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Preserving Scholarly Endeavors: A System for Archiving Thesis and Dissertations

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Abstract: The Thesis and Dissertations Archiving System was developed as a pivotal software solution to streamline the storage and organization of research papers within the University of Industrial Technology (CIT). This innovative system was meticulously designed to provide a user-friendly interface, efficient search functionality, seamless tracking of thesis and dissertation projects, and streamlined book borrowing and returning processes. Employing a research methodology rooted in descriptive and developmental research approaches, data collection was conducted using a standardized research instrument. The software development process adhered to the Rapid Application Development (RAD) Model, emphasizing rapid prototyping and iterative development to create a robust system. The primary beneficiaries of this system included CIT Department administrators, as well as a diverse user base comprising faculty and students of CHMSU, along with external researchers. Evaluation of the system's effectiveness and usability was carried out using the Post-Study System Usability Questionnaire (PSSUQ), yielding a highly promising mean score of 2.28, indicative of strong usability and acceptance among respondents. The study's findings underscored the system's exceptional acceptance and utility, positioning it as an indispensable tool for the University community. With its enhanced accessibility, efficiency, and seamless information retrieval capabilities, the system was recommended for institution-wide implementation to optimize archiving and information retrieval processes, benefiting researchers across the board.

Keywords: thesis, dissertation, archiving system, software development, usability evaluation

INTRODUCTION

Advancements in technology and its widespread use in daily life have shifted the expectations of library users. They now expect convenient online access to complete texts, including Thesis and dissertations. The combination of technology and open-source initiatives has promoted the development of Thesis and dissertations in electronic form (Alpasan, 2022).

Similarly, archiving Thesis and dissertations has been a subject of ongoing conversation among archivists since the 1950s. In 1997, American universities introduced electronic Thesis and dissertations (ETD) submission requirements to make these materials more accessible to researchers (Nimer & Wiederhold, 2022).

As society becomes more inclined to promote the idea of sharing information freely, a powerful concept called "open access" has gained prominence. This concept highlights how educational institutions can support the idea of making the results of research projects, like Thesis and dissertations, easily accessible to the public. By doing so, they create a strong base for future research in different fields. (Program, 2005).

Moreover, State Universities are reassessing how they publish and store scholarly work. They understand their crucial role in promoting communication and research. As a result, they are using online publishing more often to enhance scholarly communication (Vijayakumar, 2010).

The rationale for undertaking this research project titled, Thesis and Dissertations Archiving System arises from the need to address the complex challenges associated with the preservation, accessibility, and management of electronic Thesis and dissertations within the university particularly in

CIT. This research endeavors to bridge the gap between the traditional way of archiving the Thesis and dissertations in the University and the evolving digital landscape, thereby ensuring its accessibility, knowledge preservation, academic excellence, and scholarly continuity, thus fortifying the foundation of University's scholarly legacy.

➢ Objectives of the Study

The general objective of the study is to develop a Thesis and Dissertations Archiving System of Carlos Hilado Memorial State University to support the archiving of research projects.

Specifically, it aimed to,

1. Develop a Thesis and Dissertation Archiving System with the following technical features:
   a. user-friendly interface;
   b. easy search mechanism;
   c. easy tracking of Thesis and dissertation projects
   d. efficient borrowing and returning thesis and dissertation books.
2. Test the functionality of the aforementioned features.
3. Evaluate the usability of Thesis and Dissertation Archiving System of CIT In terms of:
   a. system usefulness;
   b. information quality;
   c. interface quality; and
   d. overall usability.
3. Develop a user manual.

MATERIALS AND METHODS

Research Design

In this study, the researchers employed both the Developmental the Descriptive research methods. Developmental research was applied to the development of the system, encompassing both hardware and software components (Dellosa, 2012). Meanwhile, the Descriptive method was utilized to assess the quality and functionality of the Thesis and Dissertation Archiving System (Caipang, 2013).

