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A USER-CENTERED DIGITAL REPOSITORY: DESIGNING AND EVALUATING HOBBYHAVEN FOR COLLECTORS

[1]Maisarah Nadiah Binti Razali & [2]Wan Hussain Wan Ishak
[1,2]School of Computing, Universiti Utara Malaysia, Malaysia

[2]Corresponding author: hussain@uum.edu.my

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ABSTRACT

Collecting physical and digital items has become increasingly popular, but many collectors struggle with keeping their collections organised, accessible, and easy to manage. Traditional methods, such as manual record-keeping or essential digital tools, often fail to meet their needs. This study introduces HobbyHaven, a web-based repository designed to simplify collection management. The platform allows users to store, organise, and track their collectables more efficiently. The goal is to create a simple, intuitive, and customisable system, making it accessible to collectors of all experience levels. HobbyHaven was developed using the Waterfall methodology, which follows a structured approach that includes gathering user requirements, designing the system, and building a functional prototype. To evaluate its usability, we applied the Website Analysis and Measurement Inventory (WAMMI) framework, which assesses key factors such as attractiveness, ease of use, helpfulness, efficiency, and learnability. A total of 35 participants tested the system and provided feedback through a five-point Likert scale questionnaire. The results showed high user satisfaction, particularly with navigation (85.8%) and helpfulness (85.7%), indicating that users found the platform well-structured and easy to use; however, some areas required improvement. For instance, only 45.7% strongly agreed that the visual design was appealing. In comparison, 37.1% felt neutral about the need for better introductory guidance, and a further 37.1% agreed that some features were difficult to locate. HobbyHaven has the potential to significantly enhance collection management by providing an organised, user-friendly, and accessible platform. Reducing reliance on outdated methods allows collectors to track and manage their items more effectively, fostering knowledge sharing and community engagement. Its open-access feature enables users to explore collections without requiring registration, making it more inclusive. With further improvements—such as AI-driven categorisation and integrated social networking features—HobbyHaven could evolve into a leading digital repository for collectors, transforming how collections are documented, shared, and preserved.

Keywords: Collectible items, customisable categories, user-friendly design, web-based repository, responsive web design

INTRODUCTION

Collecting has been a cherished activity for centuries, allowing enthusiasts to preserve cultural artefacts, explore personal interests, and find fulfilment in tangible and digital items (Low & Ishak, 2023; Stebbins, 2014). From traditional collectables like stamps and coins to modern digital memorabilia, collecting serves broader purposes, including cultural preservation and identity building. Collectables sometimes act as alternative investments, reflecting economic trends and individual preferences (Kleine et al., 2020). With advancements in digital technology, digital repositories have emerged as essential platforms for storing, managing, and sharing collections in a structured way (Dwivedi & Pachauri, 2023; Kiryakova & Yordanova, 2013; Jamaludin & Ishak, 2010).

Despite these advancements, many collectors struggle to organise and manage their collections efficiently. Manual cataloguing is time-consuming and prone to errors while existing digital platforms are often tailored to specific domains, leaving general hobbyists underserved (Low & Ishak, 2023; Geetha & Kumara, 2016). Additionally, many platforms lack flexibility and user-friendly features, making scalability, accessibility, and customisation challenging. The social aspects of collecting—such as sharing collections and connecting with other enthusiasts—are often overlooked, limiting opportunities for community engagement and collaboration (Viuche-Nieto, 2019). Research also highlights that while digital infrastructures in the cultural heritage sector aim to improve accessibility, sociocultural challenges persist. These include disparities in funding and how collections are described, which can hinder participation and data sharing among institutions (Humbel et al., 2024).

This study seeks to address these challenges through the design and development of HobbyHaven, a digital repository that offers collectors a flexible and user-friendly platform for organising, managing, and sharing their collections. HobbyHaven aims to be a scalable and inclusive solution by identifying user requirements and implementing responsive web design. The system's usability is evaluated through a functional prototype, focusing on key aspects such as attractiveness, efficiency, and learnability (Dwivedi & Pachauri, 2023).

