

# PERFORMANCE AND USABILITY EVALUATION OF THE UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES' ACCREDITATION ONLINE MANAGEMENT SYSTEM

Floreto B. Quinto, Jr.<sup>1</sup>, Oliva P. Canencia<sup>2</sup>, Laila S. Lomibao<sup>3</sup>

<sup>1</sup>University of Science and Technology of Southern Philippines,

CM Recto, Lapasan, Cagayan de Oro City, Philippines

Corresponding Author\* [jun.quinto@ustp.edu.ph](mailto:jun.quinto@ustp.edu.ph)

**ABSTRACT:** *The accreditation process was implemented online and faced numerous challenges. The University of Science and Technology of Southern Philippines (USTP) recognized the challenges and took the initiative in developing the online accreditation platform named Accreditation Online Management System which was completed during the second quarter of the year 2021. The platform was completed and pilot-tested in USTP during the program accreditation conducted. This paper aimed to evaluate the performance and usability of the Online Management System using the Computer System Usability Questionnaire (CSUQ) instrument. Results of the evaluation showed that the Accreditation Online Management System was found very useful in the conduct of program accreditation. Although there were identified areas in the online accreditation platform for improvements, results presented that the respondents were highly satisfied with its performance and users strongly agree that the Accreditation Online Management System should be adopted by the Accrediting Agency for Chartered State Universities and Colleges, Inc. and that every State Universities and Colleges in the Philippines may use.*

**Keywords:** *performance and usability evaluation, program evaluation, computer system usability, quality assurance*

## 1. INTRODUCTION

Program accreditation is viewed as a process by which an institution at the tertiary level evaluates its educational activities, in whole or in part, and seeks an independent judgment to confirm that it substantially achieves its objectives, and is generally equal in quality to comparable institutions. Likewise, it monitors the implementation of educational practices to ensure high-quality of learning [1]. It improves the quality and performance of the institution through self-evaluation and self-policing based on a certain set of criteria from the accrediting body. Similarly, it also verifies that the aims and learning outcomes of a degree program and its constituent components are consistent with the standards expected of the professionals [2] and affirmation of the quality of education, based on reliable information [3]. Program accreditation is basically a process of quality assurance in the academe.

UNESCO [4] defines quality assurance as an ongoing, continuous process of evaluating the quality of higher education systems, institutions, or programs. It is a systematic review of educational programs to ensure that acceptable standards of education, scholarship, and infrastructure are being maintained. UNESCO [4] further states that Quality assurance can only be effective when all stakeholders understand and embrace its challenges and benefits. Developing a culture of quality requires strong, committed stewardship from global leaders in higher education. Quality assurance is the process of verifying whether products or services meet or exceed customer expectations [5].

Accreditation in State Universities and Colleges (SUCs) in the Philippines is overseen by the Accrediting Agency of Chartered Colleges and Universities in the Philippines Inc. (AACCUP). The accreditation process is by degree program and is based on standards of the accrediting agency, anchored but not limited to the policy standard by CHED on the specific degree program and highlighting the program's innovative and best practices, and commendable outcomes. It

is voluntary on the part of the SUC that may want to be accredited. It is an evaluation by peers, which means the accreditors are mostly faculty members from other SUCs and it is non-governmental. The AACCUP uses a standard instrument with well-defined criteria to evaluate the program. This instrument has ten criteria for the program under survey to comply with. Rubrics are used to identify the correct numerical rating that is appropriate for each item.

The accreditation process for SUCs was conducted through physical visits. Hence, the accreditation task force which was usually composed of at least five members need to gather documents from different offices in the university. These hard-copy documents are organized and compiled in a folder accordingly based on the different benchmark statements or requirements stated in the survey instrument. There were ten (10) areas in which these documents should be organized, namely: (1) Vision, Mission, Goal, and Objectives; (2) Faculty Development; (3) Curriculum and Instruction, (4) Students, (5) Research, (6) Extension and Community Involvement, (7) Library, (8) Physical Plant, (9) Laboratories and (10) Administration. All these documents are kept in a designated accreditation room of each college.