Developmental research was chosen as it allows for the assessment of the system's evolution and changes over time. Conversely, the descriptive method was employed to collect and interpret data, aiding in the explanation and validation of the study's results to determine the system's potential benefits for the organization. The system's development followed the Iterative Model of Software Development Life Cycle (SDLC).

Respondents of the Study

The respondents of the study were the administrator, 3 teachers, 10 students, 5 researchers and, and 4 IT Experts from the institution and industry.

Table1: *Respondents of the Study*

Respondents	No. Of the Respondents	%
Administrator	1	4%
User (Teachers)	3	13%
User (Students)	10	43%
User (Researchers)	5	22%
IT Experts	4	17%
Total	23	100%

As shown in Table 1, the respondents of the study consisted of twenty-three (23) participants. These participants were categorized as follows: 4% represented an administrator, 13% constituted a group of three (3) teachers, 43% comprised by ten (10) students, 22% included five (5) teachers, and 17% were composed of 4 IT experts.

System Development Life Cycle (SDLC)

The Software Development Life Cycle (SDLC) serves as a structured framework for the creation and delivery of software applications. It is a standardized process extensively utilized in the software industry to design, develop, and rigorously test software of exceptional quality. SDLC plays a

crucial role in ensuring the production of high-quality software that aligns with customer expectations, adheres to predetermined timelines, and stays within budget constraints. This systematic approach is consistently applied in software organizations to govern the course of software projects. SDLC encompasses a methodology aimed at enhancing software quality and refining the overall development process (Salve et al.,2018).

The type of SDLC that is followed in the study is the rapid application development (RAD) model, a method of software development, that puts heavy emphasis on prompt prototyping and iterative delivery. The RAD (Rapid Application Development) model, known for its incremental development approach, proved to be a fitting choice for building the Thesis and Dissertations Archiving System. This decision was driven by a thorough understanding of the project's requirements, the ability to deliver software in manageable increments within a tight timeframe, and the system's inherent scalability.

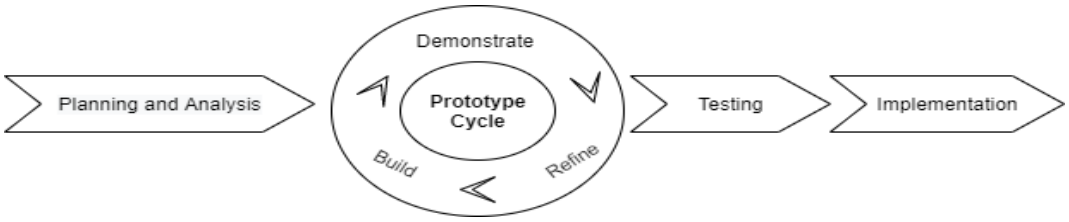


Figure 1. *Rapid Application Development (RAD) Model*

Figure 1 illustrates the software development model employed by the researchers during the system's development. It provided a visual representation of the various stages and processes that researchers should adhere to achieve optimal results in system development. These stages encompasses analysis and quick design, prototype cycles, testing, and implementation discussed as follows.

Software Development Phases

The software development phases of the study include the planning, analysis, design, coding, and testing phase of the study for this study.

Planning Phase.

Initially, the researchers sought permission from the CIT Department at Carlos Hilado Memorial State University to conduct interviews and engage them as beneficiaries of this project.

This phase involved identifying key stakeholders, establishing objectives, and outlining the specific functionalities and features that the system encompassed. Additionally, a preliminary timeline and budget were established by the researchers, ensuring that the project remained on track.

Analysis Phase.

During the Analysis phase of the software development process for the Thesis and Dissertations Archiving System, the researchers conducted a deep dive into the requirements and needs of the system. This phase involved in-depth discussions and consultations with the end users, including faculty members, researchers, and students. Through observation and interviews, the researchers gathered valuable insights into the specific features and functionalities that the archiving system should offer. These insights helped in shaping a clear and detailed set of requirements that served as the foundation for the system's design.

