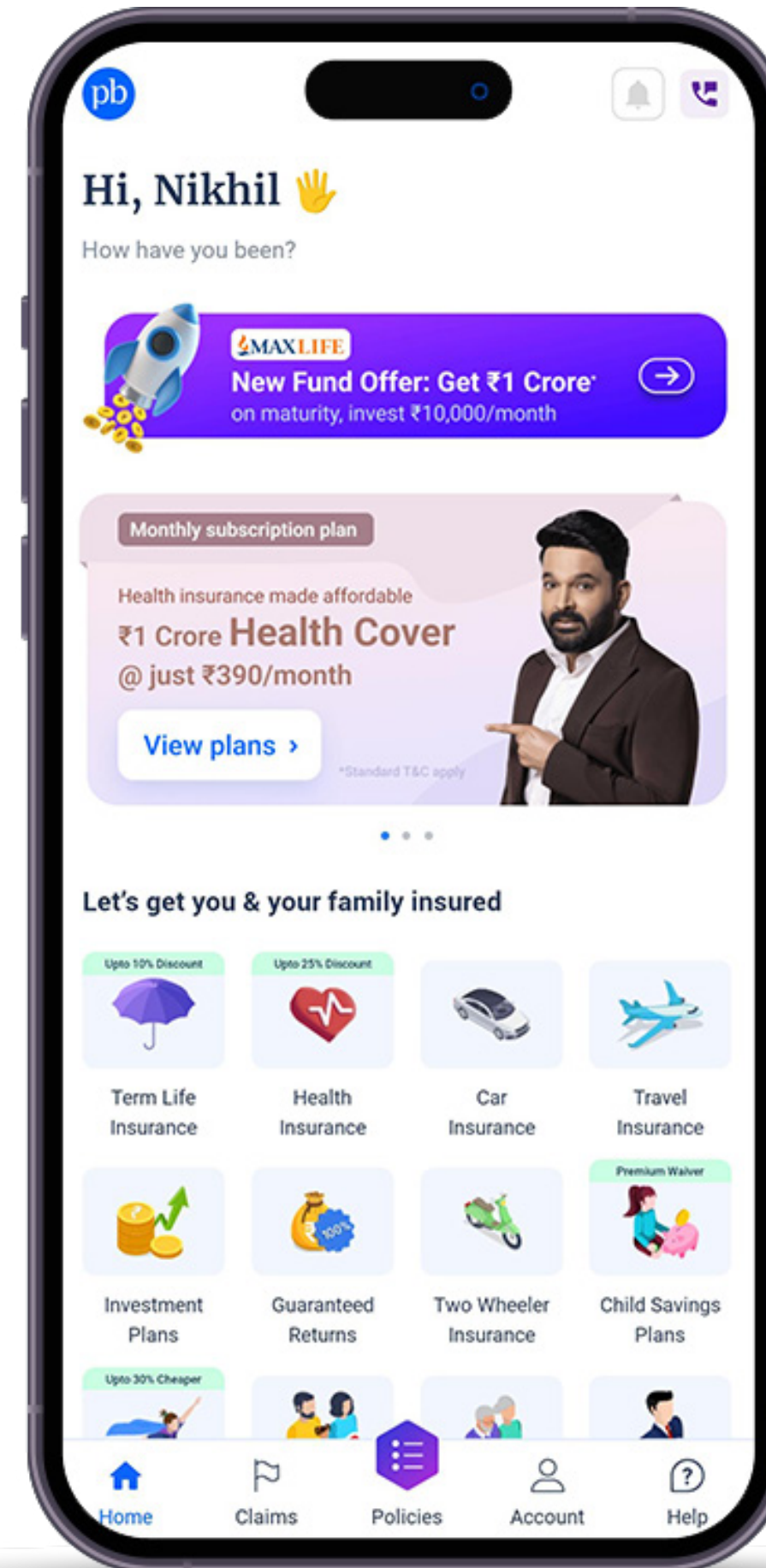
Dark Blue conveys professionalism and reliability, Yellow captures attention and indicates caution (used in taxi cabs), and Gray provides a neutral backdrop, emphasizing other important information. Apps like Uber uses these colors to create a sense of trust and safety for transportation services.



