
UX Audit: A Comprehensive Review of Methodologies and Best Practices for Evaluating User Experiences

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ABSTRACT

User experience (UX) is crucial to modern-day digital products and services. A UX audit evaluates the UX of an application, website, or digital product by analyzing user data, conducting heuristic evaluations, and identifying areas for improvement. This review paper aims to outline UX audits, including their benefits, key components, and steps involved in the process. The research also discusses the importance of using empirical data in UX audits and how to measure the success of a UX audit. Additionally, the paper highlights UX auditors' challenges and provides recommendations for overcoming them.

Keywords - UX audit, User experience, Digital products, Heuristic evaluations, Empirical data.

1. Introduction

Defining User Experience (UX) in a way that is widely accepted is a problem that is well known, but it continues to be challenging to solve. The definition provided by ISO 9241-201, UX is defined as "A person's perceptions and responses that arise out of use and anticipated utilization of a product, system, or service." The article notes that UX "includes all the users' emotions, beliefs, preferences, perceptions, physical and psychological responses, behaviours, and achievements that occur prior, during, and after use." The user's internal and physical state as a result of prior experiences, attitudes, skills, and personality, as well as the context of use, all impact user experience (UX). Other aspects that impact UX include the brand image, functionality, performance of the system, interactive behaviour, and assistive abilities of the interactive system.

UX is a user's overall experience when using a product or service, including their emotions, attitudes, and behaviours (Norman D. A., 2013). The success of a product or service is directly impacted by the user experience (UX), which has grown in importance as an element of product development. A positive UX increases user satisfaction and loyalty, while a harmful UX can result in frustration and disengagement.

A UX audit is a method of evaluating the effectiveness of a product or service's effectiveness in meeting its users' needs. The following are some general steps in conducting a UX audit explained by (Kujala & Kaasinen, 2018); (Lazar, Feng, & Hochheiser, 2017):

1. **Define the scope and goals of the audit:** Identify the product or service to be audited, the specific aspects of the user experience to be evaluated, and the desired outcomes of the audit.
2. **Gather user data:** Collect user feedback and behaviour data through surveys, interviews, analytics tools, and other user research methods. This information will provide insights into user needs and pain points.
3. **Evaluate usability:** Evaluate the product or service for usability issues, such as confusing navigation, unclear instructions, and error-prone processes. Use established usability heuristics and guidelines to identify potential problems.
4. **Assess visual design:** Assess the graphic design of the product or service, including typography, colour, layout, and overall aesthetic. Ensure the design is consistent, visually appealing, and supports user goals.
5. **Evaluate content:** Evaluate the content of the product or service, including text, images, and multimedia elements. Ensure that the content is relevant, engaging, and supports user goals.
6. **Analyse accessibility:** Analyse the product or service for accessibility issues, such as lack of alternative image text, insufficient color contrast, and poor keyboard accessibility.
7. **Document findings:** Document the findings of the UX audit in a clear and concise report, including specific issues identified, recommendations for improvement, and the rationale for each submission.
8. **Prioritize recommendations:** Recommendations based on their impact on the user experience and the resources required for implementation.
9. **Create an action plan:** an action plan to implement the recommendations, including timelines, responsibilities, and resources required.
10. **Monitor progress:** Monitor progress and measure the impact of the UX audit by conducting follow-up research, tracking user feedback, and assessing key performance indicators.

UX audit can be a complex and time-consuming process, but the right tools will reinforce the manual job your team or a third-party consultant does. some of the popular UX audit tools as per below (eleken, 2023):

- Google Analytics
- Mixpanel
- Kissmetrics
- HotJar
- Crazy Egg
- UXCam
- UserTesting

However, choosing the tool that will best serve your project and accomplish the correct interpretation of findings is crucial.

2. Objectives

The objectives of this review paper are:

- I. To understand the user experience (UX) audit process.
- II. To discuss the importance of using empirical data in UX audits and how to measure the success of a UX audit.

