Evaluation and Acceptability of the Developed Research E-Library for College of Communication and Information Technology

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Abstract: The research study aimed to create a system that could help future researchers of PRMSU-CCIT in their respective fields. The study used the quantitative method and ISO/SEC 25010:2015 Software Quality Metrics to evaluate the system. The study found that CCIT Faculty and CCIT Students can use the system and even the other schools who seek studies related to the computer field. Also, the respondents assessed the E-Library for CCIT Theses and Capstone Projects in terms of functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability as excellent. The respondents assessed the E-Library for CCIT Theses, and Capstone Projects in the Level of Acceptability was Highly Acceptable, indicating that the developed system could respond to the users' needs to provide research information. The researchers recommended that functional suitability and usability evaluation be conducted to enhance the system further. The E-Library for CCIT Theses and Capstone Projects should be implemented in the college to have an electronic application for theses and capstone projects.

Keywords: Electronic Application, E-Library, Software Quality

1. Introduction

Digital transformation is a phenomenon that has been occurring in our daily lives and affects practically every aspect of human life. In this context, academic libraries worldwide have been implementing new technologies and ICT applications to keep up with the latest innovations while also keeping their patrons connected [7]. Now, in society worldwide, technology is the most significant advancement, a necessity in progress as we move along in this computerized world. These changes, in effect, make man's life easier and more convenient. The relationship between the library and computer is constantly changing, that the use of computers contributes to the way man learns and communicates. It's easy in this world to strive for changes, and since the library is no different from any firm and institution, using a computer to perform a given task will be efficient. Librarians have the responsibility not only to know how libraries will be managed using computerized techniques but also to be aware of the changes that computerized can bring to the library services shortly. Traditionally, library systems were set up by hand. Forms were given to the librarian, and they fill them using pens. Afterward, the school administrators processed them manually and compiled them on a large bulky file cabinet. Indeed, the manual library system is very costly, time-consuming, and tedious. A study on users' perception of digital library facilities, resources, and services found that users are satisfied with it [1].

Digital libraries combine technology and information resources to allow remote access, breaking down the physical barriers between resources. Although these resources will remain specialized to meet the needs of specific learners, digital libraries will allow teachers and students to take advantage of more comprehensive ranges of materials and communicate with people outside the formal learning environment. This will allow more integration of the different types of learning. The revolution in

technology has brought about critical changes and a demanding environment in academic libraries [6]. From a business perspective, integrating technology in the business process was essential to expedite transactions like in car rental businesses [3].

The researchers illustrate the types of information resources digital libraries offer to teachers and learners and discuss some of the digital libraries' issues and challenges for teaching and learning [9]. Postgraduate male students of 28.57% were highly satisfied with the digital library services is higher than postgraduate female students of 26.12% [10]. Students today must have computer knowledge and abilities to complete their schoolwork and careers [4], [8].

The quality of education is being challenged with crucial problems [5]. The study discovered that the University's use of digital libraries in distance education was severely limited due to a lack of strategic support, consistent policies, and dedicated financing for digital library activities [2]. Along with other developing countries in Southeast Asia, the Philippines shares many problems and limitations as its fellow developing nations. Reality tells us that even if the public-school teachers are qualified to teach, the lack of instructional materials, inadequate facilities that students reach up to sixty pupils in a classroom, and lack of professional growth hindered them from performing at their best.

This study aimed to develop the E-Library for CCIT Theses and Capstone Projects useful for every student and Faculty member of PRMSU-CCIT. This study was conceptualized and designed to provide an E-Library for CCIT Theses and Capstone Projects. The developed system is on a web page that can provide helpful information about their subjects and references.

2.   Material and Methods

The research method used by the researchers includes the development cycle of using different ways such as analysis, designing development coding, testing. It would also include operational and testing procedures and respondents' evaluation procedures.

2.1   Research Design

The researchers studied and utilized the descriptive research method with the questionnaire as the primary data gathering instrument. The study would determine how effective this perception of the respondents. The descriptive process involves data collection of references about the subjects to test the hypothesis or answer questions. The problems that would come up from the existing system would try to solve by the proposed method.

2.2   Respondents and Sampling Technique

The researchers applied the random sampling technique, in which the sample may be randomly selected from the CCIT Students and CCIT Faculty of President Ramon Magsaysay State University. A total of one hundred (100) respondents have evaluated the Software Quality and Level of Effectiveness of the proposed system.

