Educational Assistance Management System for Batangas State University Arasof-Nasugbu

By Albert V. Paytaren, Hazel G. Gonzales & Rhannel D. Dinlasan

Batangas State University ARASOF-Nasugbu

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Objectives: The study's general objective is to develop an online management system of educational assistance for Batangas State University ARASOF-Nasugbu. Especially, the study attempted to answer the following questions: (1) What are the common problems of scholars and scholarship officers on the existing management of educational assistance in terms of Scholarship Program Management and Scholarship Application? (2) What features of the system should be developed to address the problems the scholars and scholarship officers encounter?

Keywords: educational assistance, likert scale, management, descriptive-developmental, web application.

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EDUCATIONALASSISTANCEMANAGEMENTSYSTEMFORBATANGASSTATEUNIVERSITYARASOFNASUGBU

Strictly as per the compliance and regulations of:

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Methodology: The researchers used the descriptive developmental research design, and incremental and iterative development to make the process more flexible. In addition, the researchers used the questionnaire for comparing and measuring the level of acceptability of the scholars and scholarship officers on the developed educational assistance management system. The researchers used the Likert Scale to measure the holistic view and opinion to measure the level of acceptance and satisfaction of the study. The researchers used convenience sampling due to the ongoing pandemic.

Results: Based on the evaluation among respondents, the study yielded the following findings: a. the scholars are having issues in the existing system in getting scholarship program announcements; b. several features are developed to solve the problems encountered by the scholarship officer and scholars; SMS and Email Notification, a feature that helps scholarship officers to decide who are eligible candidates for the scholarship program, and online chat communication; c. the IT consultant suggested to developed Validation check in compliance with the data privacy law when asking personal information and scholarship program link.

Conclusions: By the findings of the study, the following conclusions were drawn; a. The researcher concluded that most of the scholars, admin, and scholarship officers are having difficulties in getting scholarship program announcements b. The researcher concluded that the features of the developed system would be a big help for the scholars and scholarship officers to address the problem encountered on the existing/manual system; c. The researcher concluded that the system lacks compliance with data privacy; d. The researcher concluded that the existing system is not that convenient for the scholars and scholarship officers to use; e. The developed system can be easier, faster, and convenient.

Keywords: educational assistance, likert scale, management, descriptive-developmental, web application.

I. Introduction

Emerging technology changes society's history. Technology makes people's lives easier. As time goes by, the invention of computers, laptops, mobile phones, and smartphones takes place. People tend to enjoy using that invention in everyday life. Most people treat their mobile phones as best buddies and spend most of their time using them [1].

With technological innovation, every work becomes more efficient and effective. Technology becomes one of the most significant elements of today's generation in everyday living. Since the majority of people have gadgets, living becomes easier by simply tapping, clicking, and scrolling through their gadgets. Smartphones and laptops together with an internet connection allow people to complete tasks easier. This helps people to access the web pages they need.

It plays a vital role in different areas such as banking, communication, online shopping, and education. Generally, education helps to educate people to be productive members of society. However, not everyone is lucky enough to attain an education because of several factors present in society such as marginalization and poverty, but the major reason is financial difficulties. Despite that, the government and different organizations offer scholarships or educational assistance as an action on the problem [2].

There are many public and private sectors offering educational assistance. Some scholarship

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programs will only be applicable in a municipality and depend on the qualifications. Despite their good deeds, they still find difficulties in handling and managing the data of the scholars due to the manual processes. On the other hand, there are still scholars who got more than one scholarship because the specific admin of every educational assistance had problems in determining eligible applicants. To have a general awareness, it will be more convenient if there will be a platform to sort out students in various types of scholarships.

With that in mind, the researchers came up with the idea "Educational Assistance Management System for Batangas State University-ARASOF Nasugbu". This web application will be beneficial to the scholarship officer and scholars because it will serve as a tool to increase the quality and fast service on collecting data about the scholars as well as identifying what type of scholarship they already had.

II. Objectives

The general objective of the study is to develop an online management system for educational assistance.

Specific Objectives:

1. What are the common problems of scholars and scholarship officers on the existing management of educational assistance in terms of;
   a. Scholarship Program Management; and
   b. Scholarship Application?
2. What features of the system should be developed to address the problems encountered by the scholars and scholarship officers?
3. What are the components of the system tested by the IT consultant that needs revision?
4. What is the level of acceptance of scholarship offices in the developed Educational Assistance Management System in terms of:
   a. Managing scholarship application;
   b. Accessing scholar's information; and
   c. Notifying scholars?
5. What is the level of acceptance of scholars on the developed educational assistance management system in terms of:
   a. Submission of Requirements;
   b. Finding Available Scholarship Program; and
   c. Scholarship announcement?

