Design and Implementation of an Electronic Document Management System for USTP Extension Office

BSIT-4R3

Submitted in Partial Fulfillment of the Requirement for the
Degree Bachelor of Science in Information Technology
(BSIT)

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Cagayan de Oro City, 9000 Philippines

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Rationale and Background of the Study

The University of Science and Technology is one of the country's leading university when it comes to developing the science and technology industry. With this notion, the university's various colleges conduct various researches and studies in order to improve the current state of our environment, lifestyle and general way of life through

technological solutions. As a university, USTP functions through a gamut of departments and offices within it wide scope of campuses, each department facilitating a different field of expertise, working together in order to achieve the university's goal of establishing itself as a nationally-recognized science and technology university.

RA 8292 otherwise known as the Higher Education Modernization Act of 1997 stipulates that state universities and colleges (SUCs) in the Philippines to perform a trilogy of functions, one of which is the extension services.

As stipulated in CHED Memorandum Order No. 52, s. 2016, extension programs in higher education institutions provide the space to discover practical, evidence and science-based answers that can address real-world social, economic, and environmental challenges of partner citizens and communities. The incubation, knowledge validation, diffusion, and utilization process in Extension, translational or applied research acquire a much deeper relevance when universities carry these out in mutually beneficial collaborations with partner communities, such as industry, local businesses, or community groups. It is a set of iterative processes that enable evolution, revision, adaptation and change.

Furthermore, the AACCUP OBE Instrument for Area VI: Extension and Community Involvement, states that the extension function makes the institution's presence felt in the community. It involves the application of existing and new knowledge and technology and those generated in the institution to improve the quality of life of the people. Through the extension program, people are empowered with appropriate knowledge, attitudes and skills. Thus, extension services cater to various aspects of the community life, e.g. economic growth, promotion of health, environmental management, and social transformation.

The then Mindanao Polytechnic State College (MPSC) established the Research and Extension Office in 1995 but in 2006, when MPSC was converted to Mindanao

University of Science and Technology (MUST), the Extension Services Division was established, separating the office from the Research Division. In 2017, MUST and the Misamis Oriental State College of Agricultural and Technology (MOSCAT) were amalgamated into the University of Science and Technology of Southern Philippines (USTP). This amalgamation brought change in the organizational structure of USTP and the Extension Services Division was renamed Extension and Community Relations Division for the Cagayan de Oro Campus.

Anchored on the USTP Framework (Figure 1), the vision of the Extension and Community Relations Division of USTP-CDO is to "empower the underserved and underprivileged communities in its sphere of influence by providing them the technical means and opportunities to support themselves toward a better quality of life. USTP-CDO acts as a major catalyst in the industrialization program of the various industries located in its jurisdiction".

Extension projects are researches conducted then implemented by the University's various colleges that aims to improve the external community. Extension projects are then monitored by the Extension Office in order to assess the performance of the department that conducts the research. Each college in the university is presented with an annual quota of extension projects, measured through a process of computing the points gained based on each individual extension project conducted by a department under a certain college.
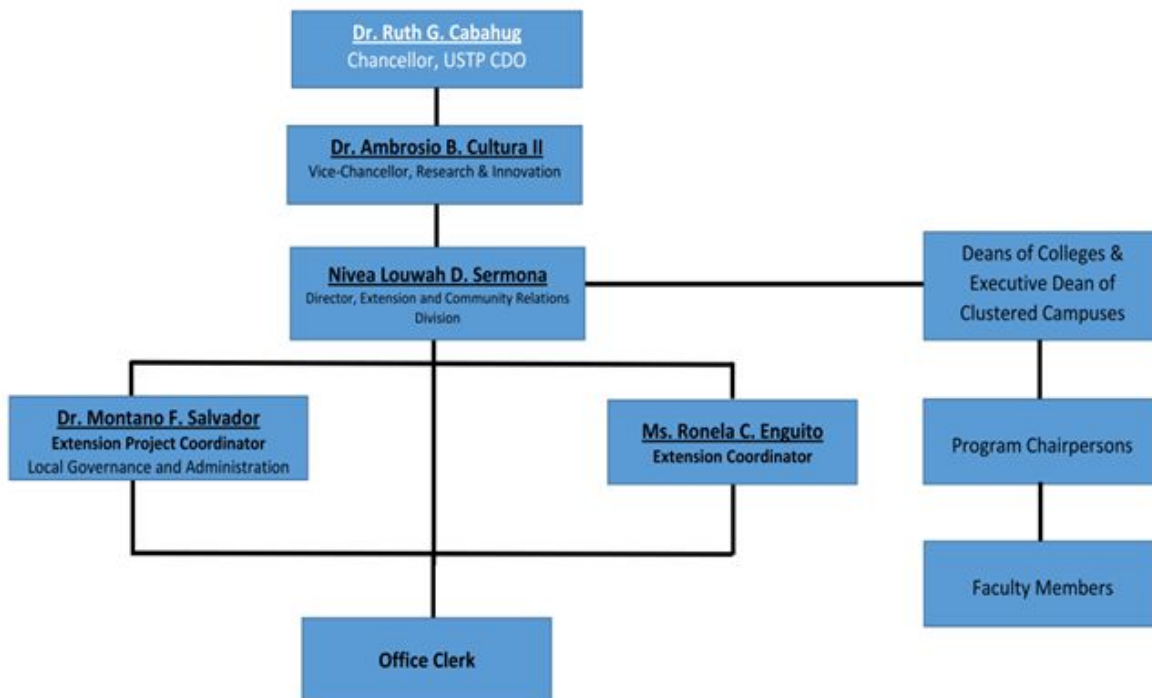
USTP Framework

