



# WEB-BASED INFORMATION SYSTEM WITH SMS NOTIFICATION FOR COMPETENT ASSESSORS

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**Abstract.** The Web-Based Information System with SMS Notification of Competency assessors using the Rapid Application Development methodology was intended for Technical Education and Skills Development Authority (TESDA) within the Camarines Sur area. Specifically, the following objectives were achieved in the completion of this project. First was to develop a web-based information system that stored the records of the accredited assessors. The second objective was to include a SMS notification to inform the clients of the renewal of their accreditation. Third objective was to provide a system that include a secure login module for both admin and client users. Fourth was to generate updated reports of the accredited assessors. Last was to evaluate the system using an industry accepted quality standards, which, in this case the ISO.

The TESDA focal person in-charge in the accreditation of the assessors, TESDA assessors and the aspiring to be assessors were the recipient of this study. Much more efficient and effective manual operations were listed in recording and storing files of competency assessor's accreditation using Microsoft Office applications.

It is therefore recommended that such system be implemented and deployed by the beneficiary agency. The system has proven its veracity, for it is of great help to the focal persons who are still using the manual system.

The system, since proven maintainable and portable, can accommodate added feature to make it more functional, reliable, usable and efficient.

**Key Words:** *Assessors, Competent Assessors' System, SMS Notification, TESDA System for Competent Assessors, TESDA Systems, Web-Based Information System*

## INTRODUCTION

Organizations and businesses have shifted from the traditional information systems to web-based information systems (WBIS) because of its great advantages and potentials. Numerous web-information systems have been developed over the years and it made a massive turnover when it comes to revenue.

The development of WBIS has helped the government to improve their services to their citizens. Citizens can get current and accurate government information from e-government websites. Government can publish different types of information through websites such as results of examinations.

The Technical Education and Skills Development Authority (TESDA) was established through the enactment of Republic Act No. 7796 otherwise known as the “Technical Education and Skills Development Act of 1994.

It is an agency that is mandated by the government to integrate, coordinate and monitor skills development programs, restructure efforts to promote and develop middle-level manpower, approve skills standards and tests, develop an accreditation system for institutions involved in middle-level manpower development, fund programs and projects for technical education and skills development and assist trainers training programs.

Unfortunately, the use of electronic spreadsheet and the manual record keeping can still be observed in some organizations nowadays. Such is the case in the TESDA Provincial Office. The agency makes use of the traditional information system wherein the applicant needs to visit the office just to submit the required documents for their accreditation. The applicant needs to proceed to the office to follow-up for their application.

On the focal staff part, it will be cumbersome and tedious to be encoding the data into their computer system. They store the submitted documents to a filing cabinet and this will be inputted through the use of a computer system. This creates redundancy and waste of human resources. Also, they have to update and monitor the records of accredited competency assessors.

In connection to the challenges faced by many organizations with the use of electronic spreadsheet and a manual record keeping, this study proposed the development of a Web-Based Information System with SMS Notification.

According to [www.ukessays.com](http://www.ukessays.com), Web-based Information system is an information system which uses Internet web technologies for delivering information and services to users. This technology is a software system and is used to publish and maintain data by hypertext principle. It plays an important role for gathering, storing, collecting and communicating data from different sources and spread information at a glance.

In addition to the use of web-based information system is the use of SMS notification. According to [www.bulksms.com](http://www.bulksms.com), the use of SMS is quite personal. It goes straight to the recipient’s mobile phone. The good thing about SMS is that they can reach a customer wherever they are. If the cellphone is off or out of signal range, the message will arrive at the recipient’s phone if it is switched on or receives signal within 48 hours of sending. It can also be easily tracked

using the delivery reports. You are able to see which messages were delivered to which mobile numbers. Also, SMS messages can be scheduled to go out at a certain date and time.

If it will be compared to any form of communication technology, SMS is much cheaper than a phone call or a fax and people are more likely to receive and read an SMS compared to other form of telecommunications since a client/customer will almost always have their cellphone on them. Thus, the chances the recipient receiving and reading the message is very high.