During the accreditation survey, a team of specialized accreditors from other regions who were identified by AACCUP visited the campus of the program under survey. The accreditors then review all documents and reports prepared by the SUC, such as but not limited to the compliance reports, narrative reports, and program performance profiles, and then check and evaluate relevant supporting documents from those reports. The accreditors then rate each applicable benchmark statements on the instrument used. After accomplishing the rating sheet, the accreditors then submit the standard accreditor reports to the accrediting agency. This whole accreditation survey process would spend at least three to five days to complete.

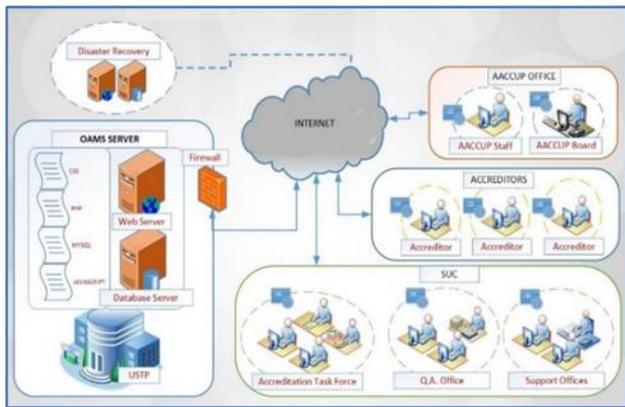
This physical process of accreditation is resource-intensive and time-consuming and requires a lot of manpower and resources. Further, when the global pandemic caused by the

COVID-19 virus hit the Philippines, several sectors were affected including the universities. The pandemic aggravated the accreditation process. However, in the aim, to continuously serve its mandate and assure the quality of services offered, methods and practices were restructured and innovated such as the program accreditation process. With this, the University of Science and Technology of Southern Philippines (USTP) developed an online accreditation platform. This system was named the Accreditation Online Management System (AOMS). Thus, even in the midst of the Covid-19 pandemic USTP, pushed through its scheduled accreditation process to provide excellently and continually improve the services it offers to its clientele. The AOMS project was completed and pilot-tested during the program accreditation in the College of Science and Technology Education and the College of Engineering and Architecture last December 2021.

Hence, this study aimed to evaluate the performance of AOMS, specifically to determine the AOMS user's satisfaction with its performance in terms of the system usefulness, information quality, and interface quality and solicit suggestions for areas that need improvement to enhance its performance and usability.

## 2. CONCEPTUAL FRAMEWORK

AOMS is accessible via the internet. Users can access the system through a web browser. Users have different account categories depending on the role the account performs in the system. The AACCUP Staff account manages information pertaining to the AACCUP processes and transactions. The AACCUP Board account reviews submitted reports by the accreditors and can generate accreditation certificates. The Accreditor account exclusively provides ratings in the



Survey Instrument (SI), generates a summary of ratings, findings and

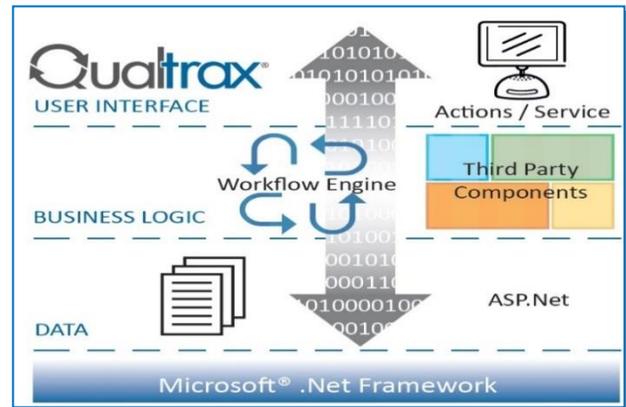
**Figure 1. AOMS Conceptual Design**

recommendations. The Quality Assurance account manages programs in the SUC. This account is responsible for all transactions between the SUC and AACCUP. The Program Head account performs program accreditation management. This account prepares the SI with supporting e-files for each benchmark statement. It can also assign a Program Member who will be in charge of specific areas in the instrument. The Program Member account is responsible for attaching