In addition to requirement gathering, the analysis phase also involved defining the system's architecture and database structure and process flow.

Moreover, the researchers conducted reviews of existing literature and prior arts that were relevant to the user requirements. This involved a careful analysis to determine areas where enhancements could be made without sacrificing the essential needs.

Considerations for scalability and future expansion were also integrated into the system's architecture to ensure that it could accommodate a growing repository of Thesis and dissertations. Ultimately, the analysis phase laid the foundation for the design and development, providing a clear roadmap for building a user-friendly archiving system tailored to the needs of CIT.

Design Phase or Prototyping.

This phase involves identifying the system's operations and designing its interface. After completing the first and second phases, the researchers will have gathered all the necessary data for the system. Then, the developers started

building the prototype of the system, from the backend to the frontend, and ensured that it was progressing correctly. During this stage, the initial design is presented to the user based on the gathered data. Any design changes and additional features are made in accordance with the user's suggestions and requirements.

Coding Phase.

The coding phase in the Software Development Life Cycle (SDLC) for the Thesis and Dissertations Archiving System was the phase where the researchers translated the system's design and specifications into actual code. During this phase, the researchers selected appropriate programming languages and tools (PHP MySQL, CSS, JavaScript), established development environments, and created modular components for various system functionalities.

The researchers implemented the database structure, developed the user interface, and crafted the back-end logic.

Continuous testing and debugging were done to identify and correct errors. This phase formed the backbone of the system's development, laying the groundwork for the next phase which were functionality and usability tests.

Testing Phase.

This phase was conducted to test the functionality and usability of the system. During this stage, the researcher conducted comprehensive testing with end-users to ensure the system operates in accordance with user expectations. Iteratively, feedback from users is incorporated into the system through coding modifications, leading to a series of tests and retests aimed at optimizing the system's performance and seamless operation.

Functionality Testing. The functionality test had been conducted to test the function of each software application. The testing had checked the functionality of the system including, but not limited to, user interface, security, and client/server communication of the system.

Test Cases. To test the system's functionality, a set of test cases was employed. These test cases facilitated user validation of the system by allowing them to assess test scenarios and mark them as either a pass or fail. Additionally, a section for remarks and comments was provided to enhance understanding of the ratings. The test cases encompassed a range of test case IDs from 1 to 4, each corresponding to specific system features, including a user-friendly interface, easy search mechanism, easy tracking of Thesis and dissertation projects, and efficient borrowing and returning thesis and dissertation books. Within each test case, detailed test steps and expected outcomes were outlined based on the system feature being evaluated in the respective test scenario.

Usability Testing. To evaluate the usability of the system, the researcher used the standardized Post-Study Usability Questionnaire (PSSUQ) that is to the 23 respondents; 3 teachers, 10 students, 5 researchers and, and 4 IT Experts from the institution and industry.

In this study, the Post-Study System Usability Questionnaire (PSSUQ) used was the third version, comprising a total of 16 questions categorized into four distinct aspects: system usefulness, information quality, interface quality, and overall usability. Respondents provided their feedback using a 7-point Likert scale, with an option for "not applicable" at the end. System usefulness, encompassing questions one (1) to six (6), evaluated users' perception of the system's ease of use, learning curve, and its efficiency in accomplishing tasks. Information quality, as assessed through questions seven (7) to twelve (12), focused on the system's interaction with users, including the provision of error messages and guidance to resolve issues, as well as the clarity and comprehensibility of the information presented. Interface quality, evaluated through questions thirteen (13) to sixteen (16), gauged the extent to which the system met user needs based on its features and capabilities. Finally, overall usability, derived from responses to all sixteen (16) questions, encapsulated users' subjective impressions of their overall experience with the product.