As an alternative solution to this emerging problem, the proponent developed a Web Based Information System for the accreditation of the competency assessors.

The Web-based information system with SMS notification for Competency Assessor is a system meant to help the individuals transact in a timely and efficient manner. The use of the electronic spreadsheet and manual record keeping will be gone and will be replaced by a much efficient system that will handle the application of the soon to be assessor. A system where the information can be received and read whenever and wherever it is convenient. The content of this system is delivered via the Internet. As we all know, Internet plays a vital role in our everyday life.

According to internetlivestatus.com, more than 40% of the world's population is connected to the Internet. In addition, based from objectiveit.com, the increase in mobile internet usage has been revolutionary. There are 5.135 billion unique mobile device users (68% penetration) alongside 4.021 billion users (53% penetration). These statistics support the idea that the development of web and mobile apps have rocketed in previous years.

Thus, the integration of the use of Web-based information system and the use of SMS notification is the best approach in helping the organization and its clientele attain the effective and efficient way of implementing the accreditation of competency assessors. The use of this system will have numerous benefits among the agency, the focal persons and the soon to be assessor. It is the desire of the researcher to be of great help to the organization's growth. To provide solutions to the emerging problems brought about by the use of the electronic spreadsheets and the manual record keeping.

The study will cover the activities involved in the process of accreditation of the applicant for the competency assessor. It will starts from the orientation, evaluation of the submitted documents, issuance of accreditation, the updating of records of the accredited competency assessor as well as the automated notification to be sent to the mobile phone of the competency assessor prior to the expiration of their accreditation.

The current system being used is the manual information system which creates hassle when processing the daily transactions of the accreditation of the assessors. The study entitled "Web-Based Information System with SMS Notification for Competency Assessors" has been conceptualized. This study aimed to propose a much efficient processing of the daily transactions using the Internet and SMS technology. It intends to integrate the use of web technology, a database and SMS technology that catered a much faster and cost-effective information system.

### **Specific Objectives**

The study specifically sought:

1. To develop a web-based information system that will store the records of the accredited assessors.
2. To include a SMS notification to inform the clients of the renewal of their accreditation.
3. To provide a system that will include a secure login module for both admin and client users.
4. To generate an updated reports of the accredited assessors.
5. To evaluate the system according to the quality standards of :

- a) Functionality
- b) Reliability
- c) Usability
- d) Efficiency
- e) Maintainability
- f) Portability

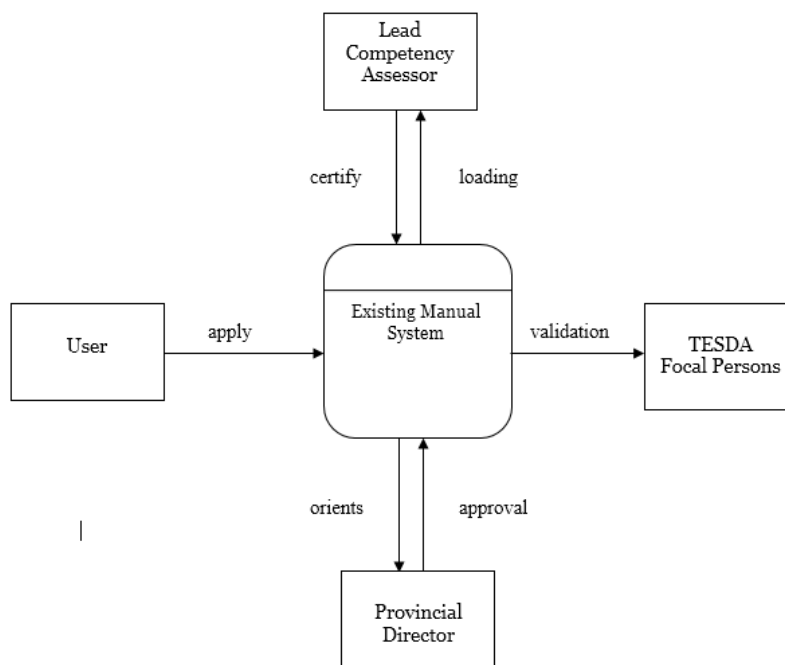
### Requirements Planning

In this phase, communication between the end user and the proponent is vital to determine the goals and expectations for the project as well as current and potential issues that need to be addressed. Data gathering is the foremost thing to do during this phase to assess the existing manual system. This is where the proponent needs to understand what things to improve in developing the proposed system.