NATIONAL ECONOMY AND INTERNATIONAL COMPETITIVENESS

- Addressing quality of human resources in industries for enhanced economic productivity
- Reduction of unemployment and underemployment for poverty alleviation
- Stimulating rural economies for job generation

EDUCATION: Human Resources

RESEARCH: Technology Solutions

USTP's Mission

Knowledge Transfer

Technology Innovations-Knowledge Creation

CONTRIBUTION TO SOCIETY: Technology Enterprises

Creating, Sharing, and Utilizing Knowledge

- Provision of technology solutions to pressing industry problems to stimulate industrial growth and development
- International recognition for leading-edge research & technology solutions to global challenges
- Opening avenue for new economies through technological support and innovations

Extension and Community Relations Division

Organizational Chart

Dr. Ruth G. Cabahug
Chancellor, USTP CDO

Dr. Ambrosio B. Cultura II
Vice-Chancellor, Research & Innovation

Nivea Louwah D. Sermona
Director, Extension and Community Relations Division

Deans of Colleges & Executive Dean of Clustered Campuses

Dr. Montano F. Salvador
Extension Project Coordinator
Local Governance and Administration

Ms. Ronela C. Enguito
Extension Coordinator

Program Chairpersons

Faculty Members

Office Clerk

The functions of the Extension and Community Relations Division are as follows:

·   Facilitate Extension Programs, Activities and Projects (PAPS);

·   Prepare Annual Work and Financial Plan (AWFP);

·   Prepare calls for presentation and evaluation of Extension proposals of different colleges and satellite campuses;

·   Evaluate extension project proposals for recommendation to competent authority;

·   Supervise all research-based and community-based extension projects;

·   Review all reports and communication to be submitted to competent authority;

·   Access funds from LGU's, NGO's and other networks and linkages to support extension projects

The researchers learned that the director and staff use Microsoft Excel to create reports intended for the different departments requiring said reports. This process requires basic knowledge of the different processes of the program in order to create and perform the task of generating reports efficiently. Add to this is the fact that each report requires a different format of inputs.

The office is also bogged down when it comes to document management. Each project conducted by the university is then partnered with a hefty paperwork detailing the accomplishments in each project. This predicament also weighs-in in the generation of reports as all extension projects are to be assessed and analyzed for their input in each report.

File management

All extension programs/projects and activities are required to submit hard copies of the following:

- Letter request from requesting party

- Letter response to requesting party (within 3 days)

- Approved Project Proposal or Letter to Conduct Activity

- Loading of Trainers

- MOA/MOU

- Progress/Accomplishment/Terminal Report

- List of Participants

- Daily Attendance Sheet

- Evaluation Sheets

- Summary of Evaluation

- Trainers DTR*

- Modules/Lecture Notes

- Others

Report processing

In the generation of reports, the ECRD Director prepared new templates using data spreadsheet software. Some reports had existing template but considering that various reports had different templates, it takes time to prepare individual reports.

With every transaction done manually, the performance and efficiency of the office is impacted negatively.