Finance Industry

Preferred Colors:

Soft and muted colors, such as pastel tones, cool blues, and greens, are strategically chosen to establish a serene ambiance in the financial sector. Apps like Policy Bazaar and Mint utilize blue, symbolizing stability and security, to foster trust and professionalism, while green represents growth and balance, encouraging confidence in financial decisions.



Beyond the Surface: A Holistic Approach to UI Design:

Effective UI design extends beyond aesthetics, prioritizing accessibility, legibility, and visual hierarchy for inclusive interfaces.

Accessibility in UI Design: The colors in UI must align closely with the central concept of accessibility, ensuring inclusivity for users of all abilities. Notably, approximately 8% of males and 0.5% of females globally experience color blindness. Neglecting their needs can result in challenges when interacting with online resources such as maps, charts, and forms. Designers should consider different types of color vision deficiencies, like red-green or blue-yellow color blindness, and purposefully select color palettes accommodating

these conditions. Tools like Color Blindness Check help identify and address potential challenges for users with color vision deficiencies. As underscored by Jason Baldridge in a pertinent post, solely relying on color cues for indicating states may not always suffice. For instance it's a good idea to always complement error messages with an icon, e.g., a large exclamation mark on a red background — right next to the error message. This highlights the critical importance of comprehensive accessibility considerations in interface designs.

