Online Refereed Researches Subscription System

Theresa Mee T. Sarenas-Habagat
Information Technology Department, Jose Rizal Memorial State University – Katipunan Campus, Katipunan, Zamboanga del Norte, Philippines
theresamee@yahoo.com

Abstract— In higher education institutions academic journals are sources of information for scholars and researchers. The study aimed to develop an Online Refereed Researches Subscription System for Jose Rizal Memorial State University to facilitate common services needed by the researchers. The study used the developmental research method and applied System Development Life Cycle. The instrument utilized for evaluation was patterned after the International Organization for Standardization and International and Electrotechnical Commission (ISO/IEC) 9126-1 for software quality factor where forty respondents comprising Faculty Researchers, Information Technology (IT) Professionals and IT Students were used to evaluate system’s effectiveness. The study revealed that the developed system is a hybrid system that can manage online process of acceptance, publication and subscription of researches and is found to have the six software qualities. Hence, it is recommended for adoption of the University as a tool for world-wide circulation of high-quality researches and additional income generating activities.

Keywords— Information Systems, subscription system, electronic journal, design and development, SDLC, ISO/IEC 9126-1

I. INTRODUCTION

Today, the Web has become indispensable, impacting nearly every aspect of human activities. It continues to leap ahead offering new capabilities and extending its reach and utility. Unarguably, it is the most influential technology since its evolution and has essentially become a universal platform for communications and interactions. Recent studies revealed that university students today prefer to use internet resources rather than the classical libraries for the purpose. Reference [1] disclosed that researchers’ information-seeking now goes on mostly outside the library. The accessibility of electronic journals means that academicians and researchers make fewer library visits [2]. This is also supported by the study of [3] that only 39.19% of the research scholars in University libraries of Andhra Pradesh visited the library daily.

In Universities, academic journals are sources of information for scholars and researchers. Peer reviewed journal articles are the preferred means of sharing and distributing research findings because they are highly credible and offer clarity to academic audience since it provides detailed findings and helped individuals to access the truthful facts. Similarly, electronic journals provide numerous service opportunities for libraries like multimedia capabilities, speed of production and distribution as well as accessibility. As research and publication is one of the area of evaluation set by the Commission on Higher Education (CHED) and other accreditation bodies for Center of Excellence (COE) and Center of Development (COD) and one of the four folds functions of the Higher Education Institution (HEI), the interest to contribute for its advancement becomes imperative for every University.

With the mandate to conduct research in support for the development of life and solution for country’s problem, the culture and environment for research among the constituents in the Jose Rizal Memorial State University is flourishing. Since 2006, the University has continued to strengthen its research programs by conducting a number of researches which is not only focused on education and policy disciplines, but also in business and tourism, agriculture and forestry, marine biology, health and environmental studies, engineering and mathematics, political and social sciences and maritime studies. The University requires two (2) faculty members to conduct one (1) research per semester and requires oral presentation in regional, national and international research fora, symposia and conferences as well as publication in the refereed journals. However, it has been a common practice by most of the University researchers that their research outputs ended only in oral national and international presentation. According to the Research Director of Jose Rizal Memorial State University, their office had produced 124 research outputs that were nationally and internationally presented by the 102 researchers for the year 2016 and 84 research outputs presented by 70 researchers for the year 2015. However, there were only 18 and 17 research outputs published for the year 2016 and 2015 respectively. This is because of the limited researches that can be published in “The Threshold”, the official research journal which was awarded as Best Journal, Category A-2 (international level) by the Commission on Higher Education (CHED) Journal Accreditation Services since only one volume is published per year by the Research Unit of the University.
Along this context, the researcher believed that there is a need to create a web-based subscription system for quality researches of Jose Rizal Memorial State University to make it visible and accessible to all interested readers, researchers and research-enthusiasts world-wide. This study aimed to develop an online refereed researches subscription system.

II. THEORETICAL/CONCEPTUAL FRAMEWORK

The study is anchored on Anderson’s Theory of Change (TOC) as adapted by [4], which states that the product of a series of critical-thinking exercises that provides a comprehensive picture of the early- and intermediate-term changes in a given community that are needed to reach a long-term goal articulated by the community. It also provides a detailed description and illustration of how and why a desired change is expected to happen in a particular context. This study also used the Baldrige Business Excellence Framework (BEF) that empowers any organization to attain its goals, improve results and become more competitive. It is a framework that focuses on improvement in seven (7) organizational critical areas, namely: a) leadership, b) strategy, c) customers, d) measurement, analysis and knowledge management, e) workforce, f) operations and g) results. This framework also provides assistance on what must be addressed to achieve sustained improvement by the organizations. The Theory of Change and Baldrige BEF were precisely applicable in the study since a desired change is very essential in the current research management of the University towards circulation of University’s research outputs in the local and national arena in order to attain world-wide circulation.