Development of the User's Manual

The development of the user's manual for the Thesis and Dissertations Archiving System study involved a comprehensive process to provide users with clear and concise guidance on how to navigate and utilize the system effectively. It began with a thorough understanding of the system's functionalities and user requirements, followed by the creation of detailed, step-by-step instructions for various tasks such as document submission, searching, and account management.

The manual was designed to be user-centric, considering the varying levels of user expertise and ensuring that both novice and experienced users could easily comprehend and follow the instructions. User interface screenshots were incorporated to enhance clarity, and the manual was organized in a logical sequence to facilitate easy reference. Furthermore, the manual was reviewed with actual users to gather feedback for maximum usability.

RESULTS & DISCUSSIONS

The primary goal of the Thesis and Dissertations Archiving System was to facilitate the archiving of research projects within the CIT Department at Carlos Hilado Memorial State University, Talisay City. This program involved the responsibility of the administrator to input information related to Thesis and dissertations. Additionally, the system aimed to enhance accessibility and speed of information retrieval. It also introduced the capability for users, including students, faculty,

and external researchers, to borrow books online. The system administrator would oversee the scheduling process, allowing users to reserve books at their convenience.

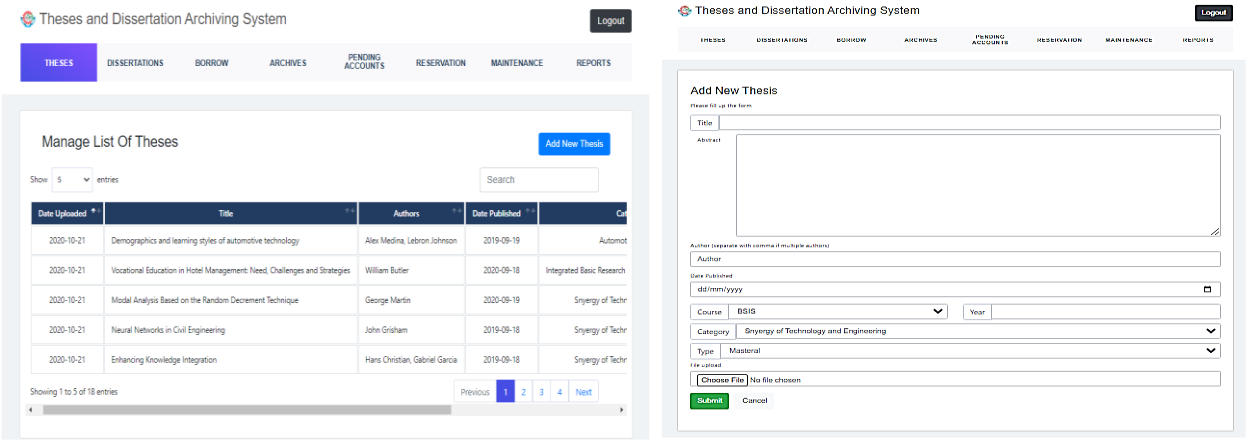
The development of the Thesis and Dissertations Archiving System represents a significant step forward in addressing the archiving and retrieval needs of the CIT Department. The system's user-friendliness offered a clear advantage in terms of information management and accessibility.

The archiving process, overseen by the administrator, ensures that the wealth of academic work produced by the department is systematically organized and readily available. This not only enhances the department's research capabilities but also contributes to the preservation of valuable academic contributions.

Thesis and Dissertations Archiving System comprises of the following.

