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Development of Electronic Journal Publication: A Digital Library of Research

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Abstract: *This study aimed to design and develop an Electronic Research Journal System: an online publication for Nueva Ecija University of Science and Technology - San Isidro Campus. The primary goal of this study was to develop digital libraries of published researches. With this system, researches that play a vital role in the world of academe will be readily available online. The system also accepts, stores, reviews, and posts research papers. The editor-in-chief of electronic journal publication serves as an administrator of the system who has full management control. The end-users are categorized into two types, the member who has full access to browse and download published research and the non-member, which has limited access to the published studies, where they can only find and read the research abstract. During the development, the proponent employed the Agile Software Development method in the conduct of analyzing requirements, designing web applications, testing, and making the necessary revisions. Selected end-users and IT experts evaluated the Electronic Journal System. The developed system is capable of records all the electronic research outputs, research publications, and working research papers managed by the editorial board team and recommended for the University to utilize the structure.*

Keywords: *Electronic Journal, Publication, Digital Library, Research.*

I. INTRODUCTION

Information Technology continuously emerges and transforms the way of our life and within a click of our fingertips it could radically bring you to a different side of the world. We are now in an era where all problems encountered are quickly solved by applying scientific knowledge and a useful tools.

Researchers such as scientists, inventors, students, educators, especially those in the field of research, spend most of their time and work hard in developing new knowledge, a gem that could bring evolution in the traditional and scientific beliefs of people. In the article in [1], it states that globalization, increasing automation, the growth of the Internet, and the dynamic componentization of business are driving the reconfiguration of service value networks to scale pace never before seen in history. With this significant contribution of the study, our life will improve, influence new ones, and foresee future problems so that we will be ready to face those challenges. Despite of all of those exceptional contributions in the field of research, researchers are still facing some difficulties. Most problems they encounter are finding research grants and funding, lack of library management, copying and manipulating data, lack of peer review, and finding the right publication for research.

Furthermore, according to the study conducted by authors in [2], information systems implementation is costly and has a relatively low success rate. This is an indication that people are reluctant to change. Moreso, the dilemma of researchers is where and how do they disseminate their research. As a usual practice, they will look for fora to present their research, and they go to different places to share the new development, innovation, experiment. The researcher chooses to avail the literary magazines, newspapers, scholarly journals, and self-publication to extend their studies.

In the realm of academia, research is crucial; in fact, it is one of the primary criteria in cycle No. 461 of the National Budget Circular (NBC 461) [3]. Making researches is considered a requirement that holds the highest rate and core requirements to upgrade the academic rank of faculty. It is very timely to develop a platform that will collect and manage studies conducted by faculty, staff, and students on NEUST - San Isidro Campus. Such electronic research journal capable of circulating the researchers' newfound learning, and as a system that will provide open access to the research will resolve previously mentioned challenges. Users of this electronic journal publication are categorized into two, the member and the non-member. If you are a member type of user, you will have full access to browse and download published researches. While the non-member type user is limited only in viewing the published studies, find and read the abstract, author, and other information about the publication.

As the prime source and controller of the publication of research, the Editorial Board ensures that online access is managed in such a way that high data security and integrity are ensured. The Electronic Journal Publication of NEUST - San Isidro Campus will provide easy queries and fast access to check and views the list of publishing research archives. For scholars and members, they may have access to a permanent record of individuals and may download published studies. And for non-member scholars have limited access to the published studies, where they can only find and read the research abstract.

II. SIGNIFICANCE OF THE STUDY

This study was deemed significant for the following:

Nueva Ecija University of Science and Technology - San Isidro Campus. As the beneficiary of the developed Electronic Journal Publication, the NEUST-SIC shall have its open access and management to the published researches.

Faculty and Staff. Shall see the lists of published researches. Submit paper for publication.

Research Services Unit. The beneficiaries of this system will be in charge of overseeing the entire system process and managing the campus and university's Electronic Journal Publication. Most importantly, it will keep track of the studies that have been done.

Authors. Shall have access to see the list of published researches. They can also submit a paper for review and post to the electronic research journal of NEUST - San Isidro Campus.

The Dream Editorial Team. As a local publication on the NEUST San Isidro Campus, the Dream is an online publication of conducted research by NEUST faculty and employees, as well as researchers who are interested in and willing to publish their study. The editor in chief has full control of the system and is responsible for regularly monitoring the online publishing.