In order to realize the desired change in the current research management towards publication of research articles, this initiative is also anchored in “Principles and Theory of Automation” [5] and [6] conceptual framework for Applying Internet of Things (IoT) in Production System for Sensing Enterprise. The Principles and Theory of Automation which states that automation has three basic building blocks, namely: First, a source of power to perform some action; Second, feedback controls; and Third, the machine programming is the fundamental for Internet of Things. [5] mentioned that automation provides numerous advantages such as higher business production rates, more efficient use of resources, and more improved product quality.

Similarly, the Internet of Things (IoT) technology provides many benefits like better transparency or real-time information. The aim is helping the organization to identify the main elements to apply Internet of Thing in production systems. The IoT is structured in three levels: Edge level, which is the physical part of IoT to store information and provide enterprise information; Access Gateway level, which required network to send and receive information; and Application level, which utilizes the application from computer or mobile for communication to extend the present information system.

The new developed Online Refereed Researches Subscription System is based on the automated buildings blocks composed of computer hardware and programming languages and IoT structured layers which used the cloud in hosting the system, online payment schemes like Paypal, banking payments and key cards for the edge level; and used the internet and electronic mail communication for access level.

The schema of the study is presented in Figure 1. The innermost layer of the circle contains the requirements and procedures in each stage of project development in putting up the Online Refereed Researches Subscription System. The middle layer of the circle the different stages of system development. The outermost layer of the circle is the developed Online Refereed Researches Subscription System for Jose Rizal Memorial State University.

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III. METHODOLOGY

The study on online refereed researches subscription system utilized the developmental research method and applied the System Development Life Cycle (SDLC). The following are the stages in SDLC that served as the guide of the researcher in the system design and development.

Planning. In this stage, the researcher identified the objectives of the project and the requirements in the development of the Online Refereed Researches Subscription System. During the pre-planning stage, the researcher conducted an interview to the Research Coordinator on the status of researches in the University. The researcher also conducted an interview to some faculty researchers regarding their experience in processing research publication in The Threshold. Other faculty members were also interviewed to determine whether their researches were published online and determine the payment scheme used. Moreover, the researcher also conducted an interview to the University Research Director as to the number of researchers, number of researches presented in regional, national and international fora, symposium or conferences and number of researches published. At the same time the researcher conducted an interview regarding the current practices in the acceptance and publication of researches at the University Research Office.

Analysis. During the analysis stage the researcher determined the end-user requirements. The researcher broke down the study into constituent parts by categories according to the specific questions under the statement of the problem and brought into focus the essential features of the study. At the same time, the researcher analyzed the different theories and framework that were anchored like the Principles and Theory of Automation and Applying Internet of Things (IoT) on how it can be used in the study and determined the possible required operational and technical components of the new Online Refereed Researches Subscription System. The researcher carefully analyzed among the different cited literatures and studies to be incorporated in the design.

Design. The researcher prepared the abstract representation of the Online Refereed Researches Subscription System. The researcher made sure that new system meets the requirements of the end-users, as well as ensuring that future requirements can be addressed. The researcher also determined the most logical design and structure for data flow and storage, described in details the desired features and operations including screen layouts, and other documentation for the Online Refereed Researches Subscription System. In an architectural design, different modules were integrated in the system namely, registration of members or authors and submission of researches in text format (input); verification of registration sent to email address, publication and subscription of refereed researches (process); and downloading of research abstracts and articles (output).
Testing and Integration. In this process the researcher with the concerned users of the software tested and evaluated the program to identify the correctness, completeness, security and quality of developed computer software. The researcher also conducted survey to the different respondents on system evaluation in order to check the attributes of the system along functionality, reliability, usability, efficiency, maintainability, and portability.

Implementation and Deployment. During this phase, the researcher allowed the Information Technology professionals reviewed all the system risks and verified to ensure these were fixed. The researcher also checked whether the Online Refereed Researches Subscription System meets the requirements expected by the end-users and ensured that the correctness, completeness, security and quality were also met. The researcher also reviewed the results of the common system attributes along functionality, reliability, usability, efficiency, maintainability, and portability as evaluated by the different respondents of the study to determine if there is a need of modifying the system. Also, the researcher coordinated with the end-user’s support in order to collect crucial observations during the implementation to make the system effective.

Prior to the final deployment of the system in the University, the researcher suggested that it must be applied first for copyright registration in the local Intellectual Property Office to avoid violations stipulated in the Intellectual Property Code of the Philippines. The research paper that are qualified for online publication in the system should undergo all the publication processing and follow the University policies set by the Office of the Vice Present for Research, Extension and Development. The journals to be created and used in the system should be applied for the International Standard Serial Number (ISSN) at the National Library of the Philippines.

