Enhancing Patient Experience through UX Design in Digital Healthcare Business Platforms: A Review

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Abstrak

Platform bisnis perawatan kesehatan digital telah muncul sebagai alat penting dalam perawatan kesehatan modern, didorong oleh kebutuhan untuk meningkatkan pengalaman pasien melalui strategi desain yang inovatif. Seiring dengan beralihnya perawatan kesehatan ke solusi digital, pemahaman tentang bagaimana desain pengalaman pengguna (UX) memengaruhi keterlibatan pasien menjadi sangat penting. Studi ini secara sistematis meninjau literatur yang ada tentang pengalaman pasien melalui desain UX dalam platform bisnis perawatan kesehatan digital. Studi ini mengikuti protokol PRISMA dan menggunakan pendekatan tinjauan literatur sistematis (SLR). Data dikumpulkan dari dua basis data akademis utama, Scopus dan Google Scholar, menghasilkan 31 dokumen relevan untuk dianalisis. Tinjauan ini menyoroti beberapa tema inti yang membentuk pengalaman pasien, termasuk keterlibatan emosional melalui elemen desain, aksesibilitas dan inklusivitas dalam desain UX, integrasi AI untuk personalisasi, dan peran telemedicine dalam memfasilitasi komunikasi yang lancar. Tema tambahan yang diidentifikasi meliputi mekanisme umpan balik untuk peningkatan berkelanjutan, mempromosikan literasi kesehatan melalui desain, menjaga privasi dan keamanan, dan meningkatkan interaktivitas melalui gamifikasi. Studi ini juga membahas aplikasi spesifik seperti UKM di industri kreatif, kerangka kerja akuntansi keuangan daring, dan desain partisipatif dalam pengembangan aplikasi kesehatan digital. Temuan ini memberikan wawasan tentang bagaimana desain UX dapat meningkatkan interaksi pasien dengan platform perawatan kesehatan digital secara signifikan. Dengan mengintegrasikan elemen emosional dan interaktif, bisnis perawatan kesehatan dapat mendorong keterlibatan, kepuasan, dan kepatuhan jangka panjang pasien terhadap praktik perawatan kesehatan.

Kata kunci

Bisnis kesehatan; Desain UX; Kecerdasan Buatan; Pengalaman pasien; Wahana digital

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Abstract

Digital healthcare business platforms have emerged as essential tools in modern healthcare, driven by the need to enhance patient experience through innovative design strategies. Understanding how user experience (UX) design impacts patient engagement becomes crucial as healthcare shifts toward digital solutions. This study systematically reviews the literature on patient experience through UX design within digital healthcare business platforms. The study follows the PRISMA protocol and employs a systematic literature review (SLR) approach. Data were collected from two major academic databases, Scopus and Google Scholar, yielding 31 relevant documents for analysis. The review highlights several core themes that shape patient experience, including emotional engagement through design elements, accessibility and inclusivity in UX design, AI integration for personalization, and the role of telemedicine in facilitating seamless communication. Additional themes identified include feedback mechanisms for continuous improvement, promoting health literacy through design, maintaining privacy and security, and enhancing interactivity through gamification. The study also addresses specific applications such as SMEs in the creative industry, online financial accounting frameworks, and participatory design in digital health application development. The findings provide insights into how UX design can significantly enhance patient interactions with digital healthcare platforms. Healthcare businesses can foster patient engagement, satisfaction, and long-term adherence to healthcare practices by integrating emotional and interactive elements.

Keywords

AI; Digital platform; Healthcare business; Patient experience; UX design

Introduction

The digital healthcare business platforms area has witnessed significant growth and development in recent years, primarily propelled by rapid technological advancements and increasing demand for accessible health services. Healthcare businesses on online platforms based on business intelligence play a crucial role (Purnomo *et al.*, 2024). This evolution reflects a broader trend toward digital transformation within the healthcare industry, where traditional service delivery models are being redefined through emerging digital solutions. Studies indicate that adopting digital platforms in healthcare facilitates operational efficiency and enhances the accessibility and quality of services delivered to patients (Kouroubali, Kondylakis and Katehakis, 2021). As digital technologies continue to reshape business paradigms globally based on business analytics (Asitah *et al.*, 2024), understanding their implications within the healthcare sector becomes imperative for practitioners and researchers alike (Amirova *et al.*, 2021).