III. OBJECTIVES

Journal publication is the new trend in publishing scholarly works where the paper reaches readers, has access, and interacts with authors. This will significantly impact the transition from print to an electronic journal [4]. In this way, research findings are more accessible to the authors. The study's main objective was to develop an electronic journal publication for Nueva Ecija University of Science and Technology-San Isidro Campus. Its function is to accept research papers and publish them online to help the researchers disseminate and impact their studies. In addition, to provide record management of researches in the electronic journal publication. According to the author [5,] converting library journals to digital format will improve services and broaden research platforms. Moreso, to allow researchers to access the electronic journal online with high data security and integrity. Furthermore, the promotion of research services of the campus and the university as a whole is and lastly, it archives and generates the paper summary report. According to the study of [6] promoting the research output defines that University have the responsibility in providing adequate information to satisfy the needs of a well-defined specialized clientele, the researchers.

IV. METHODOLOGY

The research approach employed in this study was developmental. During the development of the program, this part examined the study's research design, as well as ensuring that the methodologies used in the design process are rigorously followed, the flow of sampling design and methodology, sources of data, data collection instruments, and data gathering processes. According to the author [7] defined the development research as the systematic study of designing, developing, and evaluating instructional programs, processes, and products that must meet criteria of internal consistency and effectiveness. Developmental research is particularly important in the field of instructional technology. Accordingly, in [8] the developmental study is the process of synthesizing different elements which have been broken down to its specifics and putting together those which are related to be re-arranged in creating or developing a new model, concept, material or instrument.

In developing the system, the Agile Software Development method was employed. According to article (<https://www.cprime.com>) [9], it refers to a group of software development methodologies based on iterative development. It treated every requirement and solution that evolved thru collaboration between self-organizing cross-functional teams. Agile processes promote a disciplined project management process that encourages frequent inspection and adaptation on every deliverable.

Figure 1. below illustrates the Agile Software Development. It prioritizes the planning and analysis phases. To have a better grasp of the development project's scope by outlining it. This approach allows for easy measurement of development performance, identification of problems, and prompt resolution, which is the core focus of agile to get things done and progress regularly to the next iteration.

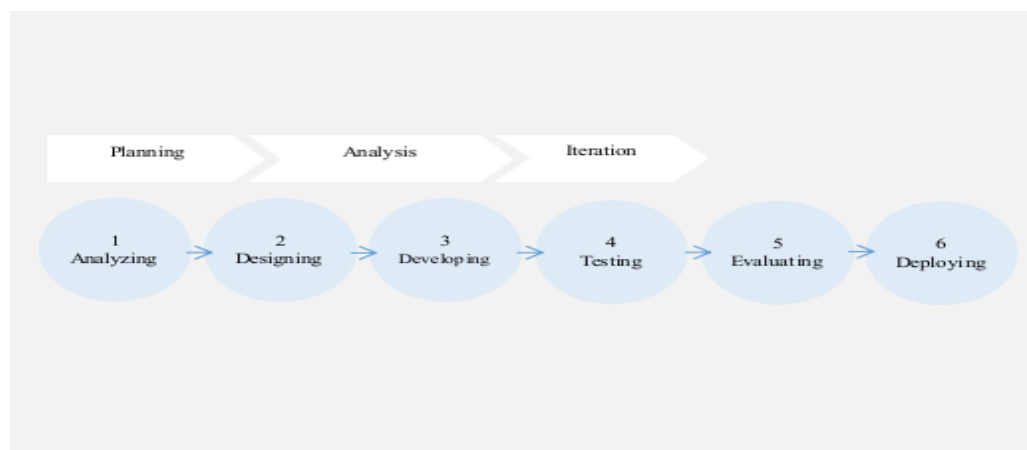


Fig. 1 Agile Software Development

The author mentioned in [10] that Gantt charts are significant useful in the history of modern project management, because they understand the benefits of splitting large projects into smaller manageable tasks. Thus, one was created for this project. As can be seen in Table 1, it follows the development timetable for electronic journal publication during the development phase. This part also included some software engineering graphics that discussed how the system was conceptualized. A context diagram level 0 was created, as illustrated in Figure 2 below, to identify the roles of the users. As depicted in Figure 3 below, a data flow diagram was created to explain the developed system's process flow. In addition, a use-case diagram was created, a method used in system analysis to identify, clarify, and organize system requirement [11], as displayed in figure 4 below, to define each user position in the system; and finally, an entity-relationship diagram was created, as pictured in figure 5, which provides a guideline on managing data and establishing the relationships between database tables. This structure helps data governance implementation.

