

SUPERVISED INDUSTRIAL TRAINING ONLINE MONITORING SYSTEM WITH SHORT MESSAGE SERVICE (SMS) NOTIFICATION

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Abstract

The Technological University of the Philippines Visayas, has three (3) colleges that provide industrial training programs for students as mandated by the Commission on Higher Education (CHED). This study aimed to design and develop an online monitoring system with short message service (SMS) notification for supervised industrial training. There were twenty (20) respondents from IT experts who participated in the study, and 16-item standardized usability questionnaires from the Post-Study System Usability Questionnaire (PSSUQ) were established. The research design used in this study is descriptive-developmental research. The mean and standard deviation were used for data interpretation. According to the findings of the study, online registration has a dedicated hosting connection through the webserver of the Technological University of the Philippines Visayas. In terms of the usability of the system, the Overall Satisfaction outcome has a mean score of 1.27, which is interpreted as strongly agree. The majority of the respondents for System Quality answered strongly agree, with a mean score of 1.26. The mean score of 1.28 for Information Quality has resulted in strongly agree. The respondents rate the Interface Quality as highly acceptable, with a mean score of 1.32. It is logical to say, therefore that, the Industrial Training Online Monitoring System with SMS Notification is functional and operational.

Keywords: SMS Notification, On-the-Job Training, Monitoring.

Introduction

The Technological University of the Philippines Visayas is a state university that was initially established as the Visayas Technician Institute. International Development Association and the World Bank as the funding institution for \$12.7 million for the establishment of three technician institutes, one of which is TUP Visayas. One of the industrial components of TUP Visayas, which is a built-in feature of all its formal circular programs, is the Supervised Industrial Training (SIT) program.

The Supervised Industrial Training Office is under the administrative center of the Assistant Director for Academic Affairs to assist students in their industry training. The nature of the program is exploratory (SIT 1), skills training, intensive skills training (SIT 2), problem-solving, and decision-making activities (SIT 3).

The Supervised Industrial Training Office is handling students on-the-job training program as part of their curriculum requirements as mandated by the Commission on Higher Education (CHED). As part of the conditions, students who will undergo industry training will submit the essential documents needed for their practical training.

Methods

The design of an online monitoring system with short message service notification for supervised industrial training is a descriptive - developmental research. [1] Descriptive research gathers quantifiable information that can be used for statistical inference on your target audience through data analysis (Fluid Surveys, 2017). Developmental research will be used for the development of the supervised industrial training online monitoring system with short message service (SMS) notification. [2] It is a systematic study of designing, developing, and evaluating instructional programs, processes, and products that must meet criteria of internal consistency and effectiveness (Richey, 1994). In this study, the researcher analyzed and described in a robust manner in order to make an innovative contribution to the vision of the Technological University of the Philippines Visayas. The researcher will conduct a survey to determine the usability of the design, ensuring the

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effectiveness and value of the system and the significance of the collection of data.

The framework of the study involves the following variables used in the formulation and development of supervised industrial training online monitoring systems with short message service notification.

The input variables are the profile updates, checklist requirement, SMS Notification, and reports. The researcher introduces a semantic approach to the study's development with a concise discussion with the students. In contrast, the process of online monitoring through short message service includes the planning, designing, testing, and evaluation usability with the online submission of documents.

The output is to develop an online monitoring software-based platform through of the System's short message service notification, which will be the basis of a concrete proposal for Supervised Industrial Training Office of the Technological University of the Philippines Visayas.

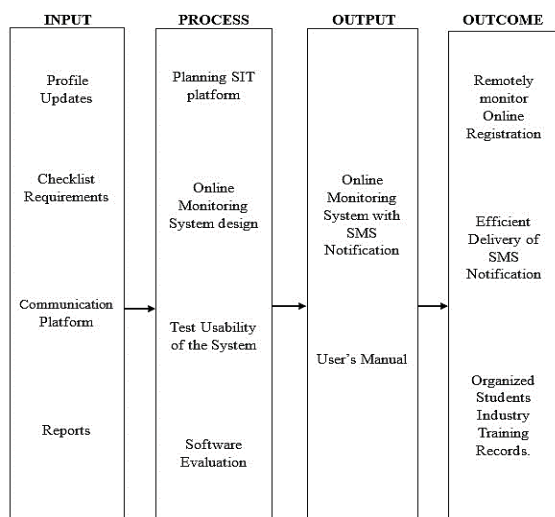


Figure 1: The Schematic Diagram Illustrating the Framework of the Study

The implementation of the SIT online monitoring system is beneficial to the university with its remote monitoring online system, efficient delivery of services through SMS notification, and ability to organize reports. The framework of the study is shown in the schematic diagram in figure 1.