Table 1. **Distribution of Respondents**

Respondents	Frequency
CCIT Faculty	**10**
CCIT Students	**90**
Total	**100**

3.   Results and Discussion

Using the ISO/SEC 25010:2015 Software Quality Metrics to assess the effectiveness and level of acceptance of the developed system, the researchers utilized the tool to gather necessary data from the

study respondents. Using the device, the researchers assessed the developed system's functionality, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability. The researchers also evaluated the level of acceptance of the developed system in terms of functionality and performance.

3.1 Evaluation on the Software Quality of the E-Library for CCIT Theses and Capstone Projects

Table 2. Data Interpretation of Faculty and Students on the Use of the Proposed System

Criteria	Faculty		Students	
	Weighted Mean	Descriptive Interpretation	Weighted Mean	Descriptive Interpretation
A. FUNCTIONAL SUITABILITY				
The application covers all the specified tasks and user objectives	4.60	Excellent	4.42	Excellent
The application provides the correct results with the needed degree of precision.	4.60	Excellent	4.47	Excellent
The functions facilitate the accomplishment of specified tasks and objectives.	4.70	Excellent	4.46	Excellent
Mean	*4.63*	*Excellent*	*4.45*	*Excellent*
B. PERFORMANCE EFFICIENCY				
The response, processing times, and throughput rates of an application, when performing its functions, meet requirements.	4.60	Excellent	4.42	Excellent
The amounts and types of resources used by a system, when performing its functions, meet requirements.	4.60	Excellent	4.47	Excellent
The maximum limits of an application parameter meet requirements.	4.70	Excellent	4.46	Excellent
Mean	*4.63*	*Excellent*	*4.45*	*Excellent*
C. COMPATIBILITY				
The application can exchange information with other systems and perform its required functions while sharing the same hardware or software environment.	4.60	Excellent	4.42	Excellent
The application can perform its required functions efficiently while sharing a familiar environment and resources with other applications, without detrimental impact on any other application.	4.50	Excellent	4.30	Excellent
The two or more applications can exchange information and use the information that has been exchanged.	4.30	Excellent	4.33	Excellent

Mean	*4.47*	*Excellent*	*4.35*	*Excellent*
D. USABILITY				
The users can recognize whether an application is appropriate for their needs.	4.70	Excellent	4.40	Excellent
Specified users can use the application to achieve set learning goals to use the application with effectiveness, efficiency, freedom from risk, and satisfaction in a specified context of use.	4.70	Excellent	4.46	Excellent
The application has attributes that make it easy to operate and control.	4.70	Excellent	4.41	Excellent
The application protects users against making errors.	4.60	Excellent	4.40	Excellent
The user interface enables pleasing and satisfying interaction for the user.	5.00	Excellent	4.50	Excellent
The application can be used by people with the broadest range of characteristics and capabilities to achieve a specified goal in a specified context of use.	4.30	Excellent	4.32	Excellent
Mean	*4.67*	*Excellent*	*4.41*	*Excellent*
E. RELIABILITY				
The application meets the needs for reliability under regular operation.	4.38	Excellent	4.60	Excellent
The application is operational and accessible when required for use.	4.37	Excellent	4.50	Excellent
The application operates as intended despite the presence of hardware or software faults.	4.47	Excellent	4.40	Excellent
In the event of an interruption or a failure, the application can recover the data directly affected and re-establish the desired state.	4.34	Excellent	4.30	Excellent
Mean	*4.39*	*Excellent*	*4.45*	*Excellent*
F. SECURITY				
The application ensures that data are accessible only to those authorized to have access.	4.60	Excellent	4.37	Excellent
The application prevents unauthorized access to, or modification of, computer programs or data.	4.40	Excellent	4.27	Excellent
The events can be proven to have taken place so that the events or actions cannot be repudiated later.	4.10	Excellent	4.30	Excellent
The actions of an entity can be traced	3.70	Excellent	4.31	Excellent

uniquely to the entity.				
The identity of a subject or resource can be proved to be the one claimed.	3.90	Excellent	4.28	Excellent
Mean	*4.14*	*Excellent*	*4.30*	*Excellent*
G. MAINTAINABILITY				
The application is composed of discrete components such that a change to one component has minimal impact on other components.	4.40	Excellent	4.40	Excellent
The asset can be used in more than one system, or in building other assets.	4.30	Excellent	4.37	Excellent
The effectiveness and efficiency with which it is possible to assess the impact on a system of an intended change to one or more of its parts, diagnose a system for deficiencies or causes of failures, or identify parts to be modified.	4.50	Excellent	4.31	Excellent
The application can be effectively and efficiently modified without introducing defects or degrading existing system quality.	4.10	Excellent	4.40	Excellent
The effectiveness and efficiency with which test criteria can be established for a system and tests can be performed to determine whether those criteria have been met.	4.80	Excellent	4.36	Excellent
Mean	*4.42*	*Excellent*	*4.37*	*Excellent*
H. PORTABILITY				
The application can effectively and efficiently be adapted for different or evolving hardware, software or other operational or usage environments.	4.50	Excellent	4.49	Excellent
The effectiveness and efficiency with which an application can be successfully installed and/or uninstalled in a specified environment.	4.40	Excellent	4.36	Excellent
The application can replace another specified software for the same purpose in the same environment.	4.40	Excellent	4.47	Excellent
Mean	*4.43*	*Excellent*	*4.44*	*Excellent*
General Weighed Mean	*4.47*	*Excellent*	*4.40*	*Excellent*