supporting e-files specific to each benchmark statement. The Support Office account, which is under the SUC, manages all e-files in the AOMS document management module. The AOMS Administrator account has overall access to the system. Considering the importance and confidentiality of all information in the system, a disaster recovery setup is a major consideration in the AOMS network design. The disaster recovery infrastructure will be configured in a cloud through a commercial cloud services provider to guarantee the safety of the information stored in the system's database. AOMS web and database servers run inside the data center of the University of Science and Technology of Southern Philippines. Figure 1 shows the design of the AOMS.

## 3. LITERATURE REVIEW

There have been numerous web-based Accreditation Management Systems (AMS) that are being used today both private and commercial. Several commercial accreditation software comes with a subscription cost and is suitable for general users. Though modification can be possible to tailor fit the user requirements. The Qualtrax Compliance Software [6] caters to international compliances and standards for industries like Forensic Laboratories, Food and Beverages, Manufacturing, Testing Laboratories, and many others built on the Microsoft.NET framework and makes use of ASP.NET for building the user interface. The system focused on major features like Document Management, Process Management, Reporting, Standards-Based Auditing, and Training Management. Its architecture, shown in Figure 2 is divided into three parts: the user interface, the business logic layer, and the data layer.



**Figure 2. Qualtrax System Architecture**

The Accreditation Council for Entrepreneurial and Engaged Universities (ACEEU) [7] AMS is accessible via its website. Their AMS allows applicants to determine the status of their application, access key documents needed for the procedure, and upload all required materials during the accreditation procedure. The duration of the accreditation covers 10 months from application to publication. Figure 3 shows the overview of the ACEEU's accreditation process flow.

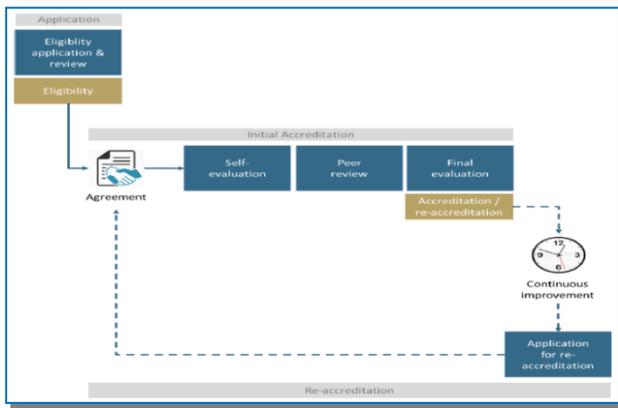


Figure 3. ACEEU Accreditation Process Flow

Another commercial web-based AMS is Jetchup Accreditation [8], a cloud-based Enterprise Accreditation Management software. Its core features include responsive architecture, information management, bungee integration, data management, dynamic reporting, self-study management, benchmark reporting, self-study report management, user management, assessment management, document management, and more importantly advanced security features which use 2048-bit SSL. Flexible features include custom automation, and custom data services & reporting recommended for small to large enterprises [8].

In Canada, they use eLumen as software support for the accreditation process. It is a web-based database software that helps faculty and departments collect and analyze evidence of student learning outcomes for their courses and programs. The eLumen Collaborative asserts that this tool reduces the workload for preparing for re-accreditation by its ability to aggregate data by department, program, and institution in a variety of report formats [9].