Design Criteria

The SIT Online Monitoring System has the following features:

Real-time updated profiling: The system can access student information through its databases and verify SIT enrollees through design interfaces.

Access code security: The system requires an

access code to direct its interface registration for data security.

Administrator authentication: The authorized personnel is allowed to log in to the SIT platform using his or her username and password.

Real-time notification: Through SMS notification, it is stress-free to inform students by notifying them through the SIT online monitoring system.

Web browser compatibility: Any web browser is compatible with the system when accessing the SIT platform.

Software Development Life Cycle

In this study, the researcher uses the waterfall SDLC for the development of the SIT online monitoring system. [3] This SDLC of the system follows the international standard in describing the method of selecting, implementing, and monitoring the life cycle for software in conformity with the ISO/IEC 12207 standard (Lumen, No Date).

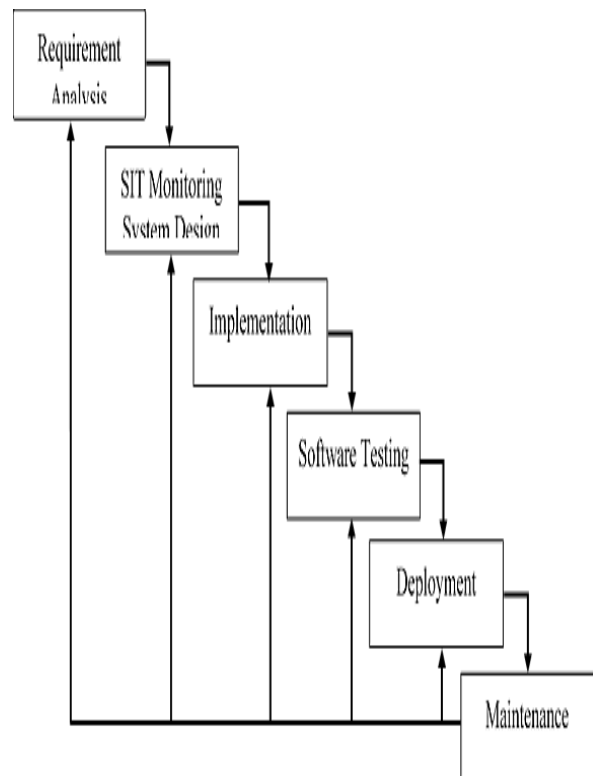


Figure 2: The Software Development Life Cycle of SIT Online Monitoring System

Figure 2 shows the Software Development Life Cycle of SIT Online Monitoring System.

Design Phase

The process of enrollment for supervised industrial training will start with the registrar's approval. Students with complete academic requirements and no failing grades will have the chance to undergo on-

the-job training. The list of students who have passed the academic requirements will be submitted to the office of Supervised Industrial Training for record-keeping purposes. Upon receiving the list of students from the registrar, the supervised industrial training officer will prepare another clearance for students to be signed by selected offices. A checklist is a list of things a student must complete before he or she can enroll in industry training. After completing the requirements, a student-trainee will proceed with the enrollment process and be ready for deployment. If not completed, the SIT officer will notify the students of their lacking requirements, and they cannot proceed for industry training unless a student-trainee will complete all the requirements given by the office of supervised industrial training. The elements of the concept diagram are shown in Figure 3.