III. Literature Review

Based on the study conducted by Annapurna Kasi (2015) from the research entitled "Scholarship Information System", they created a system for the group of colleges to manage their scholarship program. In creating the Scholarship Information System, they aim to help in managing students' scholarship details. It can also help to filter the eligible students for the scholarship program. The system can maintain the data without any loss or damage and time-consuming checking and finding information about various, scholarships will be lessened. The system is developed using MySQL and C#. JavaScript and AJAX for the web and HTML. The developed system provides ease of data entry for the user. After testing the system, they found out that the system has overcome the limitations of the existing system and worked according to the specifications. The system meets the need in providing reliable information and the requirements. The system consumes less time and effort than the old way of managing scholarships [3].

Based on the study conducted by Ayishetu, Seidu (2017) from the research entitled "Scholarship fund management system", discusses that the increasing number of applicants for scholarships over the years are manually managed in Ghana. Only advanced high school students from economically disadvantaged backgrounds are eligible for scholarships from this non-profit organization. To reduce the amount of effort and time spent on management, the NGO switched from a manual process to a web-based system. This existing/manual system enables them to enter the information of new applicants, award scholarships, and monitor student performance. The purpose of this research is to improve the system by adding functionalities that will allow it to track scholarship payments and provide reporting functionality for the scholarship application process. The system is built with HTML, CSS, and SQL and employs PHP as the application's controller, which is aided by AJAX [4].

Based on the study conducted by Jibrin, Musa, and Tahir (2016) from the research entitled "Development of E-Scholarship System.", A scholarship is a grant or payment made to support a student's education that is awarded based on academic or another achievement. Many scholarships are awarded based on merit, and recipients are not required to repay them. As a result, the Niger State Scholarship Board is seeking qualified candidates to sponsor outstanding students at the undergraduate and postgraduate levels as part of its effort to develop professionals who will serve as change agents and agents of scientific and technological advancement. The developed e-scholarship system was able to automate the scholarship application process. The system was also able to provide the scholarship board with an application that can be used for relationship award letter screening. The Object-Oriented Analysis and Design methodology are being used in the system for the software development approach (OOAD). The application, on the other hand, was created using the Hypertext Preprocessor (PHP), AJAX, JavaScript, and HyperText Mark-up Language (HTML). The development of a Scholarship system provides online application

solutions that save time and effort, as well as sending notifications about the status of applications via SMS alerts and emails [5].

Based on the study conducted by Marave, Engr. Ariel M. entitled "Online Scholarship Application and Record Management System for AYZ City", the scholarship office of AYZ City manages scholarships through a manual process. Scholarship admin finds it difficult to manage scholarship programs especially if there are bulk records and compilations. To solve the problem, this system is developed to serve as an instrument for fast service and quality services by having paperless work on managing scholarships. The developers of the system use PHP and the programming tools and MYSQL as the database [6].

IV. Materials and Methods

In this research, the development process that is used by the researchers is Iterative Incremental development. incremental and iterative development is more flexible because the development plan is broken up into pieces, and those pieces are developed and implemented one by one. Incremental development saves a lot of time because researchers can test more frequently and iterate on the work before coding something that is not going to work. This frequent testing makes the researchers flexible if errors and problems arise. The iterative development makes progress with repetition and through successive refinement until it meets the goals. The iterative is a compromise of the following stages: planning, analysis, and design, implementation, testing, and evaluation.
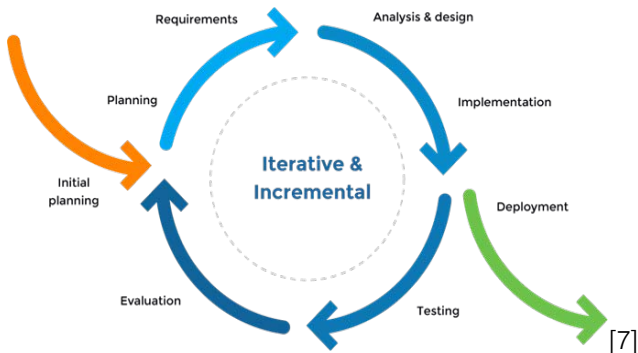

[7]

Figure 1: Iterative and Incremental Development

Planning Stage: The project starts in planning according to the set of requirements and to define the requirements, feedback needs to be analyzed. At this stage, researchers will identify the goal and purpose of the system by answering the question "What is the purpose of this financial assistance management system?"

In the planning stage, the researchers came up with the idea of using PHP and JavaScript as the language, HTML and CSS for the web technology, and XAMPP for the backend.