TABLE I

Gantt Chart of the developed system Electronic Journal Publication of NEUST - San Isidro Campus

AGILE SOFTWARE DEVELOPMENT	1st Month				2nd Month				3rd Month				4th Month			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
PLANNING																
ANALYSING																
DESIGNING																
DEVELOPING																
TESTING																
EVALUATING																

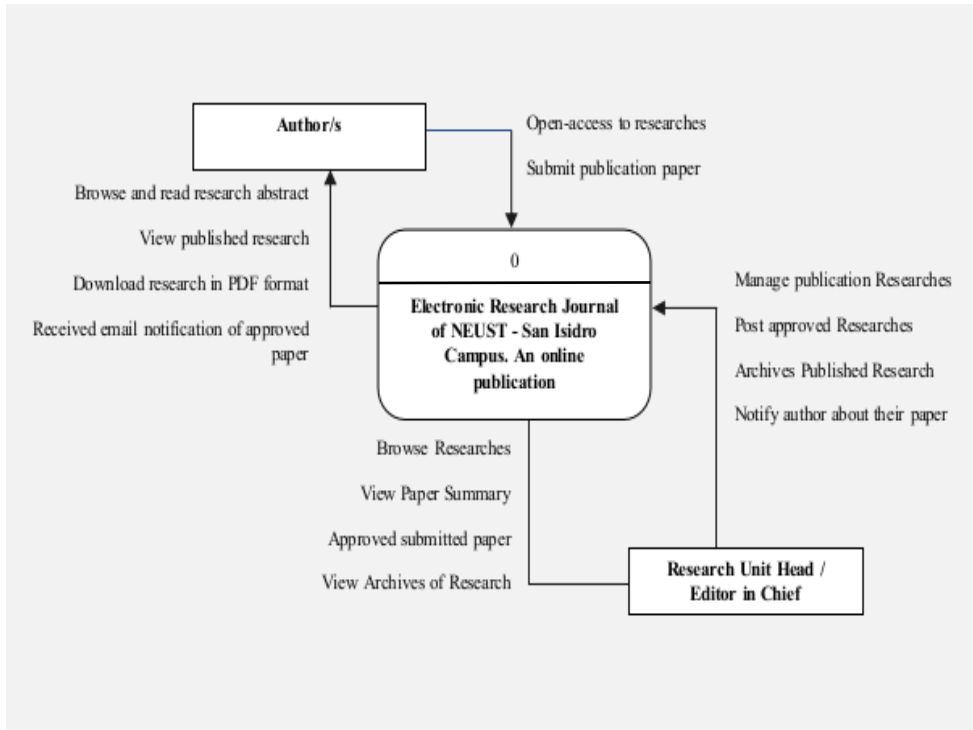


Fig. 2 Context Diagram | Level 0

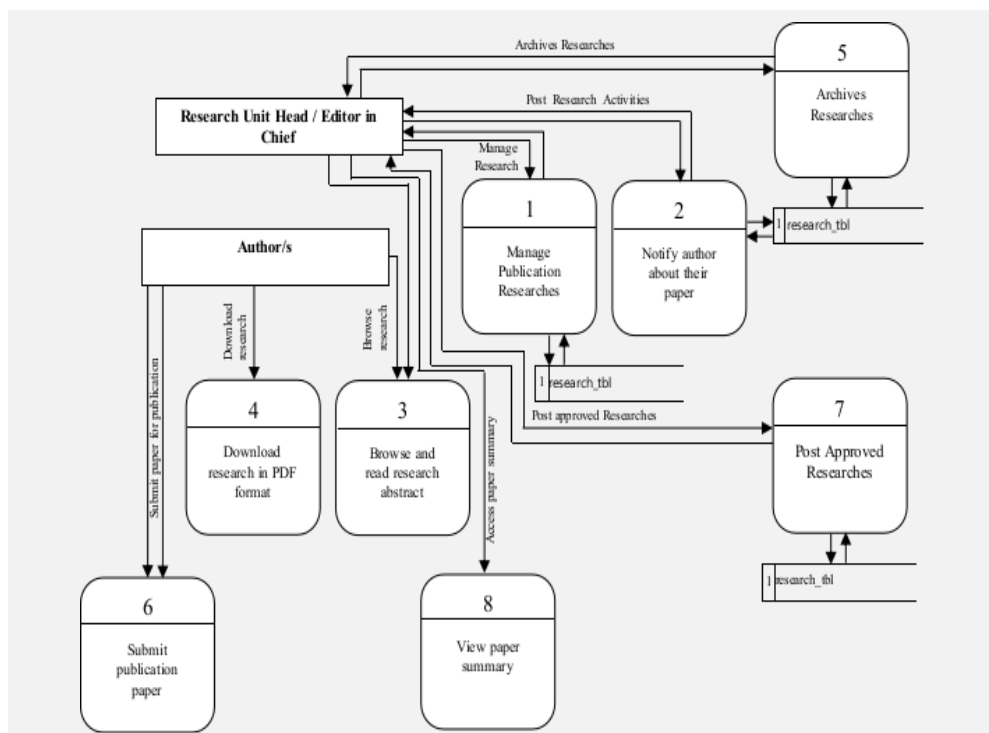


Fig. 3 Context Diagram | Level 1 - Representation of the Data Flow Diagram (DF) Processes