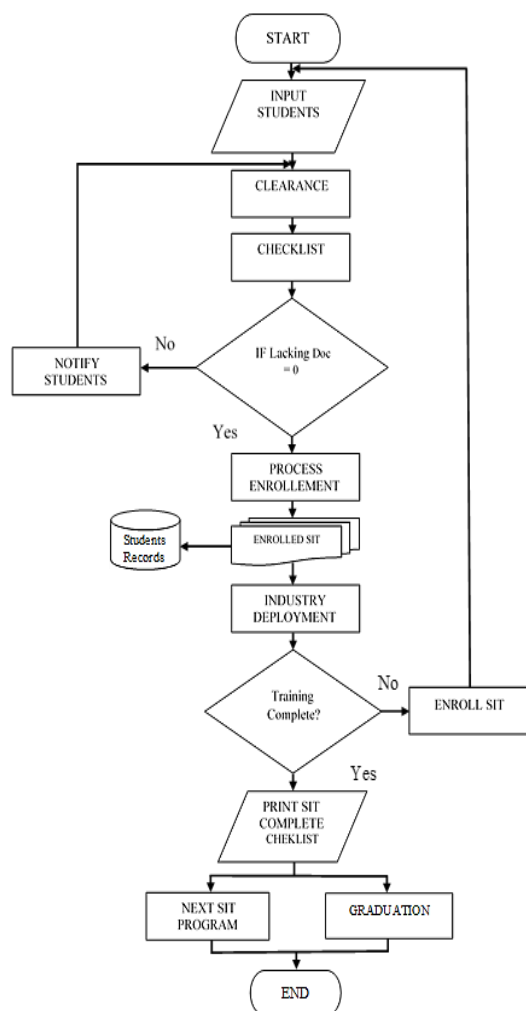


Figure 3: The Concept Design Diagram of the Study

Analysis

In this study, the purpose of the SIT Online Monitoring System with SMS Notification is to remotely use online registration, capable of sending

SMS notifications, to efficiently identify stakeholders. The SIT platform is remotely designed for students with internet connections, and by using an access code, online registration is capable of uploading files for SIT requirements'. The end-users of the system are the students who qualify for industry training and the personnel of the SIT office. The researcher identified hardware requirements and the programming language to be used in the system. The outcome of the project will be used in the Supervised Industrial Training Office during the industry training program of the Technological University of the Philippines Visayas.

Design Flow

The pattern used in this study will help organize the system through the design flow of the Supervised Industrial Training Online Monitoring System with SMS Notification. The design flow procedure is shown in Figure 4.

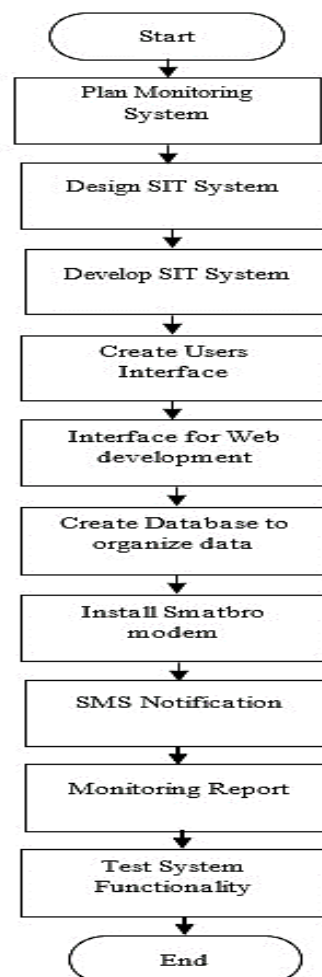


Figure 4: The Design Flow of SIT Monitoring System

Coding

In this study, the system program starts with a web building structure for the online platform of the SIT system. Using PHP files and scripts for the access

code and registration interfaces with MySQL for the database. Through the web server of TUP Visayas, the contents or services of the end-users over the internet will automatically transfer to the SIT platform. The programs for administrator authentication use the Visual Basic programming language and its design interfaces.

Functionality Test Case

In this study, the analysis of the functional test case is accompanied by detailed outputs from the software testing process. To verify how well the system functions correctly according to the requirements of functionality testing and provide an outcome after establishing a thorough examination.

The technical functions for testing the system, which will be the basis for end-user acceptance, are the SIT Access Code, Student Registration, Log In (Admin Authentication), Dashboard of New Trainee, Return Trainee, Filter Records, SMS Notification, SMS Report, Checklist Report, and About the System. Table 1 shows the test case results.

Table 1: Summary of Test Case Results

Test Case ID	Test Scenario	Pass or Fail	Remarks
TC 1	SIT Access Code	Passed	Strongly Agree
TC 2	Students Registration	Passed	Strongly Agree
TC 3	Admin Log-IN	Passed	Strongly Agree
TC 4	System (DashBoard)	Passed	Strongly Agree
TC 5	Report (DashBoard)	Passed	Strongly Agree
TC 6	Information (DashBoard)	Passed	Strongly Agree

Respondents of the Study

The respondents of the study were the ten (10) internal IT experts of TUP Visayas and the ten (10) external IT experts from private and government institutions. The frequency distribution in percentages is based on their specific organizations being equally distributed into fifty percent (50%) each. The total number of respondents is twenty (20) for the acceptability of the study, and they were chosen through quota sampling.

