

THE INFLUENCE OF COLOR SOLUTIONS ON USER BEHAVIOR AND CHOICE IN THE DIGITAL ENVIRONMENT

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Annotation. The article analyzes the influence of color parameters of interfaces on behavioral strategies, emotional background, and users' decision-making mechanisms. The relevance of the study is due to competition for attention and the need for scientifically grounded design. Psychophysiological foundations of perception, visual hierarchy, and contextual variables (culture, accessibility, industry standards) are considered. Myths about universal «conversion» colors are debunked. The importance of a situational approach and empirical testing of hypotheses through A/B testing is justified. Practical recommendations are proposed for optimizing user experience and the effectiveness of digital products.

Keywords: UX/UI design, color perception, user behavior, conversion, digital environment, color psychology, neuromarketing, accessibility of interfaces, A/B testing.

Introduction. The color scheme in design goes beyond the purely visual component, representing a tool for influencing the human psyche and behavior. In a digital space where the user's attention is scattered and overloaded with information noise, a well-designed color palette can become a determining factor in product interaction. It influences the decision-making process, builds the level of trust in the brand and directs the focus of attention.

Color accents not only evoke specific emotional reactions, but also stimulate targeted actions. The key feature of color is the speed of its perception: it is processed by the brain instantly and subconsciously, even before the user begins to comprehend the content. In addition, it is necessary to take into account the technical variability of color reproduction: different display matrices, calibration settings, and color gamut (sRGB, P3) can significantly distort the perception of hue on users' devices.

This requires the designer to set additional design tolerances so that key meanings are not lost when playing on budget or non-standard screens. Despite the recognized importance of the color factor, there is a significant dissonance between established stereotypes and objective scientific data in the professional environment of designers and marketers.

There is a widespread belief in the existence of universal «conversion» shades (for example, warm colors), which supposedly guarantee an increase in performance, while other colors (in particular, blue tones) are considered less effective or reduce activity.

Nevertheless, the results of empirical studies are often contradictory, which indicates the multifactorial nature of the influence of color, depending on the totality of contextual variables, rather than on the properties of the shade itself [3].

Main part. The psychology of color explores the patterns of the effect of color stimuli on emotional state, behavioral reactions and decision-making processes. In the field of user interface design, this area is becoming particularly relevant, since the visual shell of the product acts as the primary channel of communication with the audience.

The perception of the color scheme is variable and depends on many modulating factors: the cultural context, the demographic characteristics of users, and the specifics of the task [5]. For example, the blue color may be associated with reliability in the financial sector, but it may be perceived as excessively cold or detached in the tourism niche, which is determined by the overall tonal decision and goal setting of the resource.

Special attention should be paid to the functional semantics of color, which often prevails over the emotional ones in utilitarian interfaces. Well-established patterns, such as red to indicate errors, green to confirm success, or yellow for warnings, form stable reflexes in users. Violating these conventions for the sake of aesthetics leads to disorientation and increases the risk of making mistakes [1].

The color scheme plays a key role in shaping the initial impression. If the palette is randomly selected – the background, buttons, and icons do not harmonize with each other – the interface can be annoying, confusing, or seem incomplete. The user has to spend more time figuring out where he is and what to do next. This means that there is a growing risk that he will simply close the page and leave [3].

Color psychology is a key tool in interface design, shaping user perception and behavior. By understanding how hues influence emotions and decisions, designers can strategically guide attention, reinforce brand identity, and improve conversions [2]. While individual responses vary, research highlights consistent patterns tied to biology, culture, and context. Here's how primary colors function in digital design:

Red is the color of energy and urgency. It attracts attention and encourages action, which is why it is often used for CTA buttons and promotional offers.

Blue is associated with reliability, calmness and professionalism. The standard choice for corporate websites, banks, and legal services.

Green – symbolizes nature, health and safety. It soothes, reduces anxiety, and is often used in eco-related activities and to confirm actions.

Yellow is the color of optimism and activity. It stimulates attention and mental work, but requires dosed use so as not to cause visual stress.

Orange – combines the energy of red and the positivity of yellow. The orange color is used to create a sense of friendliness and enthusiasm. It is also effective in e-commerce for highlighting important elements.