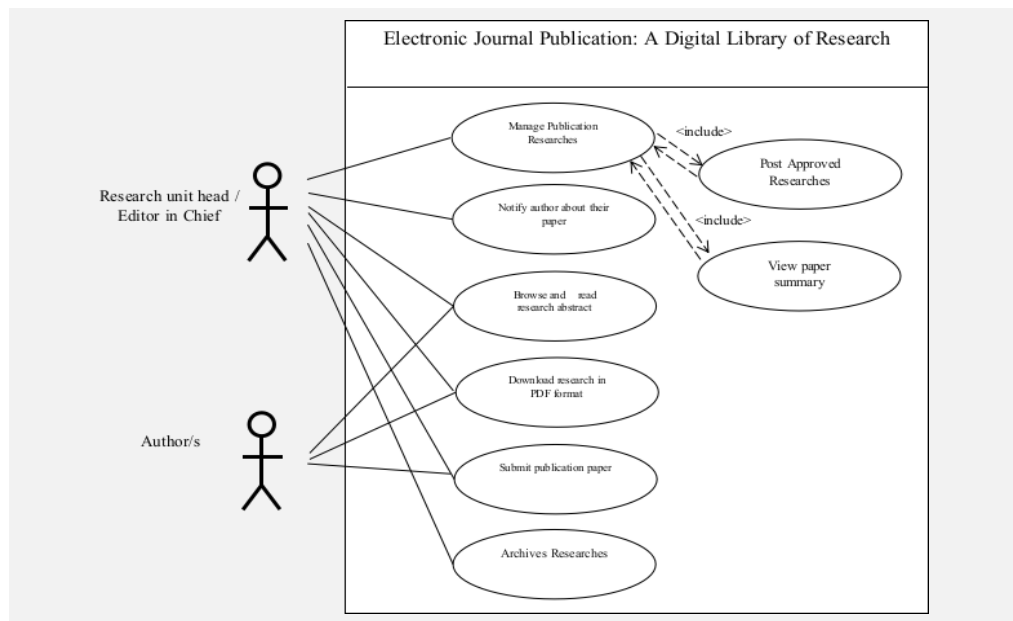


Fig. 4 Use Case Diagram

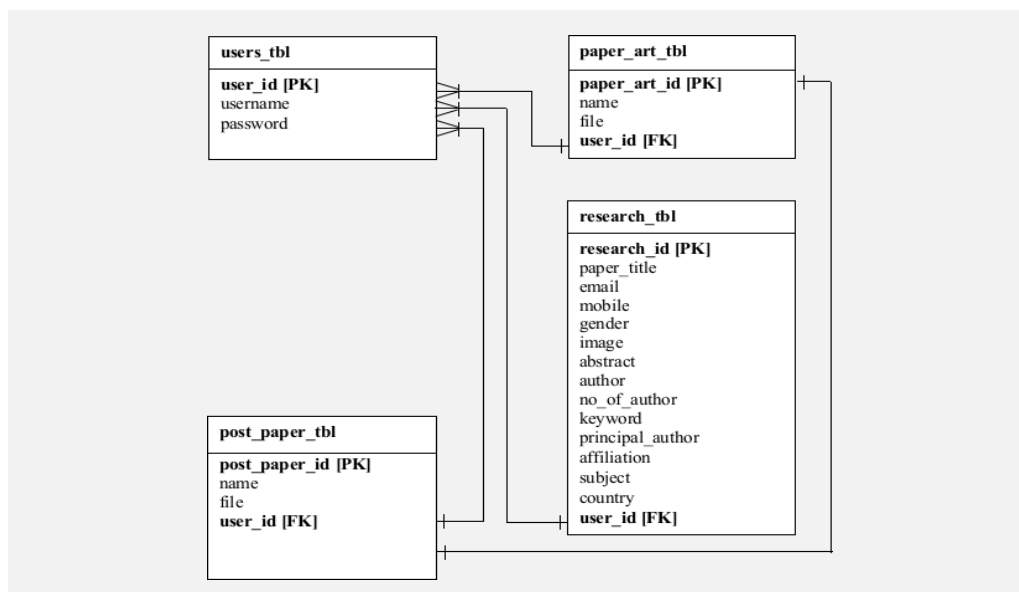


Fig. 5 Entity Relationship Diagram

During the development stage, the system was built on a localhost web server using LAMP (Linux, Apache2, Mysql, and PHP). HTML 5 was utilized to create various website pages; CSS was used to create file structures and enhance the aesthetics of webpages; and Bootstrap 4 was used to create responsive website designs. The graphical icons were created using the Fontawesome webfont icons. In the development process, the PHP 7.2 programming language was employed, with MySQL being used to define the database structure. An Application Program Interface (API) was used to connect the two API [12] stated that the success of API crucially depends on how well its documentation meets the information needs of software developers. For data modeling, SQL creation, and complete administrative tools for server configuration, user management, and backup, the MySQL Workbench was utilized. Sublime Text 3 was used as the text editor for coding.

The system's qualification is set to high criteria throughout the testing process which guarantees a fully working system. When the module was established, a number of tests were undertaken to look for any flaws in the system and to use all input as an enhancement for future modifications to the electronic research journal system.

V. RESULTS AND DISCUSSION

Below is a discussion of the outstanding system functionality gained during the development of the Electronic Journal Publication.

The electronic research journal system was created to gather and publish all academic research done by teachers, staff, and students at the NEUST-San Isidro Campus. The designed system includes a user account for system maintenance and management. It was separated into two sorts of users: members and non-members, both of whom are referred to as "end-users," with members having full access to the electronic journal and non-members having limited access to just browse and read published articles.

Using the member type account, the user may download the published research publications. The created system is fully controlled by the team editorial board, which is also the research unit head.

The published study has been archived; the research has been cached in the system's storage area to preserve copies of the studies for future reference. The research archives are only accessible to the administrator. The system may provide a report with a summary of published articles for each topic area.

The screenshots of the developed system are included below.