To determine the usability of these systems, they need to undergo careful evaluation from their users. Various standard usability questionnaires are available online. Bangor, et.al. [10] explained that the System Usability Scale (SUS) was developed by Brooke [11] as a “quick and dirty” survey scale that would allow the usability practitioner to quickly and easily assess the usability of a given product or service. This questionnaire is composed of ten statements and is scored on a five-point scale of the strength of agreement. The After-Scenario Questionnaire (ASQ), developed by Lewis [13], is a 3-question scale used to assess how difficult a user-perceived a task in a usability test. This survey is popular because of its simplicity. Another questionnaire developed by Lewis [13] is the Post-Study System Usability Questionnaire (PSSUQ), which has a 19-item instrument for assessing user satisfaction with system usability. The Computer System Usability Questionnaire (CSUQ) [13] is identical to the PSSUQ and considers its variant, except that the wording of the item does not refer to a usability testing situation. According to Bangor, et. al [10] study, the CSUQ was found to have the relatively high-reliability coefficient compare to other questionnaires. Figure 4 shows the details of the reliability coefficient among seven different usability questionnaires. Even though the SUS is a relatively short questionnaire, there are some situations in which a shorter

instrument would be preferable. The Usability Metric for User Experience (UMUX) is a four-item Likert scale used for the subjective assessment of an application's perceived usability. It is designed to provide results similar to those obtained with the 10-item System Usability Scale and is organized around the ISO 9241-11 definition of usability [14]. Lund [15] developed a 30-item questionnaire for measuring the subjective usability of a product or service and evaluating the user experience on four dimensions [16]: usefulness, satisfaction, ease of learning, and ease of use, based on a seven-point Likert scale. The Usefulness, Satisfaction, and Ease of Use (USE) [15] questionnaire comes with the goal of measuring the most important dimensions of usability for users across many different domains.

4. METHODS

This study used mixed-method [17] research design particularly the concurrent validating quantitative data triangulation design. In this research design, the timing of the data collection is concurrent, however, the analysis of the quantitative and qualitative data is separate. Then, these two data sets collected were merged to bring the separate results together in the interpretation. This design was chosen for the researcher to validate and expand on the quantitative findings from the survey by including open-ended questions and open spaces for verbatim comments, suggestions, and recommendations. Quantitative data were collected using the adapted questionnaire, the Computer System Usability Questionnaire (CSUQ) [12] with a reliability index of 0.96 [10] through the Google Forms application. The survey was added with one question. Specifically, question number 20

Survey Name	Abbreviation	Developer	Survey Length (Questions)	Availability	Interface Measured	Reliability
After Scenario Questionnaire	ASQ	IBM	3	Nonproprietary	Any	0.93 <sup>a</sup>
Computer System Usability Questionnaire	CSUQ	IBM	19	Nonproprietary	Computer based	0.95 <sup>b</sup>
Poststudy System Usability Questionnaire	PSSUQ	IBM	19	Nonproprietary	Computer based	0.96 <sup>b</sup>
Software Usability Measurement Inventory	SUMI <sup>c</sup>	HFRG	50	Proprietary	Software	0.89 <sup>d</sup>
System Usability Scale	SUS	DEC	10	Nonproprietary	Any	0.85 <sup>e</sup>
Usefulness, Satisfaction and Ease of Use	USE	Lund	30	Nonproprietary	Any	Unreported <sup>f</sup>
Web Site Analysis and Measurement Inventory	WAMMI	HFRG	20	Proprietary	Web based	0.96 <sup>f</sup>

<sup>a</sup>Lewis (1995). <sup>b</sup>Lewis (2002). <sup>c</sup>Kirakowski and Corbett (1993). <sup>d</sup>Igbaria and Nachman (1991). <sup>e</sup>Kirakowski (1994). <sup>f</sup>Lund (2001). <sup>g</sup>Kirakowski, Claridge, and Whitehand (1998).

Figure 4. Summary of Examined Usability Surveys

says, “I would highly recommend other SUCs to use the AOMS in the conduct of their program accreditation.” The reason why the such an item was added was to strengthen and validate the overall satisfaction evaluation results. The questionnaire aimed to measure user experience in the four dimensions: System Usefulness, Information Quality, Interface Quality, and Overall Satisfaction. The CSUQ used the common 7-point Likert-Type Scale to have a better reflection of a respondent’s true evaluation (Finstad, 2010). The survey was conducted online and the quantitative data were gathered and analyzed using descriptive statistics such

as mean and standard deviation. The qualitative data were summarized and consolidated according to the questions they belong.