3. Research Methodology

To write this review paper, secondary sources of data were carefully examined as part of this work's research process. To develop comprehension and a conceptual grasp of the subject, research papers and articles from reputable journals, marketing books, trend forecasting publications, and online resources on related themes were all assessed.

4. Literature Review

As per research published by (Hassenzahl, 2008) good user experience results from interacting with a product or service (hedonic quality) in a way that satisfies human requirements for autonomy, competence, stimulation (self-oriented), relatedness, and popularity (others-oriented). UX is primarily influenced by two types of product qualities: pragmatic and hedonic attributes. The phrase "pragmatic quality" refers to a product's perceived ability to help users accomplish "do-goals," hence it also refers to the utility and usability of the product for possible actions that are not directly related to the user.

Hedonic quality is the capacity of the product to support the user in reaching personal goals (i.e., being distinctive and competent). It is defined as the product's perceived ability to support the attainment of "be-goals".

Affordance and synesthesia are two categories for product attributes according to the notion of the signification of artefacts (Floch, 2000). In reality, objects are valued not merely for their embodied purposes but also for the significance they take on for those who use them, the moral and ethical messages they convey, and the aesthetic pleasure they provide. The term "affordance" refers to particular product characteristics that specify how to use the product and reveal the range for whom it is intended (McGrenere & Ho, 2000). When the product is successful, and satisfactory for the context of use, affordability qualities are attained. Thus, they are evaluated using usability testing techniques (Van Vugt, Hoorn, Konijn, & de Bie Dimitriadou, 2006). On the other hand, synesthesia is concerned with hedonic qualities that might arouse feelings of affection (Norman D. , 2004). If both aspects have an impact on how excellent an interaction is, then the product experience should be viewed as a holistic process. Proper assessment techniques must concentrate on both the objective and subjective aspects of interaction. Both the cognitive and emotional response must be examined. Traditional investigative techniques typically evaluate them individually (Kalviainen, 2002).

According to the ISO 9241-11 standard, usability is "the degree to which specified users may use a product to achieve specified goals with efficiency, effectiveness, and fulfilment in a specified context of use."

A theoretical framework presented by (Prajapati & Kumar, 2019) for conducting a UX audit typically involves several stages, which may vary depending on the specific approach used. Here is an example of a theoretical framework for conducting a UX audit:

- **Planning and Preparation:** This stage involves defining the objectives, scope, and methodology of the UX audit, as well as identifying the target audience and stakeholders.
- **Data Collection:** This stage involves collecting data on the user experience of the product or service being audited. This may include qualitative and quantitative data, such as user feedback, behavior data, and usability testing results.
- **Analysis:** This stage involves analyzing the data collected to identify critical issues and areas of improvement in the user experience. This may involve various analysis techniques, such as heuristic evaluation, task analysis, and cognitive walkthroughs.

- **Recommendations:** This stage involves making recommendations based on the analysis conducted in the previous stage. These recommendations may include design changes, usability improvements, and other user experience suggestions.
- **Implementation and Monitoring:** This stage involves implementing the recommendations made in the previous stage and monitoring the effectiveness of these changes over time.

A UX audit is a thorough assessment of a website, mobile application, or product to identify usability issues and suggest improvements to enhance user experience. Some benefits of conducting a UX audit include the following:

- **Identifying usability issues:** A UX audit can help identify areas where users may struggle with a product or service, such as confusing navigation or poor visual design (Nielsen J. , 1994).
- **Enhancing user satisfaction:** A UX audit can identify areas where users may experience frustration or dissatisfaction, such as slow load times or difficult-to-use features. By addressing these issues, companies can increase user satisfaction and loyalty (Hassenzahl & Tractinsky, 2006).
- **Improving conversion rates:** A UX audit can help identify areas where users may abandon a product or service, such as a complicated checkout process or unclear call-to-actions. Companies can improve conversion rates and increase revenue by making improvements based on the audit findings (Nielsen J. , 1994).
- **Gaining a competitive advantage:** Companies can earn a competitive advantage in the marketplace by conducting a UX audit and making improvements to enhance user experience. A better user experience can increase customer loyalty, positive word-of-mouth, and overall business outcomes. Overall, a UX audit can provide valuable insights into a product or service's usability and user experience, leading to improvements that can benefit both users and businesses (Hassenzahl & Tractinsky, 2006).