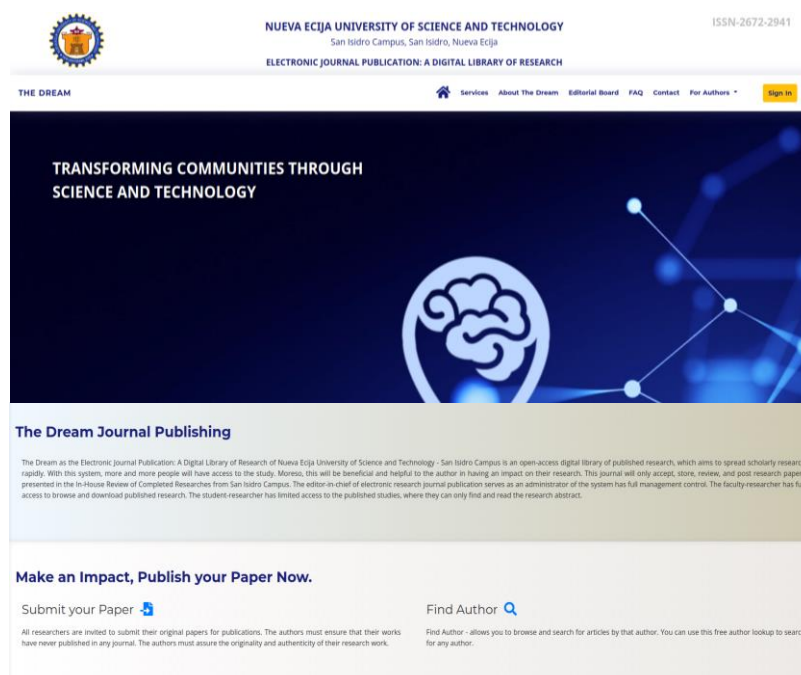


Fig. 6 Homepage of Electronic Journal Publication

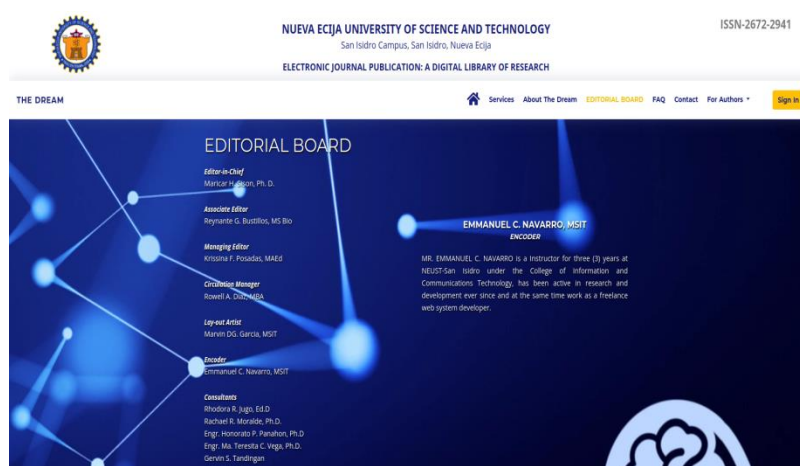


Fig. 7 Editorial Board page of Electronic Journal Publication

THE DREAM [Services](#) [About The Dream](#) [Editorial Board](#) [FAQ](#) [Contact](#) [FOR AUTHORS](#) [Sign In](#)

STEP ONE - AUTHOR'S PROFILE

PAPER DETAILS:

Paper Title:

Author/s Name:
Fill authors name separated by comma (,)

No. of Author/s:

Subject Area:

Abstract:

Keyword/s:

AUTHORS DETAILS:

Email Address:

Contact:

Affiliation:

Affiliation Type: Public Private

Country:

Department:

Image: No file chosen
Only jpg, png, gif file with maximum size of 10 MB is allowed.

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Fig. 8 Submit page of Electronic Journal Publication

THE DREAM [Services](#) [About The Dream](#) [Editorial Board](#) [FAQ](#) [Contact](#) [FOR AUTHORS](#) [Sign In](#)

PAPER PROFILE

THE NEUST-SIC RESEARCH HUB, A COMPENDIUM OF RESEARCHES
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Abstract

This Study Aimed To Design And Develop A System Entitled The NEUST-SIC Research Hub - A Compendium Of Researches That Aimed To Integrate The Researches Conducted By Members Of The Faculty, Staff And Selected Students Into One Repository Hub. The Primary Goal Of This Study Was To Develop A Research Repository. This Repository Will Be Used To Collect, Manage And Store The Researches. This System Records All The Electronic Research Outputs, Research Publications, And Working Research Papers Handled By The University Research Services Unit. Other Features Of The Developed System Are The Following: Input And List Of Campus Researches, User Accounts For The Researchers, Profiling Of The Researchers, A Tracking System For Working Research Papers, Announcements About The University Research Service Unit Activities And An Online Access Web Page That Displays The Published And Conducted Research. The Management Of The System Will Be