Analysis and Design: This stage is to determine the business logic of the project. The analysis clarifies the problems and objectives. Design is to identify a set of instructional design, conceptual and structure for the final development.

In this stage, the researcher will interview the scholarship officers to identify the difficulties they encountered in managing scholarship data.

Implementation: This stage is the start of the development process based on the requirements. This is where vision and plans become reality.

In this stage, the interface and contents of the system will be determined. The system should be user-friendly and easy to navigate and understand.

Testing: This stage performs testing to find and fix errors and bugs. This is where the system undergoes assessment to identify if the system meets every requirement.

Evaluation: This is the last stage of iterative design where the researchers meet the clients to evaluate the system and identify if all requirements are met.

The researchers will formulate an evaluation instrument in the form of a survey questionnaire.
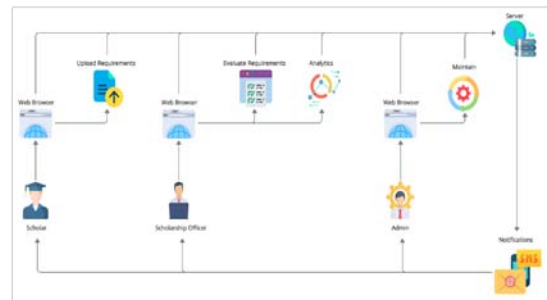

Figure 2: System Architecture of the Developed System

The figure illustrates a system architecture that helps the researchers to define the structural behavior of the proposed system. The system to be developed will be launched using a cloud server and web hosting to access the internet. Since the system is launched on the internet, different devices that support browsers such as chrome can access it. Admin, scholarship officer, and scholars will have access to the system.

Figure 3: Use Case Diagram of the Developed System

The figure illustrates the representation of the user's interaction that shows the relationship between other users. Scholars can apply for scholarships and submit requirements. Scholarship officers manage the scholars, he/she evaluates the requirements and approve the application. Scholarship admin can also approve scholarship applications and assign another scholarship officer. Admin assigns the scholarship admin and creates pages for our scholarship programs.

Figure 4: Context Diagram of the Developed System

The figure illustrates the boundaries of the system. It identifies the flows between the system and external entities. Scholars must check first the available scholarship and fill out the application form then submit the requirements. If the Scholarship officer or admin approves a scholarship application, the scholars will receive email notifications. The admin is the one who assigns the scholarship admin and adds a scholarship program to the system.

The following are the software and hardware requirements that were used during the development process of the proposed system.

Table 1: Software Requirements

PARTICULARS	SOFTWARE
Operating system	Windows 10 Pro
Environment	Sublime Text 3
Language	PHP, JavaScript
Web Technology	HTML, CSS
Backend	XAMPP

Table 2: Hardware Requirements

HARDWARE	SPECIFICATION
Processor	At least 1.8 GHz
Ram	4GB or more
Monitor	14" Color
Hard Disk	500GB SSD or more
Keyboard	Standard 102 Keys
Mouse	Optical 2 buttons

V. RESULTS AND DISCUSSION

In the preparation and evaluation stage, the proposed system will be evaluated according to respondents' answers to the survey questionnaire. The Likert scale will be used to verify intervals between rankings of the evaluation.

$$i = (Hs - Ls)/T$$

Where:

i = Interval
Hs = Highest scale in the survey questionnaire
Ls = Lowest scale in the survey questionnaire
T = Total number of scales in the survey questionnaire

Weighted Mean Formula:

$$WM = \frac{\sum fx}{N}$$

Where in:

WM = Weighted Mean
fx = sum of the products off and x where f is the frequency of each score and x is the weight of each score
x = is the weight of each score
N = total number of respondents

Table 1: Evaluation of the Existing/Manual System of the problems encountered by Admin and Scholarship Officer in terms of Scholarship Program Management

Problems	Frequency	Rank
The existing/manual system has difficulties in viewing the scholar list and searching for a scholar's information.	2	1
The existing/manual system has difficulties in determining if a scholar has another existing/manual scholarship.	1	2
Time-consuming updating the scholars regarding the scholarship program.	1	2
The existing/manual system has difficulties in accessing submitted requirements.	2	1
It is very time-consuming in submitting the requirements and other documents to the scholarship office.	1	2
The existing/manual system has difficulties in verifying all documents submitted by the scholars.	2	1
The existing/manual system has difficulties in giving updates for the scholarship program.	2	1
The existing/manual system has difficulties in reaching scholars to send announcements regarding the scholarship program.	2	1
The existing/manual system has difficulties in sending and disseminating information to the scholars if changes take place.	1	2

Table 1 presents the problems encountered by the Admin and Scholarship Officer on the Existing/Manual System relative to Scholarship Program Management. Based on the result, parameters one, four, six, seven, and eight ranked first. According to the study conducted by Ayishetu Seidu (2017), increasing numbers of scholar applicants become their major problem since they have manual management of scholarship. The researchers found that more scholarship officers have trouble in scholarship program management.