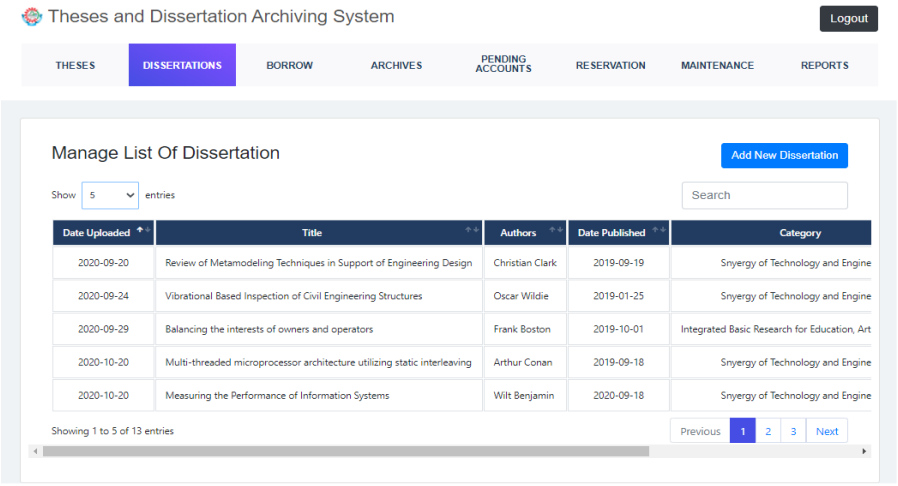
User-friendly Interface. The implementation of a user-friendly interface in the Thesis and Dissertations Archiving System has resulted positively, significantly enhancing the overall user experience. Users, including students, faculty, and researchers, have shown ease of navigation, streamlined information retrieval, and efficient interaction with the system.

Figure 1: *User-friendly interface*



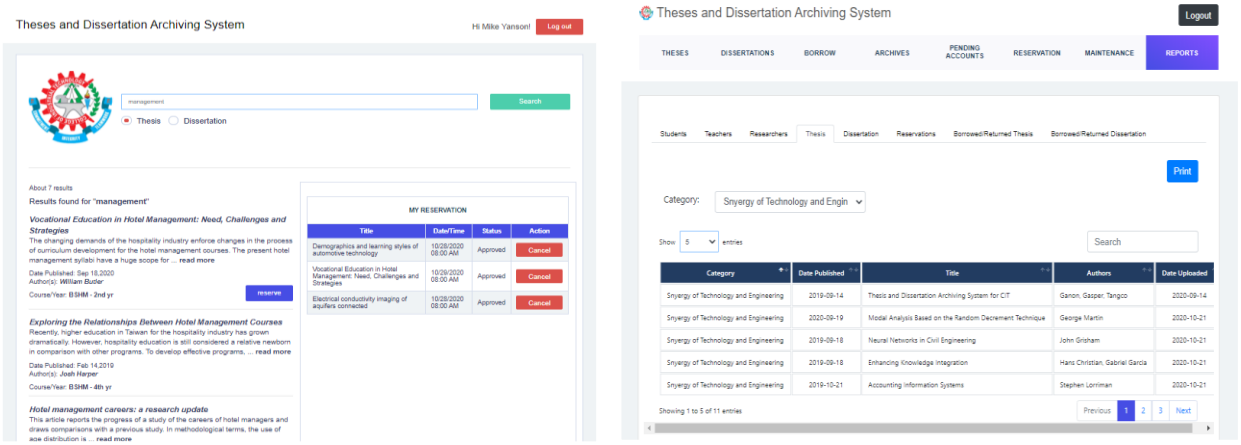
Easy search mechanism. Users were able to search for Thesis and dissertations by typing in titles or author names. It helps them quickly and accurately find the information they need. This search process has not only improved research efficiency but has also enriched the overall user experience by reducing the time and effort required to access valuable academic content. Consequently, the easy search mechanism aligns with the system's objective of providing efficient and user-friendly access to the collection of scholarly Thesis and dissertations.