Research on patient experience through user experience (UX) design has emerged as a critical area of focus in enhancing the efficacy of digital healthcare platforms. UX design emphasizes creating user-friendly, aesthetically pleasing systems that meet patients' diverse needs (Schiavone *et al.*, 2020; Risqiyah, Mu'min and Saputro, 2024). Previous studies have revealed a correlation between effective UX design and improved patient engagement, satisfaction, and treatment adherence, highlighting the importance of creating a positive user experience in digital healthcare settings (Kouroubali, Kondylakis and Katehakis, 2021). By designing platforms prioritizing user interactions, healthcare providers can ensure critical health information is accessible and easily navigable, ultimately enhancing the overall patient experience (Liu *et al.*, 2023).

The urgency for prioritizing patient experience through UX design in digital healthcare business platforms cannot be understated. With the rising integration of these platforms based on big data in entrepreneurship (Anggono and Purnomo, 2024) and during the COVID-19 pandemic, the demand for improved patient interactions has grown significantly (Kouroubali, Kondylakis and Katehakis, 2021). Healthcare organizations face increasing pressure to adapt to these changes, necessitating thoughtful implementation of UX design strategies that foster patient satisfaction and loyalty (Poonsuph, 2022). As digital platforms assume an ever-expanding role in healthcare delivery, aligning UX design

efforts with patient experience becomes crucial for maximizing healthcare outcomes and ensuring service excellence (Sharma, 2023; Maulana, Adi, *et al.*, 2024).

Examining the systematic literature review (SLR) method presents substantial opportunities for advancing the field of patient experience through UX design in digital healthcare business platforms. The SLR method allows researchers to synthesize existing evidence, identify gaps in the literature, and establish a comprehensive understanding of the subject matter (Shenkoya, 2022). By systematically analyzing various studies and integrating findings, this approach offers a robust framework for uncovering insights that can inform strategic enhancements in platform design and functionality (Eisape, 2022). Applying the SLR method within this context can lead to a richer understanding of how UX design influences patient experience across digital healthcare platforms (Santoso and Purnomo, 2024).

Previous studies on patient experience through UX design in digital healthcare business platforms have utilized various research methods, contributing to our understanding of this vital field. Erola et al. conducted a qualitative study exploring children's patient experiences with a mobile hospital clowning application. This approach allowed for the in-depth collection of user experiences and opinions, providing rich qualitative data. Still, it limited the ability to generalize findings due to the small sample size typical of qualitative research (Erolà *et al.*, 2023). Similarly, Fucà et al. implemented a pilot study using usability testing to evaluate a digital platform for neuropsychiatry services, obtaining high patient and clinician usability scores (Fucà *et al.*, 2021). The advantage of usability testing lies in its ability to identify specific design flaws; however, it often lacks a broader contextual understanding of user experiences.

In contrast, Takano et al. employed a systematic review method to assess the user experiences of older adults with digital health technologies. This comprehensive technique allowed for synthesis across multiple studies; however, it may not capture nuances in individual user experiences (Takano *et al.*, 2023). Another notable research by Katirai et al. utilized an exploratory approach to highlight patient and public perceptions of artificial intelligence in healthcare, offering insights into user expectations (Katirai *et al.*, 2023). While exploratory studies are beneficial for identifying new areas of investigation, they often face limitations in depth and replicability. Lastly, Siemer et al. conducted qualitative research through in-depth interviews to analyze patients' experiences with blended treatment approaches, which provided rich descriptive insights but was constrained by potential biases inherent in qualitative methodologies (Siemer *et al.*, 2020).

Despite these advancements, a significant research gap remains concerning integrating these various UX design strategies tailored to diverse populations within digital healthcare business platforms. Existing studies often focus on isolated design elements or demographic groups without comprehensively addressing how these elements enhance patient experience across multiple contexts.. This study aims to bridge these gaps by investigating the existing literature on patient experience through UX design in digital healthcare business platforms. This research ultimately contributes to a more user-centered approach to digital healthcare business platforms.

Method

This study employs the Systematic Literature Review (SLR) methodology to investigate the development of literature on enhancing patient experience through UX design in digital healthcare business platforms. The SLR approach was chosen to ensure a structured and comprehensive analysis of existing research, following a transparent and reproducible process (Abdhala and Purnomo, 2024).

Protocol and Framework

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) protocol guides the SLR process. PRISMA was selected because it is widely recognized for its rigor and clarity in reporting systematic reviews. Its structured four-phase flow diagram (identification, screening, eligibility, inclusion) enhances the transparency of the selection process, minimizing the risk of bias (Liberati *et al.*, 2009). PRISMA's standardized approach makes it particularly suitable for synthesizing and analyzing research in the interdisciplinary domain of digital healthcare business platforms.