A company should consider conducting a UX audit when they notice a decrease in user engagement, high bounce rates, low conversion rates, or increased customer complaints. Conducting a UX audit can help identify pain points and areas of improvement within the user experience, leading to increased user satisfaction and overall business success (Li & Li, 2021).

- A cognitive walkthrough is a method used in UX audits to evaluate the usability of a software product or system by analysing how well it supports users in achieving their goals. The process involves identifying potential issues in the design by examining the system from a user's

perspective and evaluating how easy it is to use. The steps involved in a cognitive walkthrough typically include task analysis, goal identification, scenario development, and evaluation of the user's cognitive load (Smith & Johnson, 2019).

- Heuristic analysis is a method used in UX audits to evaluate the usability of a software product or system by examining it against a set of predefined usability principles or heuristics. The process involves identifying potential issues in the design by examining the system from a user's perspective and evaluating how well it supports users in achieving their goals (Nielsen J. , 1994).
- Competitor analysis is a method used in UX audit to evaluate the strengths and weaknesses of a software product or system by comparing it to similar products or systems in the market. The process involves identifying competitors, assessing their products, and identifying opportunities for improvement (Liu, Li, & Ren, 2021).
- Data analysis is used in UX audits to evaluate a software product or system's usability by analysing user behaviour and feedback data. The process involves collecting and analysing data from various sources, such as user surveys, usability tests, and website analytics (Fernández-Medina, Martín-González, & Medina-Medina, 2019).

The importance of using empirical data in UX audits cannot be overstated. Empirical data refers to data that is collected through systematic observation or experimentation. This data type can provide valuable insights into user behavior and preferences, informing the design of more user-friendly products. Empirical data is essential for effective UX auditing. The study found that the most successful UX audits incorporated empirical data, including user feedback, usability testing, and analytics (Nielsen Norman Group, 2020). Using empirical data can help UX auditors to:

1. **Identify usability issues:** Empirical data can help auditors to identify usability issues that are not immediately obvious. For example, user testing can reveal problems with navigation or information hierarchy problems that may need to be added to an initial interface review.
2. **Prioritize design changes:** Empirical data can also help auditors to prioritize design changes. By analyzing user feedback and behavior, auditors can identify the most critical issues that must be addressed and focus their efforts accordingly.
3. **Validate design decisions:** Empirical data can be used to validate design decisions. For example, A/B testing to compare the effectiveness of two different design options and determine which one is more effective (IBM, 2017).

A template for conducting a mobile app or website UX audit discussed and presented by (Chapman, 2018); (Hassenzahl & Tractinsky, 2006); (Nielsen J. , 1994); (Preece, Rogers, & Sharp, 2015); (Rubin & Chisnell, 2008) and ISO 9241-11:2018 is articulated as per given below :

Introduction:

- Briefly introduce the app or website and its purpose.
- Identify the target audience.

Navigation:

- Evaluate the ease of navigation throughout the app or website.
- Identify any confusing or unclear navigation paths.
- Determine if the navigation aligns with the app's or website's purpose and target audience.

Content:

- Evaluate the quality and relevance of the app's or website's content.
- Determine if the content aligns with the app's or website's purpose and target audience.
- Assess the readability of the content.
- Evaluate the use of headings, subheadings, and bullet points.

Layout and Design:

- Evaluate the overall visual appeal of the app or website.
- Assess the readability and legibility of text, font size, and colour.
- Evaluate the use of icons, images, and graphics.
- Determine if the design elements align with the app's purpose and target audience.

Functionality:

- Test all the features and functions of the app or website.
- Identify any errors or glitches that occur.
- Evaluate the response time of the app's or website's features and operations.
- Determine if the features and functions align with the app's or website's purpose and target audience.

User Input:

- Evaluate the ease of inputting data.
- Determine if the input fields are clear and concise.

- Test the error messages and feedback provided when incorrect input is entered.