Validity and Reliability of Instruments

The researcher will be using a standard instrument for PSSUQ in terms of the usability of the system. The judgment of these professionals was the result of the average of the items of the test and the entire data gathering tool if suitable, sufficient, and adequate to the purpose of the test of an instrument. [4] The data gathering instrument is said to be reliable at .94 as obtain stable and trustworthy data. A standardized questionnaire has gone through the process of psychometric validation. While that sounds like a psycho with a yard stick, it actually means someone spent a lot of time going through dozens or hundreds of possible questions and winnowing the set down to the ones that are most

reliable, valid, and sensitive. Usually this is done by having a representative group of participants answer the candidate questions in response to a diverse set of interfaces (Lewis, 2016).

Statistical Treatment

The PSSUQ items are standardized questionnaires designed to measure the perception of overall satisfaction with the acceptability of the study. The mean scores and standard deviation of the sub-scales of System Quality, Information Quality, and Interface Quality were used in the statistical treatment of the data. The percentage distribution is also important to measure the insightful assessment from the IT experts.

Results and Discussions

In this study, functionality testing was conducted on the features of the system. Based on the objective of the study, the results of the test have an average of twenty (20), which corresponds to the acceptability of the system with all features functional. The percentage of the system that is functional gives an unprecedented result, meaning the system works properly and accurately and passes all criteria that serve its purpose.

The test case results of the system programs and interfaces of the SIT online monitoring system with SMS notification have been tested, and the remarks strongly agree according to the end-users acceptability. All tests have confirmed the rating of PASSED given by the respondents with a fully functional system. Table 2 shows a summary of the functionality test results.

The second objective of this study is to evaluate the usability of the system with IT experts in terms of System Quality, Information Quality, Interface Quality, and Overall Satisfaction using PSSUQ-3 criteria.

Table 2: Summary of the Functionality Test Results

No.	Features	Result	Remarks
1	Updated Profiling	100%	Passed
2	Online Registration	100%	Passed
3	Checklist Requirement Recording	100%	Passed
4	Monitoring report generation	100%	Passed

[5] Several academic kinds of research performed to test the reliability of this scale as well as determining the norm of constructs and individual questions. To make sense of the scores derived from PSSUQ

version 3, the following means determined by (Sauro & Lewis, 2016). Table 3 shows the system usability result.

Table 3: Summary of the System Usability Results

PSSUQ Criteria	Mean	Interpretation
System Quality	1.26	Strongly Agree
Information Quality	1.28	Strongly Agree
Interface Quality	1.29	Strongly Agree
Overall Satisfaction	1.27	Strongly Agree

The entirety of its system features and characteristics holds the capacity to meet stated or implied requirements. The PSSUQ results are the basis for the acceptability of the study.

The standard set for Information Quality based on the averaging of scores from the questionnaires, the highest numbers presented on the graph as the individual mean score of three (3) answered by IT Expert 13 and IT Expert 5 with a rating of two (2) would be appropriately acceptable. Based on the questionnaires from seven (7) to twelve (12), the highest number of responses are one (1) as strongly agree, and the lowest number is three (3) as above neutral. The degree of acceptability rating in information quality, with a mean score of 1.28, was rated as Strongly Agree. Information Quality ratings correspond to the PSSUQ norms that deliberately satisfy the above mean score of 3.02 as implied essentials to standard needs.

The overall satisfaction of the SIT Online Monitoring System with SMS Notification has resulted in high acceptability interpretation. The total mean score is 1.27 was interpreted as a Strongly Agree rating. The Overall Quality rating corresponds to the PSSUQ Norms deliberately satisfy on the above mean scores of 2.82 as implied essentials to standard needs.

Conclusion and Implications

According to the findings of the study, the Supervised Industrial Training Online Monitoring System with Short Message Service (SMS) Notification has the following technical features; Updated profiling, Online Registration, Checklist Requirements Recording, and Monitoring Report Generation. The level of usability was strongly

agreed upon in terms of; System Quality, Information Quality, Interface Quality, and Overall Satisfaction.

It is logical to say, therefore, that the Supervised Industrial Training Online Monitoring System with Short Message Service (SMS) Notification is functional, operational, and capable of profiling, monitoring, recording, and generating reports. The SIT Online Monitoring System with SMS Notification adheres to the minimum standard requirements of the PASUC format and Post-Study System Usability Questionnaires.

Conflict of Interest

There is no conflict of interest by the author in this manuscript.

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