Data Sources and Search Strategy

The primary data sources include Scopus and Google Scholar. Scopus was chosen due to its comprehensive coverage of peer-reviewed journals and high-quality conference proceedings, ensuring access to reputable and impactful research. Google Scholar complements this by providing broader access to gray literature, dissertations, and additional scholarly documents that may not be indexed in Scopus. Combining these databases allows for thoroughly capturing relevant studies while balancing academic rigor and inclusiveness.

Search commands utilize specific keywords and their synonyms to ensure comprehensive retrieval. Keywords include UX, Healthcare Business, Digital Platform, and Patient Experience. Boolean operators (AND, OR) refine the search process, combining keywords and synonymous phrases to maximize the retrieval of pertinent studies (Abdhala and Purnomo, 2024).

Inclusion and Exclusion Criteria

Selection criteria include the following:

- Peer-reviewed journal articles and conference papers.
- Documents published between 2020 and 2025 to capture the most recent advancements.
- Full-text availability to facilitate in-depth analysis.
- Studies written in English to maintain consistency in interpretation.
- Articles that specifically address the intersection of UX design and patient experience within digital healthcare business platforms.

The exclusion criteria are:

- Articles lacking empirical data or a clear focus on UX design in healthcare business platforms.
- Duplicate publications.
- Non-peer-reviewed documents, editorials, opinion pieces, and abstracts without full text.

Data Extraction and Synthesis

Data extraction follows a predefined form that captures essential information, including publication year, authorship, research methods, UX design elements, patient experience metrics, and key findings. Each selected article is systematically coded to identify recurring themes and patterns. This structured approach ensures consistency and accuracy in the synthesis of findings.

Analytical Approach

A descriptive analysis examines how UX design elements influence patient experience within digital healthcare business platforms (Santoso and Purnomo, 2024). The analysis aims to identify trends, highlight effective design strategies, and discuss the evolution of UX practices in healthcare business settings. Analyzing UX elements in the context of patient engagement and satisfaction enables a holistic understanding of their impact.

Research Question

This review's primary research question is: How can UX design elements enhance patient experience on digital healthcare business platforms?

By addressing this question, the study aims to contribute to the ongoing discourse on improving healthcare service quality through strategic UX design, providing insights for developers, healthcare managers, and policymakers.

Result and Discussion

The results and discussion of the research enhancing patient experience through UX design in digital healthcare business platforms using the systematic review method are as follows and can be seen in Figure 1 below.

Figure 1. Patient Experience through UX Design in Digital Healthcare Business Platforms

1. Emotional Engagement Through Design Elements

UX design elements that evoke positive emotional responses can dramatically enhance patient experiences on digital healthcare platforms. As indicated by Asadi et al., incorporating aesthetic and interactive designs can foster emotional connections with users, leading to improved patient satisfaction and engagement (Asadi, P Akinremi and Said, 2024). Furthermore, Huai's research underscores the significance of emotional well-being in patient interaction and healthcare technologies, suggesting that designs promoting positive emotions are essential in mental and physical healthcare settings (Huai, 2023). The work by Sreejesh et al. elucidates the concept of spatial presence and geographic information system in digital healthcare settings, emphasizing that feelings of connection can lead to enhanced service experiences, particularly in environments where technology interacts closely with patient care (Sreejesh, Sarkar and Sarkar, 2022; Rachman, Lisdiyanto and Pramana, 2024). Therefore, creating a design that resonates emotionally with patients not only aids in delivering care but also fosters trust and rapport between patients and healthcare providers.

2. Accessibility and Inclusivity in UX Design

A fundamental aspect of UX design that can significantly enhance patient experiences is the focus on accessibility and inclusivity. This is particularly crucial as healthcare increasingly transitions to digital formats that must cater to diverse patient groups, including those with disabilities. Research conducted emphasizes that without adequate accessibility features, digital healthcare services will limit their reach and efficacy. Moreover, Zakkar et al. explore the influence of healthcare service quality on patient experiences, reinforcing that enhanced accessibility can improve patient satisfaction (Zakkar, Meyer and Janes, 2021). Understanding demographic variations in user interactions with digital platforms is essential. As examined by Esfahani and Sareh, designing healthcare wearables that consider gender-specific needs can lead to a more engaging and satisfactory user experience (Esfahani and Sareh, 2021). This gender-aware design approach

can be implemented across all digital health platforms to ensure they resonate with and are usable by many patients, ultimately leading to improved engagement and health outcomes.