A total of twenty-nine personnel of the USTP Cagayan de Oro Campus had actual hands-on experience in using the AOMS during the preparation and actual accreditation of the programs last December 2021. The respondents were composed of nineteen (19) teaching personnel and ten (10) non-teaching personnel

**5. RESULTS AND FINDINGS**

Table 1 below shows that one question under the overall satisfaction category which states, *“Overall, I am satisfied with how easy it is to use the AOMS”* was rated with the highest score among all the items in the questionnaire. This means that the users were fully satisfied with the overall performance of the AOMS and is highly recommendable for other SUCs to use.

**Table 1. AOMS Overall Satisfaction Evaluation Result**

Indicators	Mean	SD	Verbal Description
Overall, I am satisfied with how easy it is to use the AOMS.	6.07	1.00	E
Overall, I am satisfied with the AOMS.	5.83	1.20	E
I would highly recommend other SUCs to use the AOMS in the conduct of their program accreditation.	5.93	1.13	E
<b>Category Average</b>	<b>5.94</b>	<b>1.05</b>	<b>E</b>
<i>Legend: Mean Interval</i>	<i>Verbal Description</i>		
1.00 – 2.20	Poor (P)		
2.21 – 3.40	Fair (F)		
3.41 – 4.60	Satisfactory (S)		
4.61 – 5.80	Very Satisfactory (VS)		
5.81 – 7.00	Excellent (E)		

Some of the respondents expressed their satisfaction with using AOMS by stating the following remarks:

*“I am satisfied with the Document locator, area assignment of the task force member, uploading and downloading of documents” R10*

*“I am satisfied with how easy to access information needed for accreditation. The information is available.” R19*

Furthermore, Table 2 shows that the AOMS system usefulness rated Excellent with a category average mean of 5.87 and a standard deviation of 0.99. It is observed that all the questions under this category rated above the 5.80 maximum limit for the *Very Satisfactory* rating. The users strongly agreed that AOMS is very comfortable and is efficiently useful in completing the tasks and scenarios related to program accreditation.

**Table 2. AOMS System Usefulness Evaluation Result**

Indicators	Mean	SD	Verbal Description
It was simple to use the system.	5.86	1.09	E
I could effectively complete the tasks and scenarios using the AOMS.	5.90	1.11	E
I was able to complete the tasks and scenarios quickly using the AOMS.	5.83	1.04	E
I felt comfortable using the AOMS.	5.86	1.03	E
It was easy to learn to use the AOMS.	5.93	1.07	E
I believe I could become productive quickly using the AOMS.	5.90	1.01	E
<b>Category Average</b>	<b>5.87</b>	<b>0.99</b>	<b>E</b>

*Legend: Mean Interval Verbal Description*

- 1.00 – 2.20 Poor (P)
- 2.21 – 3.40 Fair (F)
- 3.41 – 4.60 Satisfactory (S)
- 4.61 – 5.80 Very Satisfactory (VS)
- 5.81 – 7.00 Excellent (E)

This claim was supported in the verbatim comments of the raters when asked-*“What are the three things you like most in the AOMS?”*. Some of these responses are:

*“AOMS was programmed to have such multilevel functions. Based on initial information, and the concept of “shopping” that I often heard (I was not able to attend a hands-on orientation), I thought it was more basic.” R11*

*“Ease of use (shopping of data), user-friendly interface and data bank.” R13*

*“Easy to access information needed for accreditation. The information is available.” R19*

*“I like that we can easily upload our documents in the system and if other offices uploaded their documents also we can easily shop for a document without even going through some request plus there will be no waiting game if offices sincerely upload their documents on the system.” R24*

*“Easy location of Documents, Easy uploading/Downloading Files, Understandable Instructions” R25*

*“I can able to view all the files uploaded and users who have uploaded for our office.” R26*

On the other hand, Table 3 shows the AOMS Information Quality category rated Very Satisfactory with a category mean average of 5.63 and a standard deviation of 1.08. It is worth noting that this section has the lowest-rated item in the questionnaire. This item states, *“The AOMS gave error messages that clearly told me how to fix problems.”* with a mean of 5.28.