Performance:

- Evaluate the app's or website's speed and performance.
- Test the app's or website's responsiveness to user interactions.
- Determine if the app's performance meets user expectations.

Accessibility:

- Evaluate the app's or website's accessibility features.
- Determine if the app or website is usable by individuals with disabilities.
- Test the app's or website's compatibility with assistive technology.

Security:

- Evaluate the app's or website's security measures.
- Determine if the app or website stores user data securely.
- Identify any potential security vulnerabilities.

Conclusion:

- Summarize the findings of the audit.
- Provide recommendations for improvements.
- Determine if the app's or website's UX aligns with the purpose and target audience.

The Graphical User Interface (GUI), which allows consumers to interact with electronic devices through visual icons rather than text-based interfaces, is crucial to UX/UI design. Maintaining the distinctive "look and feel" of these components—which include GUIs, icons, and visual cues—becomes essential to keeping your product stand out from the competition. Protecting key UX/UI design elements makes sure that users will recognize and find them appealing, and it sets your product apart from rivals. Patents on designs are "issued for a new, original, and ornamental design embodied in or applied to an article of manufacture." Remarkably, interactive UI/UX design features are also protected by design patents. For instance, the "page turning" function in Apple eBooks is covered by U.S. Design Patent No. D670,713 (Vijh, 2021). In India, design laws as well as copyright laws can provide protection for Graphic User Interfaces (GUIs). The Hon'ble Bombay High Court ruled in the matter of Maraekat Infotech Ltd. v. Naylesh V. Kothari that copyright protects the "structure, sequence, and organization" of computer programmes, suggesting that the UI/UX related to the program would also be protected (GPF, 2023).

5. Discussion and Suggestions

UX auditors may encounter a variety of difficulties while performing user experience audits, including:

- **Subjectivity:** UX auditing involves evaluating and assessing the user experience of digital products, which can be subjective. UX auditors may need help to remain objective in their assessments, especially if they have a personal bias or preference (UserZoom , 2018).
- **Limited access to users:** To conduct UX audits, auditors need access to users who can provide feedback on their experience with a product. However, accessing users can be challenging, especially if the product is in development or has a limited user base (Munteanu, Hara, Inkpen, & Carpendale, 2010).
- **Limited resources:** UX auditors may need more resources, including time, budget, and tools. This can make it challenging to conduct thorough audits and provide comprehensive recommendations (UserTesting, 2019).
- **Keeping up with technology:** UX auditors must stay up-to-date with the latest tools and trends as technology evolves rapidly. However, keeping up with technology can be challenging, especially if resources and time are limited (UserTesting, 2019).
- **Communication:** UX auditors must effectively communicate their findings and recommendations to stakeholders, including designers, developers, and product owners. However, sharing technical information in a way that is accessible and actionable for non-technical stakeholders can be challenging (UX Collective, 2019).

To overcome these challenges, UX auditors may need to develop strategies to remain objective in their assessments, find creative ways to access users, make the most of limited resources, stay informed about the latest technology trends, and develop strong communication skills. They may also benefit from collaborating with other UX professionals and seeking ongoing training and education opportunities.

Improving the UX of a product or service based on a UX audit involves identifying and addressing issues impacting the user experience. Essential points to improve the UX of a product or service based on a UX audit explained by (Huang M. , 2020) & (Li & Guo, 2020):

- **Prioritize issues:** Review the findings of the UX audit and prioritize the topics based on their severity and impact on the user experience.

- **Develop solutions:** Work with a team of designers and developers to develop solutions to address the identified issues. Brainstorm ideas and use best practices in UX design to create effective solutions.
- **Implement changes:** Implement the changes to the product or service, ensuring they are thoroughly tested and validated before being released to users.
- **Re-evaluate:** Conduct further usability testing to validate that the changes have improved the user experience. Use user feedback to identify any remaining issues and continue refining the product or service.
- **Monitor performance:** Continuously monitor the product or service's performance and make adjustments as needed to ensure that it continues to meet users' needs.

The recommendations to help UX auditors to conduct more effective assessments and improve the user experience of products and services (Huang, Zhou, & Ma, 2019).