3. Integration of Artificial Intelligence for Personalization

Integrating artificial intelligence (AI) into digital healthcare platforms is a transformative UX design element, enriching the patient experience through personalization. By leveraging AI, healthcare providers can offer tailored care pathways, adapt communication styles, and provide reminders based on individual patient data (Maulana, Lestari, *et al.*, 2024; Nurina *et al.*, 2024). The systematic review by Lee and Yoon highlights how AI-based technologies positively influence healthcare delivery, emphasizing personalization to enhance patient engagement (Lee and Yoon, 2021). This capability to cater to unique patient needs can lead to better adherence to treatment plans and overall satisfaction with healthcare services. Furthermore, Richardson et al. propose a framework for understanding patient attitudes toward AI in healthcare, revealing that positive interactions with AI can enhance willingness to engage with healthcare services (Richardson *et al.*, 2022). Integrating AI can thus increase efficiency and lead to a more satisfactory user experience.

4. Telemedicine Platforms and Seamless Communication

Incorporating telemedicine capabilities with effective UX design is crucial for advancing patient experiences, especially during the COVID-19 pandemic (Lestari *et al.*, 2024). The narrative review by Kichloo et al. discusses how the sudden shift to telemedicine necessitated designing platforms that facilitate seamless communication between patients and healthcare providers, enhancing patient access to care (Kichloo *et al.*, 2020). As healthcare adapts to this model, ensuring that these platforms are straightforward to navigate becomes increasingly necessary. Research by Ocampo et al. highlights user perceptions of telemedicine technologies, indicating that effective communication processes are paramount in shaping patient satisfaction (Ocampo *et al.*, 2022). Patient experience is enhanced when telemedicine platforms facilitate real-time interactions, fostering clarity in communication and a sense of connection.

5. Feedback Mechanisms for Continuous Improvement

Establishing robust feedback mechanisms within digital healthcare platforms is instrumental in evolving UX design elements that cater to patient needs. Incorporating user feedback loops enables healthcare providers to gather insights into how patients interact with digital interfaces and their grievances. As pointed out by Kim et al., understanding patient feedback leads to identifying areas for improvement, which is essential for ensuring that healthcare services remain effective (Kim, Park and Kim, 2022). Additionally, the systematic review by Gualandi et al. emphasizes the critical role of patient-reported outcomes in shaping service delivery (Gualandi *et al.*, 2021). Design iterations based on real-world patient feedback can enhance user satisfaction and lead to more effective implementation of healthcare services.

6. Promoting Health Literacy through Design

The design of digital healthcare platforms must account for health literacy, as understanding health information is crucial for patient engagement. Beccia et al. highlights the need for clear, easily interpretable information to facilitate effective patient-provider dialogues (Beccia *et al.*, 2023). Effective UX design should reduce complexity, allowing patients greater comprehension of their health information and care pathways. Moreover, enhancing health literacy through informative UX design can empower patients to make better-informed health decisions. Digital healthcare platforms must integrate resources that educate patients about their conditions and treatments (Lee and Yoon, 2021).

7. Maintaining Privacy and Security in UX Design

As digital healthcare platforms become more prevalent, maintaining user privacy and security through effective UX design is vital for patient trust and engagement. Alhur's literature review notes that as healthcare adopts more technologies, issues related to cybersecurity and privacy become primary concerns for patients (Alhur, 2024). Designing user interfaces prioritizing transparent data handling and robust security measures will enhance patient confidence in utilizing these digital tools. Additionally, incorporating user feedback regarding privacy concerns into the design process

can address specific anxieties related to data security. This proactive approach can significantly enhance patient experiences on digital healthcare platforms, supported by findings from Virgilio et al., who discuss the critical role of user trust in adopting health technologies (Richardson *et al.*, 2021).

8. Interactivity and Engagement through Gamification

Utilizing gamification strategies within digital healthcare platforms can significantly enhance patient engagement. As noted by Omaghomi et al., interactive elements that reward patients for participating in their healthcare routines can boost motivation (Toritsemogba *et al.*, 2024). Gamification can transform tasks such as medication reminders into engaging activities, improving patient experiences and health outcomes. Such strategies have been successfully implemented in digital health interventions, demonstrating improved user engagement when healthcare applications incorporate game-like elements (Islam, 2024). Healthcare providers can leverage interactivity principles by designing user interfaces to retain these features and cultivate a more enjoyable user experience.