HobbyHaven enhances digital collection management by offering customisable features that cater to a wide range of collectors. Unlike domain-specific repositories, it allows users to create personalised archives while contributing to cultural preservation and knowledge sharing. Its open-access model, which lets users explore collections without requiring registration, encourages community engagement and broader participation (Santos-Silva et al., 2017). HobbyHaven also empowers users to manage their collections while fostering efficient collaboration among collectors. Its emphasis on accessibility and inclusivity ensures the platform is valuable to casual hobbyists and serious collectors. By addressing the limitations of existing collection management tools and highlighting the importance of user-centric design, this study provides a foundation for the future of digital repositories and the evolving needs of collectors.

LITERATURE REVIEW

Web-based repositories serve as centralised platforms for collecting, storing, managing, and preserving various collectable items, including physical memorabilia, digital assets, documents, and media. These systems ensure that collections remain accessible and easily discoverable for users. Zipperer (2019) compared digital repositories to library stacks, emphasising their role in providing intellectual control and seamless access to stored materials. By offering a structured approach to collection management, digital repositories help address organisational challenges, accessibility, and long-term usability (Thomer et al., 2022). Additionally, they enhance the management of scholarly materials, making information retrieval and organisation more efficient (Okon et al., 2020). The archival strategies used in these repositories are equally important, particularly for curating large-scale digital collections and preserving diverse digital assets (Bingham & Byrne, 2021).

One of the key strengths of digital repositories is their ability to safeguard collectable information while ensuring long-term access (Bingham & Byrne, 2021). These platforms offer convenient browser-based access through web-based technologies, allowing users to search, browse, and retrieve information intuitively (Dwivedi & Pachauri, 2023). Museums, cultural institutions, and hobby groups utilise digital repositories to expand the global reach of their collections (Kiryakova & Yordanova, 2013). Moreover, these platforms play a crucial role in cultural preservation, ensuring that tangible and intangible artefacts are archived and shared effectively (Santos-Silva et al., 2017).

Beyond preservation, digital repositories streamline collection management by centralising storage and improving efficiency. Advanced search functionalities and workflow automation enable users to save time by reducing duplication and maintaining consistency (Anderson et al., 2017). Additionally, these platforms foster collaboration and knowledge sharing within communities, enabling collectors to discuss, exchange insights, and learn from one another (Geetha & Kumara, 2016).

More than just functional tools, digital repositories contribute to inclusivity and engagement by offering customisable features that cater to diverse collector needs, ensuring a broader user appeal and accessibility (Dwivedi & Pachauri, 2023). Furthermore, integrating social dimensions, such as public sharing and collaboration, enhances community involvement, particularly among hobbyists, where shared interests drive participation and interaction (Viuche Nieto, 2019).

Despite their many benefits, gaps remain in the study of web-based repositories. While research has extensively documented their functionality, organisation, and role in cultural preservation, several key challenges persist. These include a lack of research on usability challenges, particularly regarding how users interact with repository features. Additionally, the effectiveness of archival strategies outside of institutional settings remains underexplored, leaving hobbyists and independent collectors with limited guidance. Finally, the impact of social and personalisation features on user engagement requires further investigation to optimise these platforms for community-driven collection management.

As web-based repositories evolve, they will remain valuable tools for knowledge sharing, accessibility, and preservation. However, addressing these gaps in research and design will be essential to maximising their potential and ensuring they meet the diverse needs of institutional and independent collectors.

METHODOLOGY

This study systematically adopts the Waterfall methodology to achieve its objectives, covering user requirement identification, system design, development, and usability evaluation.

The first phase, Requirements Analysis, focused on understanding user needs and expectations. User requirements were gathered through discussions with collectors, providing valuable insights into their preferences, challenges, and expectations. These interactions highlighted the need for features such as customisable collection categories, advanced search capabilities, and seamless accessibility across devices. Alongside functional requirements, technical specifications, including Responsive Web Design (RWD), were outlined to enhance adaptability and user experience.