The Sole Responsibility Of The Research Services Unit Department In The Coordination Of The Management Of Information System Department. They Will Manage The Use Of The System. The Maintenance Is Reserved To The Research Proposant. The System Was Evaluated By University Research Reviewer During A Presentation In "In-house Review Of Completed Research" And Selected IT Experts Who Assessed System Functionality, Efficiency, Validity, Reliability, Maintainability, And Portability Based On The Software Development Following The Standards

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Fig. 9 Paper profile page of Electronic Journal Publication

VI. CONCLUSIONS AND RECOMMENDATION

Following the comprehensive research study, the research findings indicate that the NEUST-San Isidro Campus Electronic Journal Publication is needed. A digital publication was developed. This will assist to maintain, search, and share a useful and instructive an open-access compendium of published research that is helpful and informative. It was also recommended that the developed system be utilized, and in order for the system to be fully implemented, it must also be utilized in other departments. It was also suggested that using the aforementioned system implementation as a model for harmonizing the NEUST research system's input and processes.

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Emmanuel Carlos Navarro graduated Bachelor's Degree of Computer Science at the College of the Immaculate Conception and finished Master's Degree in Information Technology at the Nueva Ecija University of Science and Technology. He worked for Midway Maritime Foundation now (Midway Colleges) as assistant registrar, part-time computer instructor and head of Information Technology department for almost sixteen (16) years. He is currently connected with NEUST as Instructor, has been active in research and development ever since and at the same time work as a freelance web system developer.