The study used the judgment sampling which is a non-probability sampling in where the samples for a study are gathered in a process that does not give all of the individuals in the population equal chances of being selected. The specific group of people that fit the criteria of this study are comprised of TESDA focal person, TESDA accredited competency assessors in various Technical Vocational institutions within the Camarines Sur area and the IT Experts.

Survey questionnaire were distributed to evaluate the existing manual system. The survey showed that the existing manual system was less reliable since the focal persons are the one managing the data inputs, processing, storage and output. This is more prone to human error. It is also inconsistent when it comes to functionality since it relies on the performance of the focal person's capability to verify and authenticate the certification of a soon to be assessor. The efficiency of the system to deliver its task relied mainly on the performance of the focal persons.

The figure below described the flow of the existing manual system.



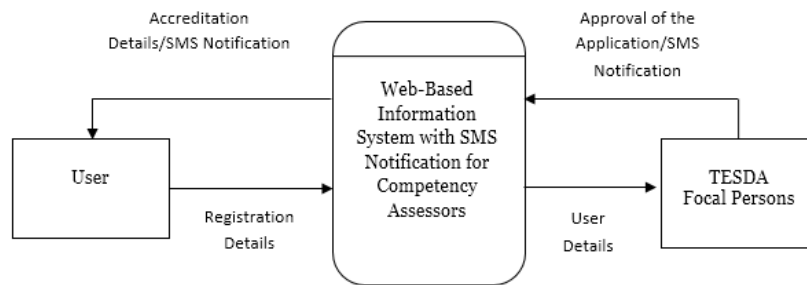
**Figure 4.1 Flowchart of the Existing System**

On Figure 4.1 showed the flowchart of the existing system where the proponent based the system design. The user will apply by submitting his/her documents in the TESDA office of Camarines Sur.

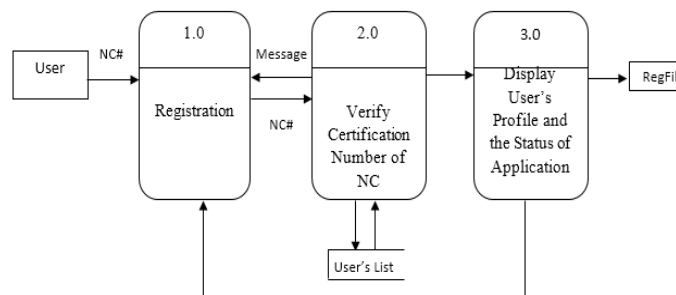
**Prototyping**

The information gathered in the previous phase serve as the foundation for the prototype of the system. The prototype generated was based on the requests of the focal persons.

The data flow diagram serves as a guide since it shows the flow of information through a process or a system. The user will register through the use of a personal computer with internet connection. He/she must register through the web-based information system. Upon registration, he/she must fill out the form and choose Apply for Loading or Apply for Assessor. Once the requirements needed is completed and submitted, the focal persons will be the one to approved and encode in the system the accreditation number and the date of issuance and expiration date. The system will generate automatically once the expiration date of the accreditation is within the 30 day or 5 day period.



**Figure 4.2 Data Flow Diagram of the Web-Based Information System with SMS Notification for Competency Assessors**



**Figure 4.3 The Registration Module**

Figure 4.3 showed the process for the registration of the applicant. He/ she must have a NTTC certificate stored in the offline system for him/her to have a successful registration.