A detailed blueprint was developed in the System Design phase to ensure user-friendly navigation, intuitive interfaces, and scalable functionality. Wireframes and mockups helped visualise the layout and ensure alignment with user expectations. Unified Modeling Language (UML) was used to structure the system, incorporating use case diagrams to illustrate user interactions, class diagrams to define relationships between key entities such as users, collections, and items, and sequence diagrams to map the flow of operations.

During the Implementation phase, the conceptual designs were translated into a working system using MySQL and PHP. MySQL served as the database management system, ensuring efficient data storage and retrieval, while PHP handled server-side logic, enabling seamless interaction between the user interface and the database. To ensure accessibility across various devices, responsive web design (RWD) principles were integrated, making the system compatible with desktops, tablets, and smartphones.

The Testing phase involved a comprehensive evaluation to assess the system's reliability, usability, and compatibility. Along with functional testing, usability testing was conducted using the Website Analysis and Measurement Inventory (WAMMI) framework, which evaluates five key factors: attractiveness, controllability, helpfulness, efficiency, and learnability. Thirty-five participants were selected to provide feedback, including hobbyists and potential users. While the sample size may seem modest, it aligns with established usability research, which suggests that groups of 5–50 users are sufficient to identify significant design issues (Nielsen, 2000). Participants' feedback highlighted both strengths and areas for improvement, offering valuable insights for further refinements.

Finally, the Maintenance phase focused on ensuring the platform’s long-term performance and relevance. Regular updates were implemented to address evolving user needs. In contrast, continuous monitoring and integration of user feedback played a crucial role in maintaining system robustness, adaptability, and ease of use over time.

DESIGN AND DEVELOPMENT OF HOBBY HAVEN

The design and development of HobbyHaven followed a structured approach to address the needs of collectors and create an effective, user-friendly platform. User requirements were gathered through discussions with collectors and translated into functional requirements, categorised by mandatory, optional, and desirable priority levels. This prioritisation ensured the development of essential features while allowing room for future enhancements.

UML diagrams were developed to visualise and model the platform's functionality. The use case diagram for HobbyHaven illustrates the interactions between the main actors—collectors and system administrators—and the system's core functionalities, as shown in Figure 1. Specifically, Figure 1 represents the critical features that enable users to manage their collections efficiently, as listed.

- Sign Up/Login: Collectors can create secure accounts through the sign-up feature, which includes email and password verification, or log in to their existing accounts.
- Manage Profile: This use case enables users to update their personal details or deactivate their accounts, providing flexibility in account management.
- Manage Collection: Collectors can add new items, update existing entries, or delete items from their collections. This feature ensures that users can maintain an accurate and organised inventory of their collectables.
- Manage Inventory: Users can track inventory details, such as quantity and condition. The functionality includes adding, updating, and deleting inventory entries, making it easier for collectors to monitor the status of their items.
- Generate Reports: This feature provides valuable insights by enabling users to generate reports on their collections, including item summaries and detailed inventory statuses.
- Admin Report: System administrators can generate reports that include views of all registered users and their collections. Additionally, administrators can deactivate or activate user accounts, ensuring proper system governance and user management.

A functional prototype was created to bring these features to life, as shown in Figure 2. The prototype included an intuitive dashboard that centralised user activities and provided responsive interfaces to ensure device compatibility. Key design elements focused on balancing usability and aesthetic appeal, enhancing the overall user experience.