9. SMEs in the Creative Industry

User experience (UX) design elements can significantly enhance patient experiences on digital healthcare platforms, particularly from the perspective of small and medium enterprises (SMEs) within the creative industry (Aryanto *et al.*, 2024). Effective UX design promotes user-centered using business model interfaces that align closely with the needs and preferences of patients, thereby making healthcare more accessible and engaging (Aryanto *et al.*, 2023). SMEs often excel at innovation and agility, enabling them to incorporate dynamic design strategies that prioritize emotional resonance and intuitive navigation, which are critical in healthcare settings (Sudirjo *et al.*, 2024). For instance, using color psychology and interactive elements can create a calming therapeutic atmosphere for patients, fostering a sense of comfort and security while navigating their healthcare journeys. Additionally, incorporating feedback loops through collaborative design processes can ensure that patient voices are heard and integrated into the development of digital platforms, ultimately leading to higher satisfaction and adherence (Vardanyan *et al.*, 2024). Thus, SMEs in the creative industry can leverage their expertise in UX design to improve usability and enhance the emotional and psychological aspects of patient interactions with digital healthcare systems, creating holistic experiences that promote better health outcomes (Karmagatri *et al.*, 2024).

10. Online Financial Accounting Framework

UX design elements can significantly enhance patient experience on digital healthcare platforms from the perspective of an online financial accounting framework (Candratio *et al.*, 2024). By integrating intuitive navigation and clear informational hierarchies, platforms can facilitate smoother transactions related to billing, insurance claims, and financial consultations (Kirsch *et al.*, 2024). For instance, visually engaging dashboard interfaces that align with user expectations can increase patients' understanding of their healthcare budgets, empowering them to make informed decisions. Moreover, features like real-time notifications and reminders for payment deadlines can help patients manage their healthcare expenses more effectively, reducing anxiety associated with financial management. Additionally, implementing secure digital signatures to enhance transaction safety establishes trust and streamlines the financial workflow, improving overall user satisfaction (Azni *et al.*, 2024). Thus, financial accountability and transparency in the platform's design can create a more user-friendly environment, ultimately leading to a better patient experience.

11. Cohesion Between Functional and Aesthetic Design

Designing for both function and aesthetics is crucial in the healthcare context. As noted in Ghani's work, establishing a practical user experience requires digital tools that not only perform their essential functions but also engage the user (Ghani, 2020). For example, a well-designed app promoting mental health would benefit from a user-friendly interface that combines simplicity with inviting colors and layout; this approach can lead to improved adherence to

care protocols and personal health management. Moreover, Zhang et al. present findings that underline the necessity for continual refinement in design and development to ensure acceptability and usability across different patient populations, particularly in mental health applications (Zhang *et al.*, 2021). A cohesive design that fuses function with aesthetics ensures that users can utilize the app effectively and feel positively engaged with its appearance.

12. Participatory Design in Digital Health Application Development

Participatory design principles can significantly enhance the user experience by incorporating diverse stakeholders' perspectives, including patients, healthcare professionals, and designers. The systematic mapping proposed by Pernencar et al. articulates a methodology tailored to digital health apps that emphasizes the importance of understanding user needs and experiences in developing effective healthcare solutions (Pernencar *et al.*, 2022; Cenderadewi *et al.*, 2024). This approach ensures that applications are not only practical but also resonate on an emotional level with patients. The research conducted by Nasir et al. further demonstrates that culturally relevant design elements enhance patient acceptance and usability of health services among Indigenous Australians, showcasing the potential benefits of adapting applications to local contexts and cultural preferences (Nasir *et al.*, 2025). Such culturally attuned UX design is crucial for fostering trust and engagement in diverse patient populations.

Limitation

This study is limited to using secondary data sources derived from scientific articles, books, and related publications from the scientific databases Scopus and Google Scholar.

Conclusion

The systematic literature review highlights the pivotal role of UX design in enhancing patient experiences within digital healthcare business platforms. The study identifies key elements such as emotional engagement, accessibility, AI-driven personalization, telemedicine integration, and continuous feedback as fundamental to improving user satisfaction. Incorporating gamification, promoting health literacy, and ensuring data privacy were also crucial components. By leveraging these design principles, healthcare providers can foster more meaningful and effective patient interactions, ultimately improving healthcare outcomes.

The findings underscore the importance of a holistic approach to UX design that considers functionality and the emotional and social dimensions of patient engagement. Digital healthcare platforms must prioritize user-centric strategies that cater to diverse patient needs while integrating innovative technologies to enhance care delivery. Incorporating patient feedback mechanisms ensures the platform's adaptability to evolving user expectations and healthcare demands. Addressing privacy concerns through transparent data handling further strengthens patient trust and engagement.

Future research should focus on longitudinal studies to assess the sustained impact of UX design improvements on patient outcomes. Exploring the integration of emerging technologies, such as augmented reality and machine learning, could reveal new opportunities for enhancing patient experience. Additionally, investigating SMEs' specific challenges in adopting advanced UX practices in healthcare business platforms can provide insights into fostering more inclusive digital healthcare ecosystems.

Conflict Interest

No potential conflicts of interest are relevant to this systematic literature review article.

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