- **Ease focus on the user:** When conducting a UX audit, keeping the user at the centre of your evaluation is essential. Try to understand the user's needs, goals, and expectations, and evaluate the product or service from their perspective.
- **Use multiple evaluation methods:** To get a comprehensive understanding of the user experience, it's essential to use various evaluation methods, such as surveys, usability testing, heuristic evaluations, and analytics.
- **Develop clear and actionable recommendations:** After identifying issues with the user experience, it's crucial to develop clear and actionable recommendations for addressing those issues. Make sure your submissions are specific and focused on improving the user experience.
- **Collaborate with designers and developers:** To ensure that your recommendations are effectively implemented, working closely with designers and developers throughout the process is essential. Collaborate with them to develop solutions that address the identified issues and improve the user experience.
- **Continuously evaluate and iterate:** UX is an ongoing process, so it's essential to constantly assess and repeat the product or service to ensure that it continues to meet users' needs.

IPR-Intellectual Property Rights:

In the realm of UI/UX (User Interface/User Experience) design, intellectual property rights (IPR) are essential for safeguarding innovative ideas, designs, and creative works. Here are several main justifications for the significance of IPR in the UI/UX design process:

Safeguarding unique designs, promoting creativity, establishing ownership, stopping unfair competition, safeguarding brands, drawing in investment and customers, Possibilities for Licensing, Legal Action for Infringement, Preserving Design Integrity, and Worldwide Protection

To sum up, the protection, respect, and expansion of the design profession as well as the larger creative industry depend on the incorporation of Intellectual Property Rights into the UI/UX design process. It establishes a framework that promotes innovation, creativity, and fair competition in the quickly developing industry of design.

6. Limitations

Due to time restrictions, only a limited number of literature sources could be examined in order to fully comprehend the user experience audit. Furthermore, the research still needs to include empirical work.

7. Conclusion

To make sure a product or website is user-friendly, effective, and efficient, a UX audit must be carried out. This thorough review's techniques and best practises offer a strong framework for assessing the user experience and pinpointing opportunities for development.

UX is crucial since it has a direct impact on user retention, satisfaction, and conversion rates. You may learn valuable information about how consumers engage with your product, spot pain points and areas of confusion, and implement improvements that improve the user experience as a whole by conducting a complete UX audit. Utilising both quantitative and qualitative methodologies to obtain information and insights is crucial when conducting a UX audit. The right approach and tools can improve the usability and accessibility of your product and create a more engaging and enjoyable experience for users.

References

- Chapman, C. (2018). *Website UX Audit Template*. Retrieved from www.uxpin.com:
<https://www.uxpin.com/studio/blog/website-ux-audit-template/>
- Eleken. (2023). *7 Useful Tools to Help with Your UX Audit*. Retrieved from www.eleken.co:
<https://www.eleken.co/blog-posts/7-useful-tools-to-help-with-your-ux-audit>
- Fernández-Medina, E., Martín-González, M., & Medina-Medina, N. (2019). UX audit based on data analysis: A case study. *International Journal of Human-Computer Studies*, 42-57.
- Floch, J. M. (2000). *VisualIdentities*. London.: Continuum.
- GPF. (2023, July 31). *Safeguarding Intellectual Property Rights For UI/UX Designs In India*. Retrieved from globalpatentfiling.com: <https://globalpatentfiling.com/blog/Safeguarding-Intellectual-Property-Rights-For-UI-UX-Designs-In-India?page1=6>
- Hassenzahl, M., & Tractinsky, N. (2006). User experience - a research agenda. *Behavior & Information Technology*, 91-97.
- Hassenzahl. (2008). User experience (UX). *he 20th International Conference of the Association Francophone d'Interaction Homme- Machine*. (pp. 11-15). ACM.
- Huang, M. (2020). *UX Audit: What It Is and How to Do It*. Retrieved from www.nngroup.com:
<https://www.nngroup.com/articles/ux-audit/>
- Huang, X., Zhou, J., & Ma, X. (2019). Recommendations for conducting UX audits. *Behaviour & Information Technology*, 733-746.
- IBM. (2017). *The ROI of User Experience: How to Quantify the Business Value of UX Design*. . Retrieved from www.ibm.com: <https://www.ibm.com/design/thinking/static/thinking/roi-of-ux/>
- Kalviainen, M. (2002). *Product design for consumers taste, Pleasure with products: beyond usability*. London: Taylor & Francis.
- Kujala, S., & Kaasinen, E. (2018). *User Experience Evaluation Methods: Current State and Development Needs*. In *Handbook of Human-Computer Interaction*. Springer, Cham.
- Lazar, J., Feng, J., & Hochheiser, H. (2017). *Research methods in human-computer interaction*. Morgan Kaufmann.
- Li, M., & Guo, B. (2020). Improving user experience of mobile app based on UX audit. *Journal of Ambient Intelligence and Humanized Computing*, 3223-3236.
- Li, X., & Li, L. (2021). Conducting a UX audit. *Journal of Usability Studies*, 56-72.