Figure 1

Use Case Diagram

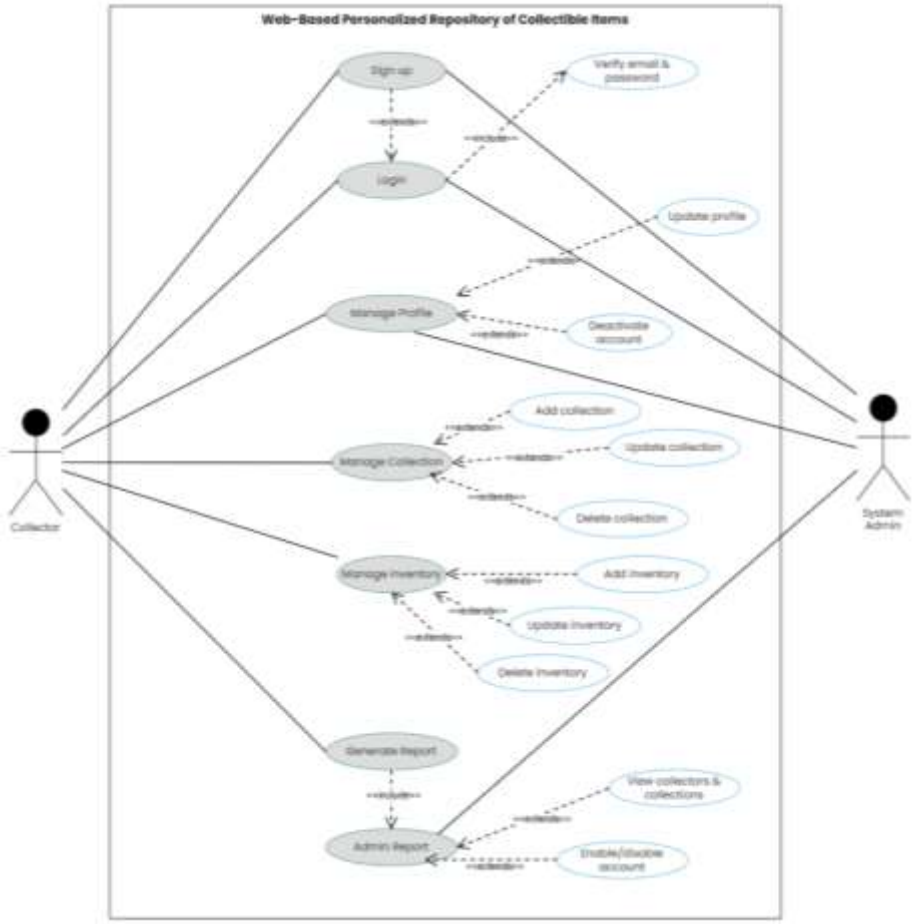
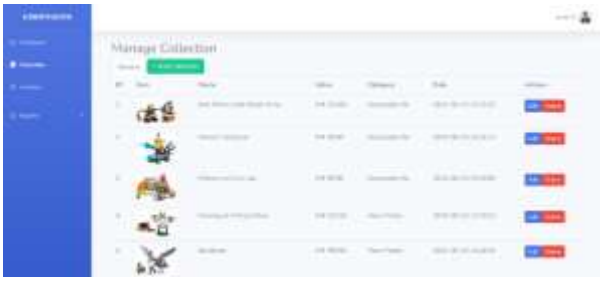


Figure 2

Sample of the HobbyHaven interfaces

(a) Landing Page



(b) Managing Collection

FINDINGS AND DISCUSSION

The usability evaluation involved 35 participants, including students and other users, who tested the system and provided feedback through a structured questionnaire based on the WAMMI framework. Participants rated their experience on a 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree),

assessing key usability factors such as attractiveness, controllability, helpfulness, efficiency, and learnability.

Participants generally found the platform visually appealing. 48.6% strongly agreed that the website contained content of interest to them, while 45.7% strongly agreed that the design was attractive. Additionally, 42.9% strongly disagreed with the statement that they disliked using the website, and 54.3% strongly disagreed that using the site was a waste of time. Although these results indicate an overall positive response, some users suggested visual design and aesthetics improvements. This supports Kiryakova and Yordanova (2013), who emphasised that a visually engaging interface is crucial in encouraging user engagement and sustained interaction.