Statement of the Problem

Title of Report	Requiring Entity	Mode	Remarks
Budget Accountability Report (BAR 1)	Department of Budget and Management	Quarterly	Physical report of operations based on the indicators of the Program Expenditure

			Classification (PREXC)
Program Expenditure Classification (PREXC)	AO 25 Secretariat	Annual	Reports the accomplishment of targets set in the General Appropriations Act (GAA).
Narrative Report	USTP Cagayan de Oro	Quarterly and Annual	Details the accomplishment if the unit for the quarters and the whole year.
Higher Education Management Information System (HEMIS) Report	Commission on Higher Education (CHED)	Annual	Lists all recognized extension programs and projects with Board Approval/Confirmation.
3-Year Status of Extension Projects	Senate of the Philippines	Annual	Reports the status of extension programs, projects and activities for 3 years (prior year, current year and following year).

As seen in the Organizational Structure of the Extension and Community Relations Division, the office' staffing structure is quite lean. Thus, the office is experiencing some problems mostly in these following areas:

· Various reports are prepared and each report requires a different format. The usual time frame for each report to be finished is at least three (3) weeks.

· Another problem of the office is document management and sorting. Sifting through all the paperwork of each extension project can take up a huge amount of time.

· Their traditional method of storing their pertinent document is also poor performance-wise and very risky as they are all kept within a single external hard drive

   o The office facilitates all 33 vertically-articulated programs of USTP Cagayan de Oro and Clustered (Jasaan, Panaon and Oroquieta) Campuses. With only one office clerk, file management is quite difficult. Also, the bulk of hard copies of documents fills the limited space of the office.

· The last problem the researchers would like to address is the determining of the various problem areas in the department. The client would like to easily know which problem areas need improving like which extension projects to conduct, which beneficiaries to target and which department/program is lacking when it comes to extension projects.

Objectives of Study

1. To develop and implement a system that streamlines the Extension Office's operations and transactions through technological solutions and automation

2. To analyze the problem of the client's current mode of operation and create a solution tailored to their needs

3. To design a system that best suits the client's needs and aid in improving their overall performance and efficiency.

4. To test the performance of our system and fix issues using feedbacks from the users
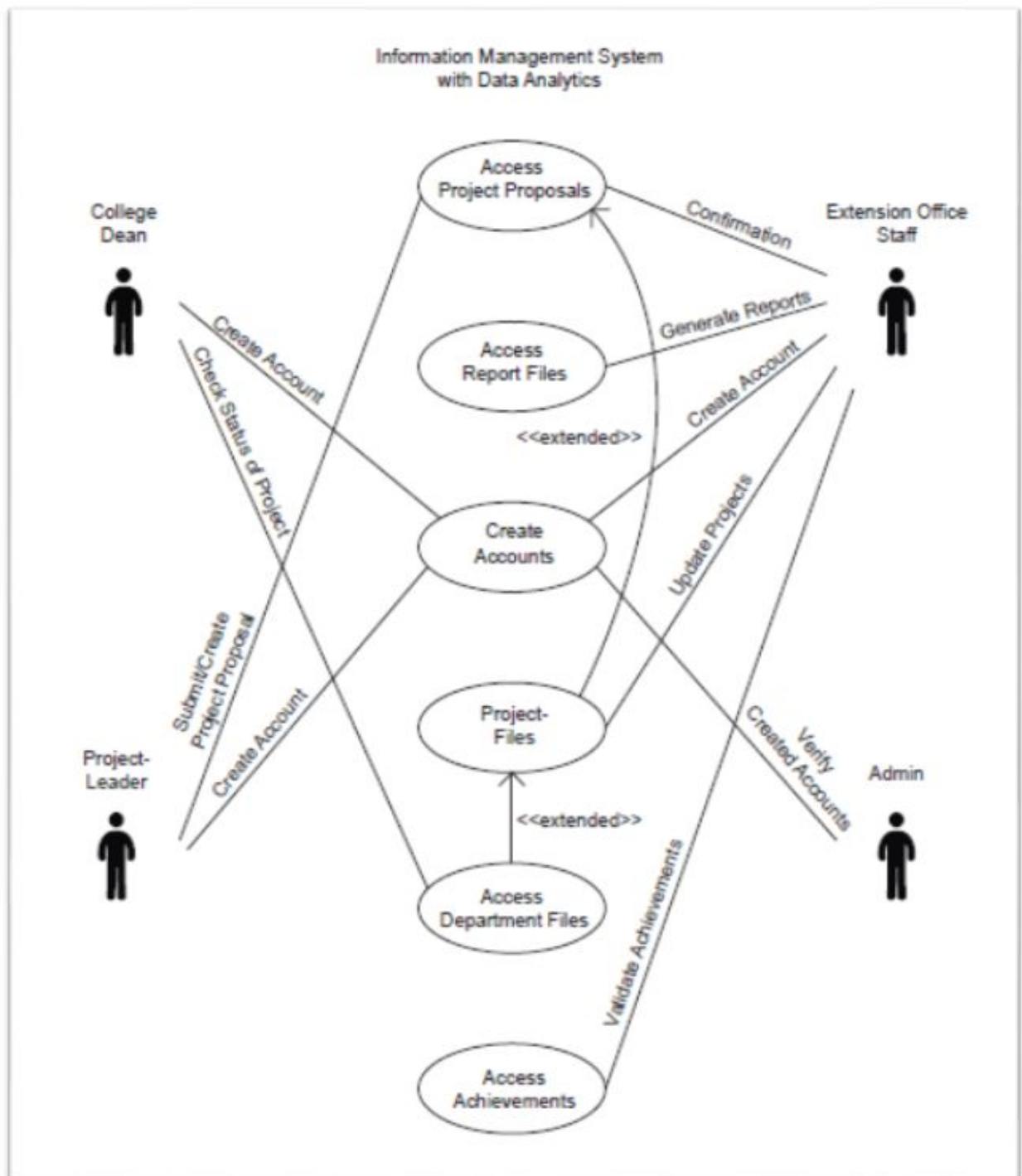
Proposed Methods/Procedures