Maintenance. The periodic maintenance for the system is imperatively carried out to ensure that the system is performing excellently. Parts replacement of the system, continuous evaluation of the system’s performance, and updates for certain components of the system were considered and performed by the researcher to make sure that the system meets quality standards.

IV. RESULTS AND DISCUSSION
What are the current practices in the acceptance, publication and subscription of researches?

The research manuscript was submitted in hard copies by the author(s) for a schedule of double blind peer review. The manuscript passed through appropriate quality control such as evaluating for plagiarism before lay-outing into the journal’s page. The University journal does not offer research subscription.

What are the problems encountered in the acceptance, publication and subscription of researches?

The publication of researches were not meeting timelines or for the lack of designated full-time editorial staff to facilitate the processing from the acceptance up to the publication period. Limited researches from different disciplines were catered and published in the university journal.

What are the unique features in the newly developed online refereed researches subscription system?

The developed Online Refereed Researches Subscription System combined different features from Philippines Electronic Journal, University of the Philippines (U.P.) Diliman Journals Online, and Plaridel: A Philippine Journal of Communication, Media and Society. The unique features included are:

- submission of papers for review and editing through the designed website of electronic journal
- downloading of journal/papers is based on point system of subscription
- membership is renewable by year for author affiliation and readers
- provide additional points for the authors’ affiliation in submission of papers
- provide members dashboard in member’s account management
- provide members dashboard in submission of papers

- Subscription payment through PayPal

- website visitor
- s counter
What is the profile of the hybrid refereed researches subscription system in terms of:

4.1 Functionality;
4.2 Reliability;
4.3 Usability;
4.4 Efficiency;
4.5 Maintainability; and
4.6 Portability?

The study revealed that the developed Online Refereed Researches Subscription System for Jose Rizal Memorial State University obtained was found very acceptable by the evaluators of the system. It is shown in Table 1 that Online Refereed Researches Subscription System possessed with six (6) software quality characteristics, namely: functionality, reliability, usability, efficiency, maintainability and portability as evaluated through the instrument. It obtained an overall mean of 4.35 from the Faculty researchers and an overall mean of 4.53 and 4.66 from the Information Technology (IT) professionals and IT Students respectively. The overall results proved the acceptability of the application software.

Table I Results of the Software Evaluation

<table>
<thead>
<tr>
<th>Descriptors</th>
<th>Faculty Researchers</th>
<th>IT Professionals</th>
<th>IT Students</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average Weighted Value</td>
<td>Description</td>
<td>Average Weighted Value</td>
</tr>
<tr>
<td>Functionality</td>
<td>4.34 Very much functional</td>
<td>4.53 Very much functional</td>
<td>4.75 Very much functional</td>
</tr>
<tr>
<td>Reliability</td>
<td>4.31 Very much reliable</td>
<td>4.47 Very much reliable</td>
<td>4.61 Very much reliable</td>
</tr>
<tr>
<td>Usability</td>
<td>4.44 Very much usable</td>
<td>4.63 Very much usable</td>
<td>4.63 Very much usable</td>
</tr>
<tr>
<td>Efficiency</td>
<td>4.40 Very much efficient</td>
<td>4.62 Very much efficient</td>
<td>4.65 Very much efficient</td>
</tr>
<tr>
<td>Maintainability</td>
<td>4.27 Very much maintainable</td>
<td>4.46 Very much maintainable</td>
<td>4.65 Very much maintainable</td>
</tr>
<tr>
<td>Portability</td>
<td>4.36 Very high portability</td>
<td>4.44 Very high portability</td>
<td>4.64 Very high portability</td>
</tr>
<tr>
<td>Mean</td>
<td>4.35 Very much acceptable</td>
<td>4.53 Very much acceptable</td>
<td>4.66 Very much acceptable</td>
</tr>
</tbody>
</table>
V. CONCLUSIONS

The developed Online Refereed Researches Subscription System for Jose Rizal Memorial State University (JRMSU) is a hybrid system that can manage online the process of acceptance, publication and subscription of the refereed researches and journal. It is a system that serves an alternative method from the current practices of the University System Research Unit and additional tool for the circulation of the refereed researches world-wide.

The following recommendations are given:

1. The University System Research Unit must adopt the Online Refereed Researches Subscription System as a tool in managing the acceptance and publication of high quality researches. This is to motivate the researchers to further conduct more quality researches since this is their opportunity to publish their research outputs worldwide.

2. The University must also adopt the developed system since this can serve as additional income generating activities.

3. Future enhancement of the system that allow plagiarism check to articles published in Elsevier, Scopus and other prestigious online journal.

ACKNOWLEDGMENT

This research was made possible through the office of the vice president for research. Special thanks to Dr. Edgar S. Balbuena, Dr. Evelyn R. Campiseño, Dr. Jane T. Aquino, Prof. Armando T. Saguin, Jr., and Dr. Jhamie Tetz I. Mateo.

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