Table 2: Evaluation of the Existing/Manual System of the problems encountered by Scholars in terms of Scholarship Application

Problems	Frequency	Rank
The existing/manual system has difficulties in getting scholarship program announcements.	26	1
The existing/manual system has difficulties in submitting scholarship applications/ requirements.	23	3
The existing/manual system has difficulties in identifying if there are additional documents to be submitted.	17	6
The existing/manual system has difficulties in communicating between scholars and officers.	21	4
The existing/manual system has difficulties in getting up to date with information regarding the scholarship program.	23	3
The existing/manual system has difficulties with identifying which scholarship programs are open for new applicants.	25	2
The existing/manual system has difficulties in identifying if they are accepted on the scholarship application.	20	5

Table 2 presents the problems encountered by the Scholars on the Existing/Manual System relative to Scholarship Application. Based on the result, "The existing/manual system has difficulties in getting scholarship program announcements" got the highest rank. The researchers found that more scholars have trouble in getting scholarship program announcements. "The existing/manual system has difficulties in identifying if there are additional documents to be submitted" problem got the lowest rank based on the result of the evaluation. The existing/manual process of identifying additional documents to be submitted is difficult if there are no on-time updates. According to Mahmoud (2019) and there should be a system that follow-up all the stages of scholarship application from the initial procedures up to the final stage and can process the submission of application and retrieval time by saving the processing type and effort.

Table 3: Evaluation of the Developed System on the level of acceptability by the Admin and Scholarship Officer in terms of Managing Scholarship Application

Parameters	Weighted Mean	Verbal Interpretation
1. The developed system allows the scholarship office to access and verify the scholars' submitted documents/applications.	5	Highly Acceptable
2. The developed system allows the scholarship officer to accept eligible applicants and deny applications.	4.5	Highly Acceptable
3. The developed system can easily set the eligibility criteria and deadlines on the application.	4	Acceptable
Combined Weighted Mean:	4.5	Highly Acceptable

Table 3 shows the evaluation of the admin and scholarship office on the developed system in terms of Managing Scholarship applications. The overall result was Highly Acceptable. The highest-rated parameter is the first parameter because the developed system helps the scholarship office in accessing the scholar's application. According to the study conducted by Marave, Engr. Ariel M. (2019), the manual process of scholarship is difficult especially if there are bulk records and compilations.

Table 4: Evaluation of the Developed System on the level of acceptability by the Admin and Scholarship Officer in terms of Accessing Scholar's Information

Parameters	Weighted Mean	Verbal Interpretation
1. The developed system could be a major platform for accessing scholars' information.	4	Acceptable
2. The developed system has accurate and reliable scholarly information.	4.5	Highly Acceptable
3. The developed system allows scholarship officers to access and verify if the scholar has another scholarship.	4.5	Highly Acceptable
Combined Weighted Mean:	4.33	Highly Acceptable

Table 4 shows the evaluation of the admin and scholarship officer on the developed system in terms of Accessing Scholars Information. The overall result was Highly Acceptable. The highest-rated parameter was the second and third parameter because evaluators find that the developed system has accurate and reliable scholarly information and it allows them to access and verify if the scholars have another scholarship. According to the study conducted by Annapurna Kasi (2015), creating a scholarship system helps to manage scholar's details and filter eligible students for the scholarship program, which is also considered in creating this study.

Table 5: Evaluation of the Developed System on the level of acceptability by the Admin and Scholarship Officer in terms of Notifying Scholars

Parameters	Weighted Mean	Verbal Interpretation
1. The developed system can easily reach scholars through the posting of announcements.	4.5	Highly Acceptable
2. The developed system has an email and SMS notifications facility that can use to disseminate information.	5	Highly Acceptable
3. The developed system has a chat feature that allows the scholars and scholarship officers to exchange messages with each other.	5	Highly Acceptable
Combined Weighted Mean:	4.83	Highly Acceptable

Table 5 shows the evaluation of the admin and scholarship office on the developed system in terms of Managing Scholarship applications. The. a chat feature that allows users to exchange information with each other. This variable is inclined in the study conducted by Ayishetu, Seidu (2017) that allows to trach the scholarship application process.