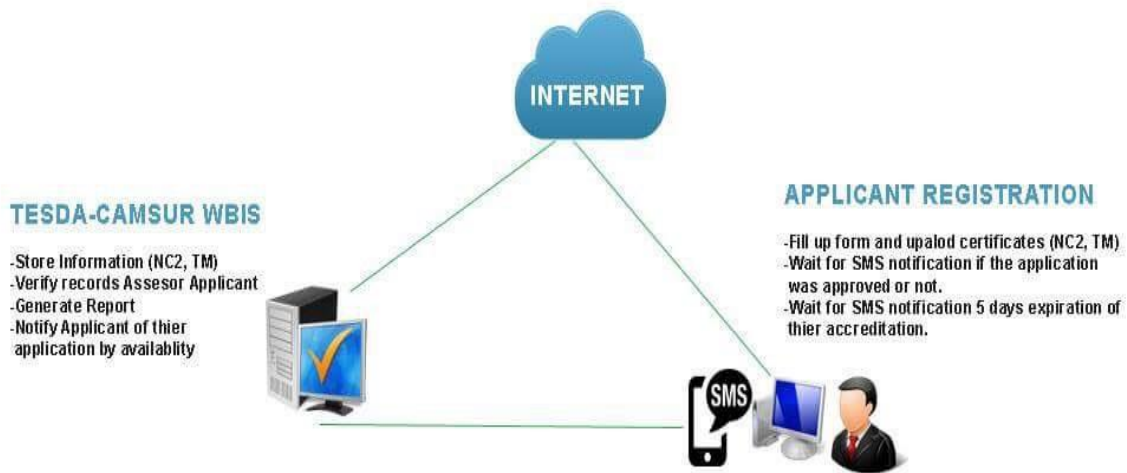


Figure 4.4 System Architecture of the Developed System

Figure 4.4 showed the system architecture of the developed system where the registration and application for the competency assessor will be done through the use of the web. It will be broadcasted using the GSM modem that will communicate with mobile network. This will be sent to the mobile phone of the respective user through SMS.

### Testing

Codes and the actual system are created. The various tables for the database are created together with the graphical user interface. A user friendly interface must be of utmost importance in this stage. Users still participated on the look and feel of the user interface.

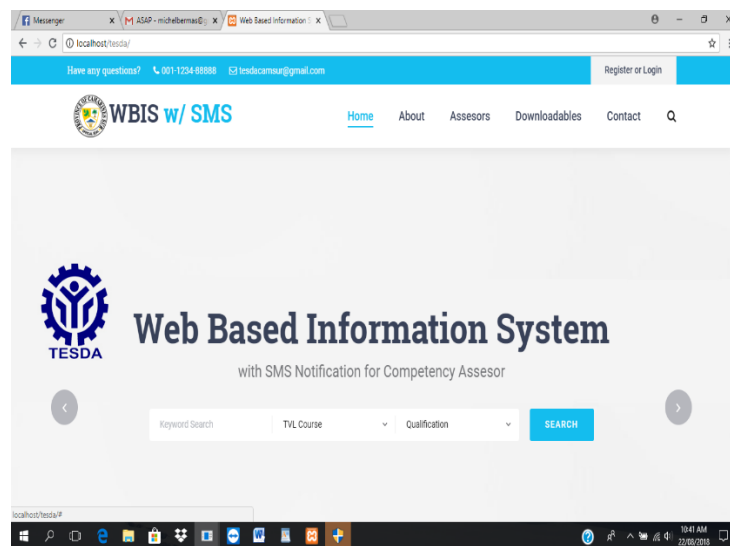


Figure 4.5 - The Homepage of the system

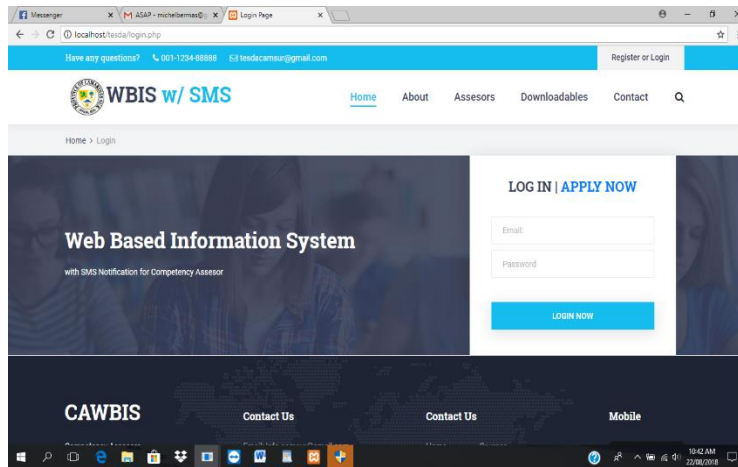


Figure 4.6 - User Registration

Upon registration of the applicant, his/her profile was stored in a database. The status of the application is displayed once he/she checked his/her profile.