**Table 3. AOMS Information Quality Evaluation Result**

Indicators	Mean	SD	Verbal Description
The AOMS gave error messages that clearly told me how to fix problems.	5.28	1.51	VS
Whenever I made a mistake using the AOMS, I could recover easily and quickly.	5.62	1.24	VS
The information (such as online help, on-screen messages, and other documentation) provided by the AOMS was clear.	5.62	1.15	VS
It was easy to find the information I needed.	5.59	1.15	VS
The information provided for the system was easy to understand.	5.72	1.03	VS
The information was effective in helping me complete the tasks and scenarios.	5.83	1.14	E
The organization of information on the system screens was clear.	5.93	1.15	E
<b>Category Average</b>	<b>5.63</b>	<b>1.08</b>	<b>VS</b>

**Legend: Mean Interval Verbal Description**  
 1.00 – 2.20 Poor (P)  
 2.21 – 3.40 Fair (F)  
 3.41 – 4.60 Satisfactory (S)  
 4.61 – 5.80 Very Satisfactory (VS)  
 5.81 – 7.00 Excellent (E)

Although the mean has a verbal description of "Very Satisfactory", this section of the evaluation had verbatim comments associated with the information quality. Some of these comments are the following.

*"It is difficult to search other documents."* **R5**

*"Keyword search not available (this has been a recurring suggestion every time AOMS is discussed) and filenames were confusing."* **R12**

*"Same document carrying different names/ titles."* **R16**

*"Repetition of titles/words, a repeat of items needed to be uploaded per area."* **R25**

Further results are shown in Table 4. The interface quality category was rated "Very Satisfactory" with a category mean of 5.67 and a standard deviation of 1.12. The users strongly agreed that the AOMS interface was pleasant and has complete functions and capabilities as expected by the users.

**Table 4. AOMS Interface Quality Evaluation Result**

Indicators	Mean	SD	Verbal Description
<i>The interface of this system was pleasant.</i>	5.77	1.01	VS
<i>I liked using the interface of the AOMS</i>	5.76	1.15	VS
<i>The AOMS has all the functions and capabilities I expect it to have.</i>	5.62	1.15	VS
<b>Category Average</b>	<b>5.67</b>	<b>1.12</b>	<b>VS</b>

**Legend: Mean Interval Verbal Description**  
 1.00 – 2.20 Poor (P)  
 2.21 – 3.40 Fair (F)  
 3.41 – 4.60 Satisfactory (S)  
 4.61 – 5.80 Very Satisfactory (VS)  
 5.81 – 7.00 Excellent (E)

This numerical rating was supported also by the verbatim comments of the respondents. Some of the comments are as follows:

*"I like its Easy Navigation"* **R6**

*"I like the way AOMS manages system users, instruments, and programs"* **R9**

*"I like the idea of uploading the documents, easy to navigate, and the AOMS layout design"* **R14**

*"I like the manner of uploading files - area specific, very nice interface and functions."* **R15**

*"Easy attaching file, easy access, easy to navigate"* **R23**

*"I like the appearance, it is user-friendly."* **R22**

**5. CONCLUSIONS AND RECOMMENDATIONS**

The performance and usability evaluation of the University of Science and Technology of Southern Philippines' Accreditation Online Management System showed that respondents found the system very useful to all State Universities and Colleges in the country. The users found the system so easy to use, very efficient, and promotes productivity in the workplace. Even though the general average of the overall evaluation is "Very Satisfactory", there are recommendations from the users on how to enhance the Accreditation Online Management System. This study further recommends that the system will be used by the Accrediting Agency of Chartered Colleges and Universities in the Philippines (AACCUP) not only to have a uniform platform in program accreditation but to test the overall functionality of the system in terms of the different user types. It is also recommended that the system will be hosted in a cloud-based server and that multiple SUCs will simultaneously access the system to fully test the reliability,

stability and functionality of the system and all SUCs that used the system will evaluate the AOMS to come up with the standard online accreditation platform to be used by the AACCCUP and all SUCs in the country.

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