-
- Liu, Y., Li, C., & Ren, X. (2021). Competitive analysis of UX design in mobile applications. *Human-centric Computing and Information Sciences*, 1-22.
- McGrenere, J., & Ho, W. (2000). Affordances: clarifying and evolving a concept. *Graphics Interfaces*. (pp. 176-186). Montreal: Lawrence Erlbaum Associates.
- Munteanu, C., Hara, C., Inkpen, K., & Carpendale, S. (2010). Imagine this!: scripting reality for user studies. *ACM conference on Computer Supported Cooperative Work*. (pp. 229-238). ACM.
- Nielsen Norman Group. (2020). *UX Audits: What, Why, How*. . Retrieved from www.nngroup.com: <https://www.nngroup.com/articles/ux-audit/>
- Nielsen, J. (1994). *Usability engineering*. Morgan Kaufmann.
- Nielsen, J. (1994). Usability inspection methods. In *Conference companion on Human factors in computing systems* (pp. 413-414). Elsevier.
- Norman, D. (2004). *Emotional design: why we love (or hate) everyday things*. New York: Basic Books.
- Norman, D. A. (2013). *The Design of Everyday Things: Revised and Expanded Edition*. New York: Basic Books.
- Prajapati, H., & Kumar, R. (2019). A theoretical framework for conducting user experience (UX) audit. *International Journal of Human-Computer Interaction*, 35(3), 193-204.
- Preece, J., Rogers, Y., & Sharp, H. (2015). *Interaction design: beyond human-computer interaction*. John Wiley & Sons.
- Rubin, J., & Chisnell, D. (2008). *Handbook of usability testing: How to plan, design, and conduct effective tests*. John Wiley & Sons.
- Smith, J. D., & Johnson, K. L. (2019). Evaluating User Experience with a Cognitive Walkthrough. *Journal of Usability Studies*, 119-137.
- UserTesting. (2019). *The State of UX Audits*. Retrieved from www.usertesting.com: <https://www.usertesting.com/blog/state-of-ux-audits/>
- UserZoom . (2018). *The Benefits and Limitations of UX Audits*. Retrieved from www.userzoom.com: <https://www.userzoom.com/blog/the-benefits-and-limitations-of-ux-audits/>
- UX Collective. (2019). *The challenges of conducting UX audits*. Retrieved from uxdesign.cc: <https://uxdesign.cc/the-challenges-of-conducting-ux-audits-2a4bade4aa4e>
- Van Vugt, H. C., Hoorn, J. F., Konijn, E. A., & de Bie Dimitriadou, A. (2006). Affective affordances: Improving interface character engagement through interaction. *International Journal of Human-Computer Studies*, (pp. 897- 888.).

Vijh, R. (2021, May 19). *Protecting UI/UX Design Using Intellectual Property*. Retrieved from www.copperpodip.com: <https://www.copperpodip.com/post/protecting-ui-ux-design-using-intellectual-property#:~:text=In%20many%20ways%2C%20patents%20are,but%20is%20not%20a%20copy.>