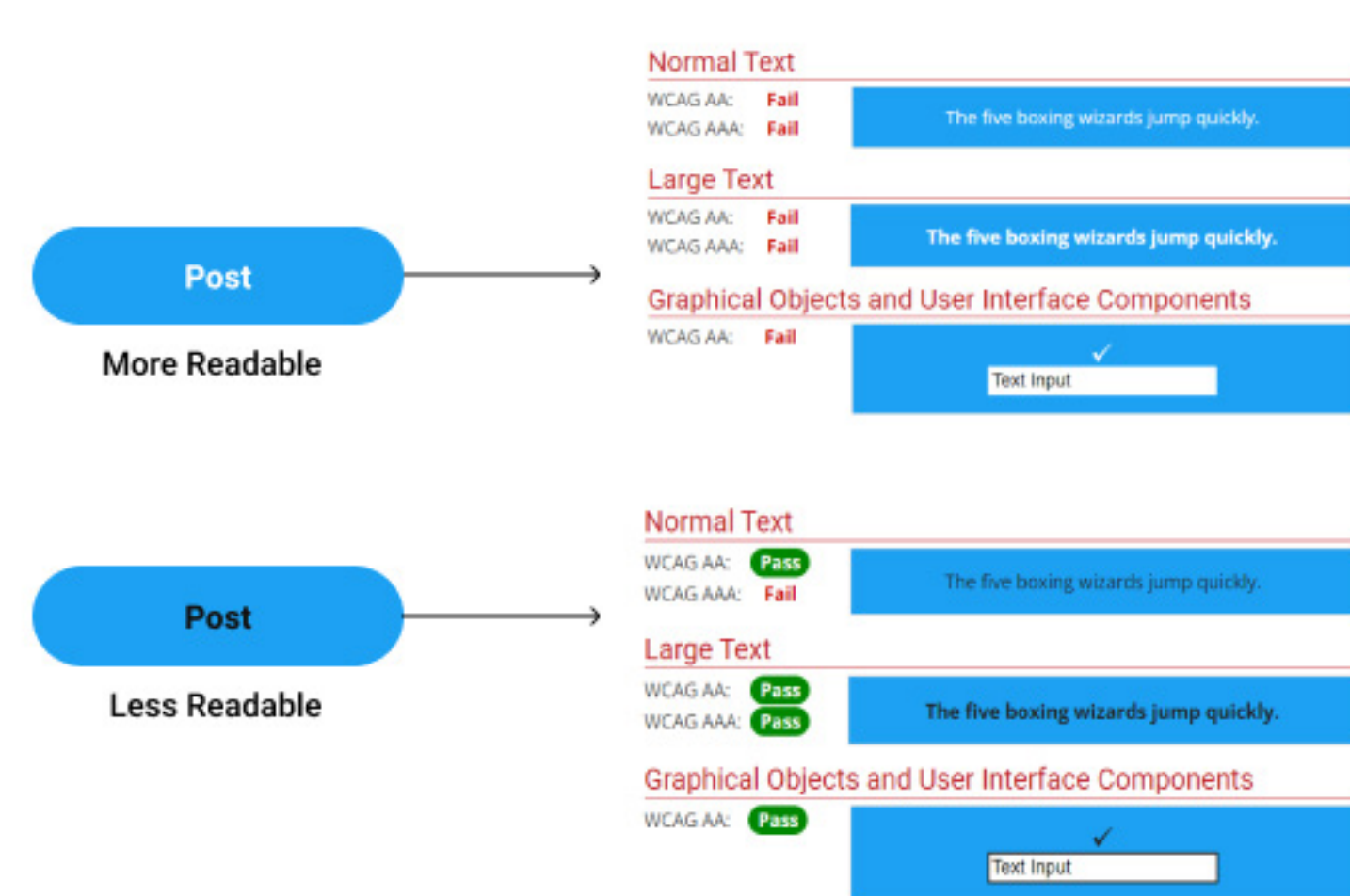


Contrast and Legibility:

Ensuring contrast ratios is vital for accessibility. Addressing contrast ratios is crucial for accessibility. Tools like Contrast Checker help designers ensure readability, even though real-world examples may challenge standard norms.

For instance, white text on a blue background may seem more readable to users, despite a contrast ratio of 2.82, which technically fails the requirement. In comparison, black text

achieves a ratio of 5.69, meeting the standards (O'Connor, 2019). Platforms like Twitter and Instagram use white text on blue, highlighting a practical contrast ratio paradox. The challenge arises from high brightness in both text and background, creating a low contrast. Design should prioritize what users see, not just follow rules. WCAG guidelines assist but mustn't replace real-world considerations.