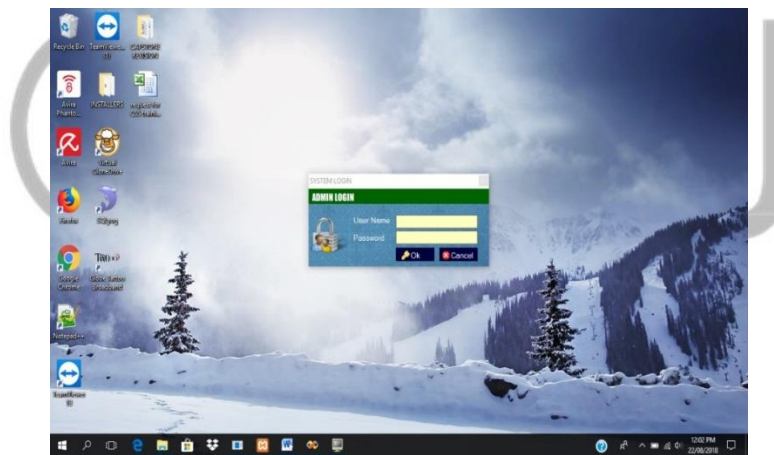


Figure 4.7 - Admin Account

The admin account showed in Figure 4.6 is responsible for the entry of the National Certification number of the User. There must be a record of certification number since this number will be used to validate the online registration of the User. The user cannot continue the registration online if he/she has no authentic certification number that is recorded in the admin account. In the admin account, the admin can add new assessor once their requirements have been met, they can update or edit the records of the assessor, they can also send SMS Notification once the date of expiration of the certification of the assessor is within the limited number of days and they can also see the SMS Log wherein the list of the Sent SMS will be displayed on the screen.