Figure 2: Easy search mechanism



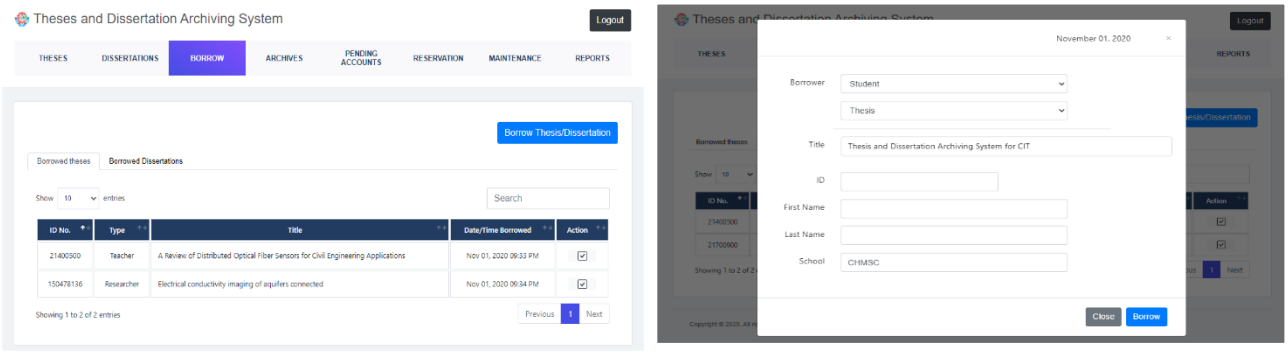
Easy tracking of Thesis and dissertation. With this feature, the admin has found it significantly simplifies the process of monitoring and managing the Thesis and dissertation records. Through this feature, the admin can easily keep tabs on the status and availability of Thesis and dissertations. This tracking capability not only promotes better organization but also ensures that users can readily access and engage with the Thesis and dissertations they need.

Figure 3: Easy tracking of Thesis and dissertation



Efficient borrowing and returning thesis and dissertation books. Users have found it easier and quicker to borrow and return Thesis and dissertations through the system, and this has not only saved them time but also made things simpler for the admin. This feature ensures that users, including students, teachers, and researchers, can access the resources they require while contributing to better resource management within the system. By simplifying the borrowing and returning processes, the system has enhanced the accessibility and utilization of Thesis and dissertations.

Figure 4: *Efficient borrowing and returning thesis and dissertation books.*



Furthermore, the functionality testing, using the test cases and means, showed a pass rating of 100% out of its twenty-three (23) users, including 4 IT Experts.

Table 2. Functionality Test Summary Result

No.	Features	No. of Passed	Passed
1	user-friendly interface	23	100%
2	easy search mechanism	23	100%
3	easy tracking of Thesis and dissertation	23	100%
4	efficient borrowing and returning thesis and dissertation books	23	100%

The third objective of the study was to assess the level of usability of the Thesis and Dissertations Archiving System among end-users and IT experts in terms of system usefulness, information quality, interface quality, and overall satisfaction using the parameters of PSSUQ-3.

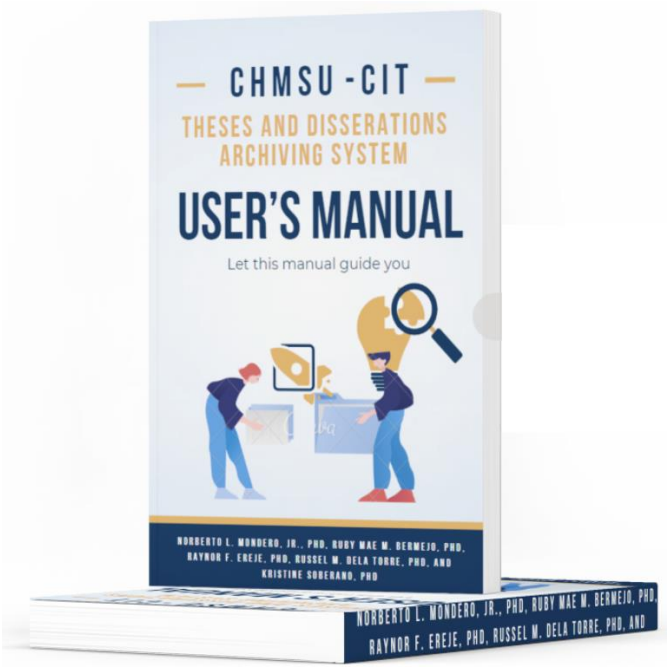
The result of the data is interpreted as Very High, High, Moderate, Low and Very Low. Mean Scores 1.00-1.79 is interpret as Very High (VH), 1.80-2.59 is High (H), 2.60-3.39 is Moderate (M), 3.40-4.19 is low (L) and 4.20-5.00 is Very Low (VL).