Table 6: Evaluation of the Developed System on the level of acceptability by the Scholars in terms of Requirements Submission

Parameters	Weighted Mean	Verbal Interpretation
1. The developed system allows scholars to submit requirements through file attachments in an efficient and timely manner.	4.78	Highly Acceptable
2. The developed system supports changing of incorrect documents.	4.70	Highly Acceptable
3. The developed system is more convenient in terms of online submission of requirements rather than printing the requirements and submitting them to the scholarship office.	4.78	Highly Acceptable
Combined Weighted Mean:	4.75	Highly Acceptable

Table 6 shows the evaluation of the scholars on the developed system in terms of Requirements Submission. The overall result is Highly Acceptable. The high parameter is the first and the third parameters because the evaluators find that it is easy to submit requirements through attachments online rather than printing the documents before submitting them. The lowest rate parameter was the second parameter, which is the changing of incorrect documents. According to the study conducted by Marave, Engr. Ariel M. (2019)., online management of scholarship application and requirements submission will help to have fast service in managing submitted requirements.

Table 7: Evaluation of the Developed System on the level of acceptability by the Scholars in terms of Finding Available Scholarship Program

Parameters	Weighted Mean	Verbal Interpretation
1. The developed system allows scholars to find available scholarship programs.	4.80	Highly Acceptable
2. The developed system allows scholars to search and choose which scholarship program is applicable.	4.82	Highly Acceptable
3. The developed system allows the scholars to view the details of the scholarship program.	4.80	Highly Acceptable
Combined Weighted Mean:	4.81	Highly Acceptable

Table 7 shows the evaluation of the scholars on the developed system in terms of the Finding Available

Scholarship Program. According to Surigayti, et al (2018)., having a system that can handle scholarship programs is a big help in different organizations to lessen their manual work. The overall result is Highly Acceptable. The highest-rated parameter was the second parameter because evaluators find that it is easier to search and choose available scholarship where they can apply, while the lowest parameter is the first and third parameter, which is finding an available scholarship and viewing the details of the scholarship program.

Table 8: Evaluation of the Developed System on the level of acceptability of the Scholars in terms of Scholarship Announcement

Parameters	Weighted Mean	Verbal Interpretation
1. The developed system allows scholars to receive announcements on time.	4.90	Highly Acceptable
2. The system can address the difficulties in communication between scholars and officers by having a chat feature and a comment section on the system's posts/announcements.	4.84	Highly Acceptable
3. The developed system allows the scholars to receive announcements through SMS.	4.86	Highly Acceptable
Combined Weighted Mean:	4.87	Highly Acceptable

Table 8 shows the evaluation of the scholars on the developed system in terms of Receiving Scholarship announcements. The overall result is Highly Acceptable. The highest-rated parameter was the first parameter because evaluators found that they could receive announcements on time. According to the study of Setiyani, the existing manual system has slow decision-making in accepting scholars as well as sending announcements. The result of this evaluation means that the developed system is effective and efficient to use in sending announcements and decision making [8].

VI. Conclusions

From the findings of the study, the following conclusions were drawn:

1. The researcher concluded that most of the scholars are having difficulties in getting scholarship program announcements while the admin and scholarship officers are having difficulties in terms of scholarship program management. It means that the existing/manual system is not convenient for the scholars and scholarship officers to manage the scholarship application. This helps the researchers to create educational assistance management system so that they can solve the problem of scholars and scholarship officers.
2. The researcher concluded that the features of the developed system would be a big help for the

scholars and scholarship officers to address the problem encountered on the existing/manual system.

3. The researcher concluded that the system lacks compliance with data privacy.

4. The high ratings of scholarship officers for the developed system when it comes to managing scholarship applications, accessing scholars' information, and notifying scholars give the researchers the idea that the existing system is not that convenient for the scholars and scholarship officer to use.

5. The high ratings of requirements submission, finding an available scholarship, and scholarship announcements give the researchers the conclusion that the developed system will be very useful for the scholars. Using the developed Educational Assistance Management System can be easier, faster, and convenient.

VII. Recommendations

The following are the recommendations for the enhancement of the Educational Assistance Management System for Batangas State University-ARASOF Nasugbu.

1. The developed system is recommended by the researchers to be used by the scholarship office for handling and managing different scholarship programs.

2. The educational assistance management system should have an android and iOS application so that it can be easily downloaded from Play Store and App Store.

3. The educational assistance management system should be able to predict who are the possible scholars that will have a better job opportunity based on their performance.

4. The research team recommends that the system should be integrated with the validation check in compliance with data privacy law.

5. For the future researcher, the research team recommends having Frequently Asked Questions (FAQs) on the online chat feature of the system.

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