Purple is associated with creativity, luxury and spirituality. Suitable for brands in the fields of fashion, art and premium services.

Black and white are the base colors for contrast and structure. Black adds elegance and weight, white adds «air», purity and helps to focus on the content.

Nuance: It should be borne in mind that the psychological impact depends not only on the hue, but also on its saturation and brightness. Pastel blue is perceived as soft and friendly, whereas deep navy blue may seem strict and authoritarian.

Neon evokes associations with technology and drive, but it quickly tires.

Therefore, when choosing a color, it is necessary to test different saturation options within the same scale in order to find a balance between emotional message and visual comfort [4].

It is important to remember that the meaning of a color always depends on the context, combinations, and target audience – there are no universal rules.

The first step in building a color scheme is to choose a shade. The most important aspect is the proportional ratio of the color spots, which determines the visual hierarchy of the interface. The «60-30-10» rule is common in the professional environment, adapted to digital products:

1 60% is the primary color. As a rule, a neutral background provides «air» and readability of the content.

2 30% is a secondary color. The brand range used for navigation, headings, and illustrative elements that form recognition.

3 10% is an accent color. The most contrasting shade, reserved exclusively for key interaction elements (CTA buttons, notifications, active states). Violation of this proportion, for example, excessive use of accent color, leads to the effect of «visual noise», reducing the user's ability to prioritize tasks and increasing cognitive load.

The consistency of the color scheme across platforms is also critically important.

The user expects a single visual language when switching from the desktop version to the mobile application. Discrepancies in the shades of buttons or backgrounds between platforms undermine the sense of product integrity and can be perceived as a technical error or negligence.

Modern design standards require accessibility to be considered as an integral part of the color scheme. Statistics show that a significant proportion of users have various forms of color blindness, so relying solely on color as a way to convey information is unacceptable. Key requirements include:

1 Sufficient contrast. The brightness ratio of text and background must comply with WCAG (Web Content Accessibility Guidelines) standards to ensure readability for people with low vision.

2 Signal duplication. Errors in forms, system statuses, or interactive elements should not be indicated only by changing colors. It must be duplicated with icons, text captions, or a change in the shape of the element.

Returning to the question of the effect of color on conversion, it should be emphasized that there is no shade that guarantees success without prior verification. The effectiveness of a particular color scheme depends on a unique set of variables: audience expectations, previous experience with the product, and the overall context of the page.

The statement about the superiority of one color over another (for example, «a red button is better than a green button») is a simplification. Color does not work in isolation, but in a system of surrounding elements.

The only objective way to evaluate the effectiveness of the palette is A/B testing, which allows you to validate hypotheses on real user behavior data [5]. What works for one segment of the audience or niche may not be effective for another, which confirms the thesis of multifactorial perception of color.

When conducting tests, it is important to isolate variables: change only the shade of an element, leaving its size, copywriting, location and environment unchanged. Only this approach allows us to obtain pure data on the effect of color, excluding side factors that could distort the overall conversion statistics [2].

Conclusion. To summarize, it should be stated that the color scheme in digital design is a complex multilevel system where aesthetics are inextricably linked with functionality and psychology of perception. Color is no longer just a decorative element of the product's «packaging», becoming a full-fledged user experience engineering tool. It is able to instantly translate brand values, modulate the user's emotional state and direct their attention to key growth points, but its impact is not linear or universal.

A competent color strategy is based on a careful balance between subjective psychological associations, objective technical accessibility requirements and dry analytical data.

The designer acts as a researcher who must take into account not only visual style trends, but also the physiological characteristics of audience perception, ensuring an inclusive environment for all user groups. Ignoring the principles of contrast or reliance on stereotypical «conversion» colors without prior validation can negate efforts to develop a functional interface.

In an ever-evolving digital landscape, where new types of devices, display modes (for example, a dark theme) and interaction formats are emerging, the role of color will only increase.

However, the true effectiveness of the palette is not revealed in isolation, but in a harmonious combination with usability, content quality and information architecture.

A successful design is one where color works unnoticeably for the user, but precisely achieves business goals, creating an environment that is both convenient, trusting and encouraging to action. Therefore, the key task of a specialist remains not to find the «perfect shade», but to build an integrated system adapted to the specific tasks of the product and human needs [4].

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