Navigation and ease of use were also rated highly. 51.4% of participants strongly disagreed that it was difficult to move around the website, and 85.8% agreed or strongly agreed that they could quickly find what they were looking for. Additionally, 62.9% felt in control while using the platform, and 82.8% agreed or strongly agreed that they could quickly contact the necessary people through the system. These findings align with those of Dwivedi and Pachauri (2023), who highlighted that intuitive navigation enhances the user experience in digital repositories.

Regarding helpfulness, 51.4% strongly agreed that the website had a logical structure, while 85.7% agreed or strongly agreed that it assisted them in finding what they needed. However, 37.1% remained neutral, and 42.8% felt the website could benefit from more introductory explanations. Additionally, while 45.7% strongly disagreed that the site had annoying features, a small percentage (2.9%) found some features frustrating. This aligns with Mgonzo and Yonah (2014), who stressed that explicit instructional content maximises user satisfaction in digital repositories.

The platform's efficiency was also well-rated. 48.6% strongly disagreed that the website was too slow, indicating strong performance. Furthermore, 80% of participants agreed or strongly agreed that using the site was efficient. However, 37.1% found it difficult to determine whether the platform contained the specific information they were looking for, suggesting a need for improved content clarity and organisation. Additionally, 48.6% of participants agreed they got what they expected when interacting with different elements. These findings align with those of Anderson et al. (2017), who emphasised that efficient systems must minimise user effort when retrieving information to enhance usability.

When it came to learnability, the results were generally positive. Sixty per cent of participants agreed or strongly agreed that the platform was easy to use on their first visit. However, 40% remained neutral about whether navigating the site was difficult, and 8.6% strongly agreed that it was challenging. Additionally, 51.4% disagreed or strongly disagreed that remembering their location within the website was difficult, but 34.3% remained neutral. Lastly, 54.3% of participants strongly agreed that everything on the site was easy to understand. These findings support Zipperer (2019), who noted that simplifying system design improves accessibility for diverse user groups.

Overall, the findings demonstrate HobbyHaven’s potential as an effective platform for managing and sharing collectable items while highlighting areas for improvement. The moderate attractiveness rating suggests that visual design and user interface enhancements could make the platform more engaging. This aligns with Santos-Silva et al. (2017), who argue that aesthetics have a significant influence on user retention and satisfaction in digital platforms.

The high controllability score indicates that the system's logical structure and navigation meet user expectations. This aligns with Chowdhary et al. (2022), who emphasised that user-centric navigation fosters usability and engagement.

Findings on helpfulness and efficiency suggest that while users found the system functional and reliable, there is room for improvement in search capabilities and user guidance. Dwivedi and Pachauri (2023) emphasise that advanced search features and precise support mechanisms are crucial for enhancing user satisfaction in digital repositories.

Finally, the learnability results suggest that adding onboarding tutorials or interactive guides could make the platform easier for first-time users. Hager et al. (1999) emphasised that a user-friendly design must prioritise ease of learning, particularly for novice users, to maximise engagement.

CONCLUSION AND FUTURE WORKS

This study explores the development and evaluation of HobbyHaven, a web-based repository designed to help collectors manage, organise, and share their collections more efficiently. Usability testing results indicate that the platform is functional and user-friendly, with notable strengths in controllability, helpfulness, and efficiency. Participants appreciated its logical structure, intuitive navigation, and ability to assist in tracking and locating collectables. However, visual design, search refinement, and user onboarding require further attention to improve the overall user experience.

The findings suggest several directions for future improvements. To enhance the platform's visual appeal, future development should focus on refining the design to create a more aesthetically engaging interface, as a well-designed layout can significantly improve user retention and satisfaction. The moderate efficiency and learnability scores indicate that introducing advanced features, such as dynamic search capabilities and personalised tutorials, could streamline user interactions and make it easier for new users to navigate the system.

The high controllability and helpfulness ratings highlight an opportunity to enhance community engagement. Adding community forums and item-sharing options could encourage collaboration and knowledge exchange among collectors. Additionally, integrating AI-driven recommendations based on user preferences and behaviour could enhance efficiency and learnability, helping collectors discover relevant items and better organise their collections.

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