Note: 5.00-4.20 – Excellent; 4.19-3.40 - Very Good; 3.39-2.60 – Good; 2.59-1.80 – Fair; 1.79-1.00 – Poor

Table 2 shows the result of the survey questionnaire on the evaluation of the developed system. The functionality and performance efficiency of the system gained an excellent outcome from both faculty (4.63) and students (4.45), indicating that the functions facilitate the accomplishment of specified tasks, objectives and also the response, processing times, and throughput rates of an application when performing its operations, meet requirements. The system's compatibility was also excellent for faculty (4.47) and students (4.35), indicating that the application can exchange information with other systems and perform its required functions while sharing the same hardware or software environment. For the usability of the developed system, the faculty (4.67) and students (4.41) answered excellently. This indicates that the user interface enables pleasing and satisfying interaction for the user. The reliability of the developed system was also excellent for both faculty (4.39) and students (4.45), which indicates the application operates as intended despite the presence of hardware or software faults. The security of the developed system was also excellent for both faculty (4.14) and students (4.30). The maintainability of the developed system was also excellent from both faculty (4.42) and students (4.37), which indicates that the software was easy to maintain. Lastly, under portability of the developed system was also excellent from both faculty (4.43) and students (4.44). This indicates that the user was able to install the developed system easily.

The developed system generally garnered a general weighted mean of 4.47 or excellent for faculty and 4.40 or excellent for students. The results indicated that the developed system was able to respond to the needs of the user-respondents on the criteria evaluated using the Software Quality tool.

3.2 Assessment on the Level of Acceptability of the E- Library for CCIT Theses and Capstone Projects

Table 3. Data Interpretation of Faculty and Students on the Level of Acceptance of the Proposed System

Criteria	Faculty		Students	
	Weighted Mean	Descriptive Interpretation	Weighted Mean	Descriptive Interpretation
A. FUNCTIONALITY				
Application completeness.	3.80	Highly Acceptable	4.27	Highly Acceptable
Accuracy and consistency of the application task.	4.40	Highly Acceptable	4.34	Highly Acceptable
Functionality of the system modules and contents.	4.40	Highly Acceptable	4.41	Highly Acceptable
Mean	*4.20*	*Highly Acceptable*	*4.34*	*Highly Acceptable*
B. PERFORMANCE				
User – friendliness of the application.	4.90	Highly Acceptable	4.39	Highly Acceptable
Effectiveness and efficiency to the users need of the application.	4.70	Highly Acceptable	4.42	Highly Acceptable
Mean	*4.80*	*Highly Acceptable*	*4.41*	*Highly Acceptable*
General Weighed Mean	**4.50**	*Highly Acceptable*	**4.38**	*Highly Acceptable*

Note: 5.00-4.20 - Highly Acceptable; 4.19-3.40 - Moderately Acceptable; 3.39-2.60 – Acceptable; 2.59-1.80 - Slightly Acceptable; 1.79-1.00 - Not Acceptable

Table 3 shows the data interpretation of faculty and students on the level of acceptance of the use of the proposed system. It is noticeable that the system's functionality is highly acceptable on both faculty and students, with a mean of 4.20 for faculty and 4.35 for students. On the performance of the proposed system, both the faculty and students perceived a highly acceptable result with a mean of 4.80 for faculty and 4.41 for students. In general, the proposed system's acceptability was highly acceptable, with an available weighted mean of 4.50 for faculty and 4.38 for students indicating that the developed system was able to perform its desired function and performance.

Conclusions

The results obtained from this study were based on the respondents' evaluation using the Software Quality instrument provided by the researchers. It was noticed that the proposed system increased the capability of the college to provide research materials to researchers. The use of the proposed system offers researchers the needed information available in the uploaded researches in the database system. It can be seen in the evaluation of both faculty and students on the use and acceptance of the proposed system that the system was excellent and highly acceptable in its desired function. It can be recommended that the college use the developed system and enhance the user interface in the future.

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