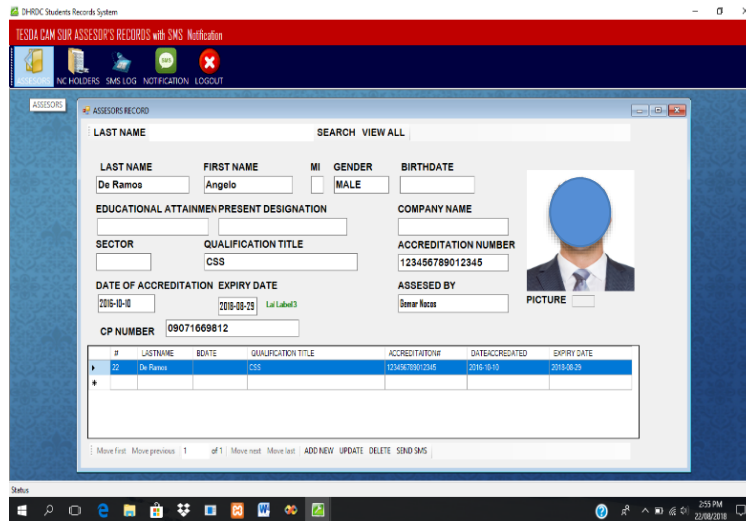


Figure 4.8 - Assessor Profile

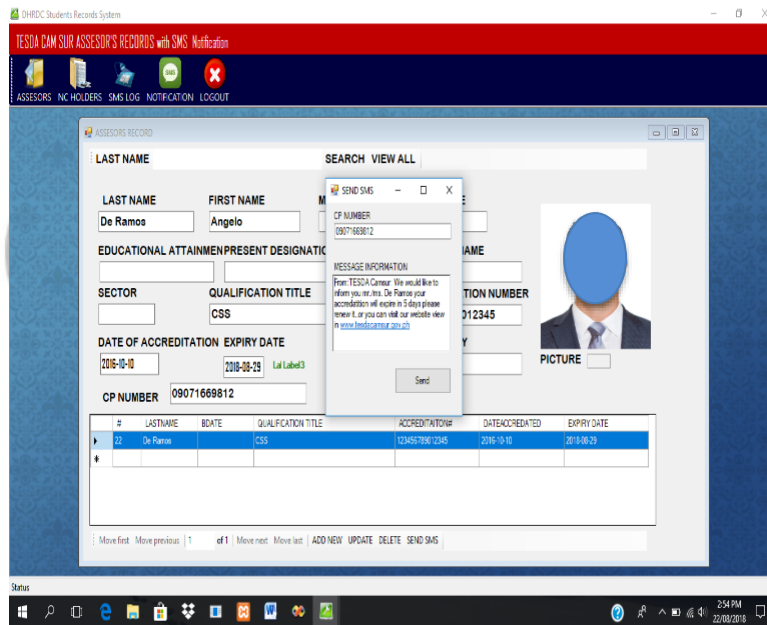


Figure 4.9 - SMS Notification

The SMS notification can be found in the Admin account. This will serve as the proper venue in the dissemination of information such as the notification when the expiration of the certification is fast approaching and it can also be used for the scheduling of the assessor when the expertise of the assessor will be needed. The system will automatically notify the accredited competency assessor if the expiration of the accreditation is within the 30-day and 5-day period.

In this phase, alterations are considered that solve the problems as they arise. This phase showed that there is a client's preference of the use of the offline system aside from the web-based information system.



## Cutover

The system was tested for evaluation using the ISO 9126 software quality standards. The ISO 9126 served as a guide for testing the system for its functionality, reliability, usability, efficiency, maintainability and portability. This phase covers the deployment of the system as it was uploaded in the web-based information system.

**Table 4.1 Summary of Evaluation and Testing**

Characteristic	TESDA Focal (PO Office) (Frequency -3)	TESDA Assessors (Frequency- 4)	IT Expert (Frequency -5)	Mean	Interpretation
<b>1. Functionality</b>	4.50	4.60	4.50	<b>4.53</b>	More than what is expected
<b>2. Reliability</b>	4.50	4.50	4.33	<b>4.44</b>	More than what is expected
<b>3. Usability</b>	4.50	4.56	4.75	<b>4.60</b>	More than what is expected
<b>4. Efficiency</b>	4.50	4.25	4.83	<b>4.54</b>	More than what is expected
<b>5. Maintainability</b>	4.50	4.25	4.58	<b>4.44</b>	More than what is expected
<b>6. Portability</b>	4.50	4.75	4.83	<b>4.69</b>	More than what is expected
<b>Over All Mean</b>	4.50	4.49	4.64	<b>4.54</b>	More than what is expected

Table 4.9 showed the summary of the evaluation and testing administered to the nine respondents of Web-Based Information Systems with SMS Notification for Competent Assessors.

## Findings

The findings have been discovered during the development and after a thorough use of the developed system:

1. The records of the accredited assessors should be displayed on the webpage of the web-based information system.
2. SMS notification should be generated automatically within number of days.
3. Login module must be secured for both admin and client.
4. Updated reports of the accredited assessor must be access for both online and offline system.
5. Evaluation system must be used to assess the developed system.

## Conclusions

After numerous use of the system, the following conclusions were established:

1. The records of the accredited assessors are accessed through the search box.
2. SMS notifications are generated automatically within the 30-days and 5-days before the expiration of the accreditation.
3. The login module is accessed via username and password for both admin and client.
4. There is an updated reports of the accredited competency assessors for both online and offline system.
5. The system has successfully passed the ISO 9126 software quality evaluation.

## Recommendations

Based on the conclusions, the following recommendations were made:

1. Records of the Lead Competency assessor must also be included.
2. SMS notification must also cover the TM certification, NC certification and NTTC certification.
3. Interactive login and logout module.
4. Include notification for the TM certification and NC Level certification.

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