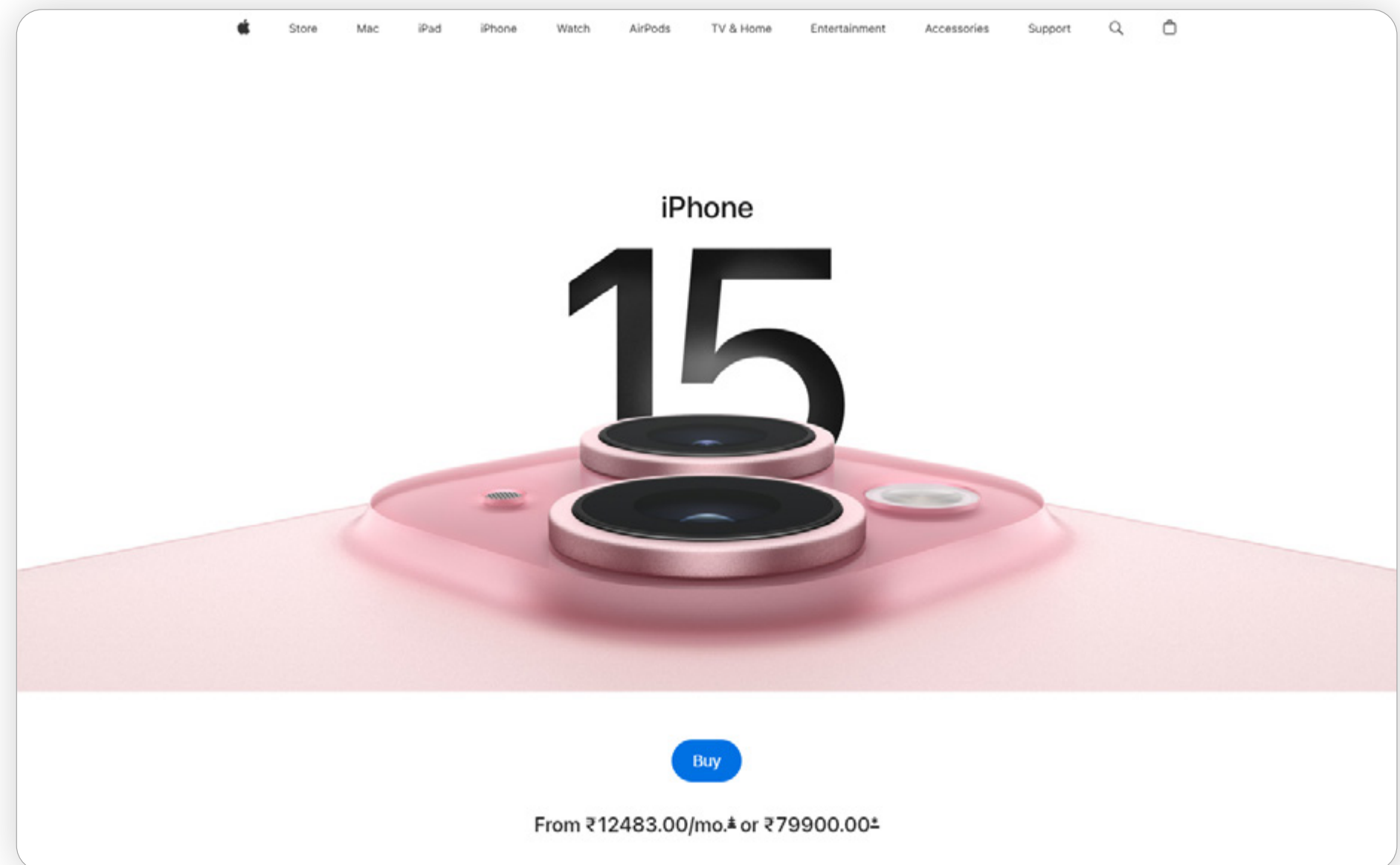


Visual Hierarchy:

In UI design, a strong visual hierarchy is essential for informing, impressing, and persuading users who have specific expectations about an interface's appearance. To thrive, websites, apps, or related products should strategically design their pages or screens, utilizing visual hierarchy to minimize uncertainty, convey empathy, and elevate the overall user experience with an aesthetically pleasing structure. The key building blocks of visual hierarchy include

size, color, space, contrast, alignment, repetition, proximity, and texture (IxDF, 2016).

An excellent illustration of effective visual hierarchy can be seen in Apple's website design. Size plays a pivotal role in capturing attention; larger elements, such as headlines and call-to-action buttons, are strategically emphasized to draw focus. This prioritization by scale enhances the overall user experience



Final Palette Thoughts

In conclusion, the strategic use of colors in user interface design goes far beyond aesthetics, deeply influencing users' emotions, perceptions, and interactions with applications. From fostering trust with calming hues to prompting action through vibrant tones, the artful incorporation of colors shapes user experiences and guides important decisions. As technology advances, the significance of color psychology becomes increasingly vital, ensuring inclusive, accessible, and emotionally resonant user interfaces. Here's a checklist for a UI designer, with an emphasis on color psychology and accessibility.

- ✓ **Understand Color Psychology:** Research and apply colors that align with desired emotions.
- ✓ **Brand Consistency:** Ensure colors match the brand identity and maintain consistency.
- ✓ **Contrast for Accessibility:** Prioritize accessible color contrast, especially for text.
- ✓ **Color Harmony:** Create harmonious color palettes for a cohesive look.
- ✓ **Cultural and Gender Considerations:** Be mindful of cultural interpretations of colors.
- ✓ **Emphasize Key Elements:** Use color to highlight important elements like calls-to-action.
- ✓ **Consistent Color Mapping:** Maintain a predictable mapping of colors to actions or meanings.
- ✓ **Accessibility through Color Alternatives:** Provide non-color visual indicators for accessibility.
- ✓ **Test for Color Blindness:** Check the interface for color blindness using simulations.
- ✓ **Balance and Simplicity:** Keep a balanced, simple color palette to avoid overwhelming users.

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