As a standard, the researchers would be using HTML5, CSS3, ES6 and NoSQL in creating an online platform that best suits the needs of our client. The researchers would create a simple UI/UX in order for smooth transition from manual operations to automation. ES6 and NoSQL would handle data manipulation and data transfer. For storing the documents and other files, the researchers would use Firebase as a database.

Various researches propose electronic document archiving in storing documents. The researchers would like to propose a system of archiving documents through digitization of hard copies, storing them on a single database and implement a tagging process/mechanism to better enhance document management and sorting. In document sorting, the said tagging method would be utilized to create a better sorting and searching algorithm to increase efficiency in locating important documents. In tackling the report generation, the TCPDF method of generating pdf documents would be used to better suit various formats, each for different types of report. In order for easy accessibility for user across platforms, the researchers propose to make the system online to better cater all possible user of the system.

As part of streamlining the office's operation, the researchers would like to implement an algorithm which determines the urgency of all requests and transactions that they receive. This would help the Extension Office staff determine which request or transaction to prioritize.

The researchers would also like to propose a method to facilitate a decision-support system by incorporating Association rule learning that uses the data gathered by the database in order to discover interesting relations between variables.

The researchers would present the data in graphs and tables to better show the problems encountered by each community, department and/or colleges.

Proposed Research Timeline and Targets

	Inventory Management System with D....	Sub Tasks	Assignee	Est. Hours	Start Date	Due Date	Task Prog.	Aug 2018
0	Create Concept Paper		Unassigned	-	01/Aug	20/Aug	0%	Create Concept Paper
1	Gather Information for the System		Unassigned	-	01/Aug	20/Aug	0%	Gather Information for the System
2	Mock Defense		Unassigned	-	20/Aug	20/Aug	0%	Mock Defense
3	Concept Paper Revision		Unassigned	-	20/Aug	24/Aug	0%	Concept Paper Revision
4	System Design (Wireframe and E....		Unassigned	-	22/Aug	31/Aug	0%	System Design (Wireframe and Entity)
5	Defense for the Concept Paper		Unassigned	-	25/Aug	25/Aug	0%	Defense for the Concept Paper
6	System Development (Prototypal ...		Unassigned	-	01/Sep	30/Sep	0%	
7	Initial Project Testing		Unassigned	-	01/Oct	12/Oct	0%	
8	System Development (Fixes usin....		Unassigned	-	13/Oct	31/Oct	0%	

Sep 2018

System Development (Prototypal or Agile Method)

Oct 2018

Initial Project Testing

System Development (Fixes using Feedback)