Table 2 shows the mean scores representing the levels of usability of the system. The data reveals an overall mean score of 2.28, indicating a high degree of acceptability among respondents. In terms of Information Quality, respondents provided a mean score of 2.43, suggesting a high level of acceptance concerning the quality of information within the system. Interface Quality attained an average score of 2.46, signifying a highly acceptable system interface quality. The System Usefulness category received an average score of 1.94, which statistically implies a high level of acceptance, indicating that respondents find the system highly acceptable and ready for use. The mean score for the Overall Usability of the System indicates that respondents express satisfaction with all system features and that it effectively fulfills both stated and implied requirements.

Table 2. Usability Test Summary Result

Parameters	Items Covered in PSSUQ-3	Mean
System Usefulness	Items 1 to 6	1.94
Information Quality	Items 7 to 12	2.43
Interface Quality	Items 13 to 16	2.46
System Overall Usability	All items	2.28

Finally, a user manual was developed to provide users with comprehensive guidance on system operation of the Thesis and Dissertation Archiving System. This manual comprises an introductory section, system prerequisites, and a detailed, step-by-step walkthrough of accessing and utilizing the system's functionalities.



CONCLUSIONS

Based on the findings of the study, the following conclusions were formulated:

(1) In conclusion, the development of the first objective, which was to develop the Theses and Dissertations Archiving System with specific technical features, was achieved. The successful implementation of a user-friendly interface contributed to the system's usability, making it more accessible to the users. The implementation of an easy search function simplifies information retrieval, ensuring that users can efficiently access theses and dissertations. Furthermore, the system's efficient tracking capabilities have enhanced the management of theses and dissertations, while the simplified borrowing and returning processes have contributed to a more productive and user-centric experience. Together, these technical features have made the system easier to use. They contributed to the system's main goal of being a helpful and efficient way to store and retrieve theses and dissertations.

(2) The Theses and Dissertations Archiving System passed in terms of functionality. This means that the system has been found to work correctly and effectively in terms of its primary functions, such as archiving, retrieving, and managing theses and dissertations. Users can expect the system to perform these tasks reliably, contributing to its overall usability and value in an academic context.

(3) The Theses and Dissertation Archiving System has achieved a high usability index and is considered acceptable in terms of usability, encompassing system usefulness, information quality, interface quality, and overall usability. This suggests that the system has been evaluated positively by users, and it effectively meets the criteria for usability and user satisfaction. It can be concluded that the system performs well in facilitating users' access to and interaction with the theses and dissertation resources, ensuring an efficient and user-friendly experience.

(4) In conclusion, the development of the user manual for the Theses and Dissertation Archiving System serves the purpose of assisting users and providing guidance on how to effectively use the software system.

RECOMMENDATIONS

The following are the recommendations provided by the system's users and evaluators.

It was recommended that end-users should have access to a high-speed internet connection to ensure the proper functioning of the system and its features.

It was also recommended to enhance Information Quality by addressing issues related to errors and providing better online help resources, as identified during the evaluation process.

Moreover, it was strongly recommended to implement this system within the institution. This implementation will significantly improve the efficiency of archiving and information retrieval processes, benefiting all researchers.

Lastly, it was recommended that investigating potential integrations with emerging technologies or exploring opportunities for expanding the system's functionality to include additional features that enhance its utility for academic research and archiving could be beneficial.

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