Tax Management System for Local Government Unit with SMS Notification

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ABSTARCT: This study aimed to design and develop a Tax Management System for Local Government Unit with SMS Notification and evaluate the degree of acceptability and performance efficiency in the perception of the respondents. It is a computer-based information system aimed at providing information of the tax payers and their payment history in fast and easy manner. Developmental and descriptive research design was employed in this study. A system prototype was developed to implement the core functionalities as required by the target users to meet design specification. This study was conducted at the Treasurer Office in the Municipality of Estancia, Iloilo with a total of 50 respondents. When respondents were asked as to the degree of acceptability of the developed system in terms of security, it yielded a response of strongly agree. In terms of confidentiality, the developed system was described as strongly agree. The result showed that the performance efficiency of the developed system in terms of time behavior was also described as strongly agree. In terms of responsiveness, the developed system was also described as strongly agree. From the results stated above, this simply showed that the respondents were very much contented with the security, confidentiality, and efficiency of the developed system.

1. INTRODUCTION

Economic management specifically tax management relates to management of finances for payment of tax, assessing the advance tax liability to pay tax in time [1]. It has nothing to do with planning to save tax, it is just related with operational aspect of payment of tax while managing his taxes a person ensures that he or she is making timely payment of taxes without running out of the money and he is complying with all the provisions of the law [2]. The objective of Tax Management is to comply with the provisions of Income Tax Law and its allied rules. Tax Management deals with filing of Return in time, getting the accounts audited, and deducting of tax at source[3]. The main purpose of tax management system is to inform the lessee about the monthly tax and date of last payment. Lessee are also be updated of the payment status and penalty if they cannot meet the due date. In [4][5][6], uses electronic tax filing E-Filing and payment which resulted to the tax growth of their country.[7] Argued that tax is an important stream of revenue for government's development projects and therefore all efforts must be made by governments to ensure that it is accurately and efficiently collected so as to facilitate the government's operations. In [8]used ICT in property tax administration to solve their problem in revenue leakages, corruption, and under-collection

On the other hand, in the northern part of the province of Iloilo, there is a second class municipality named Estancia which is known around the country as the center for commercial fishing and said to be the "Little Alaska of the Philippines" [9].The Treasurer's Office in the Municipality of Estancia is using the manual process to serve the needs of their tax payers in keeping of tax payer's information and also of their payment history. Hence, to improve these processes, an alternative solution was proposed to employ information technology. The Tax Management System with SMS Notification for Local Government Unit is a web-based management information system that will provide efficient and reliable information for the Municipal Treasurer Staff, employees and tax payers. The purpose of this system was to design and develop an Economic Enterprise Management System for Local Government Unit with SMS Notification for the Treasurer Office, Determine the degree of acceptability of the developed system as perceived by the personnel of the Treasurer Office and tax payers in terms of security and confidentiality, and Evaluate the performance of the developed system as perceived by the expert evaluators in terms of time behaviour and responsiveness.

This study was conceptualized to design and developed a computer-based information system that would provide real-time information to the users. The input phase requires tax payer's information and business information. The process phase included the development of the Economic Enterprise Management System with SMS Notification for Local Government Unit while the output phase of this study determined the confidentiality and acceptability characteristics of the developed system.

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2. METHODOLOGY

2.1 Research Design

In this study, developmental research and descriptive research designs were employed. Developmental research is defined as the systematic study if designing, developing and evaluating instructional programs, processes and products that must meet criteria of eternal consistency and effectiveness [10]. As such, developmental research design was used in the design and development of the system prototype. On the other hand, descriptive research was also used. Descriptive research is a study designed to depict the participants in an accurate way. More simply put, descriptive research is all about describing people who take part in the study[11].

Software Development Life Cycle (SDLC) is a process used by the software industry to design, develop and test high quality software. The SDLC aims to produce a high-quality software that meets or exceeds customer expectations, reaches completion within times and cost estimates [12].

The researcher used the Rapid Application Development Model (RAD) model as the software development life cycle for the software development activities. With rapid application development, developers can make multiple iterations and updates to software rapidly without needing to start a development schedule from scratch each time[13].

Figure 1: The Rapid Application Development Model

2.2 Process Model

The next task under this phase was to develop the system structure in terms of the automated and manual functions that comprimise the system. The develop system is composed of the three core modules namely lessee Information module, Business Information module, and the SMS Notification module. The Lessee Information Module contained the basic information about the lessee's personal information. The Business Information Module is responsible of all rents about the business. The SMS Module will handle the SMS ralated activity to SMS notification. Figure 4 shows the decomposition data flow diagram for the developed system.
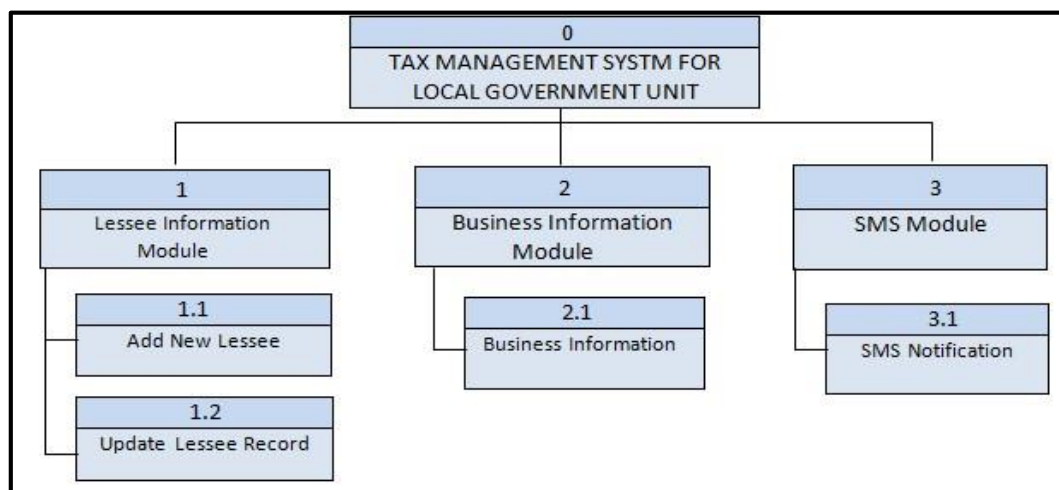

Figure 2. The Decomposition Data Flow Diagram Depicting the Process Model of the develop System.

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2.3 Logical Architecture Design

The next task was to develop proposed layout for the core functions. The layout depicted the hierarchy of major logical components comprising the developed system. The Logical grouping of components into separate layers that communicate with each other and with other clients and applications. Figure 5 shows the logical architecture design of the developed system. The model, which is multitier architecture, is a client-server architecture combined with the layered architecture. These are the presentation layer, application and logic layers also known as the business layer, the data manipulation layer and database layer.
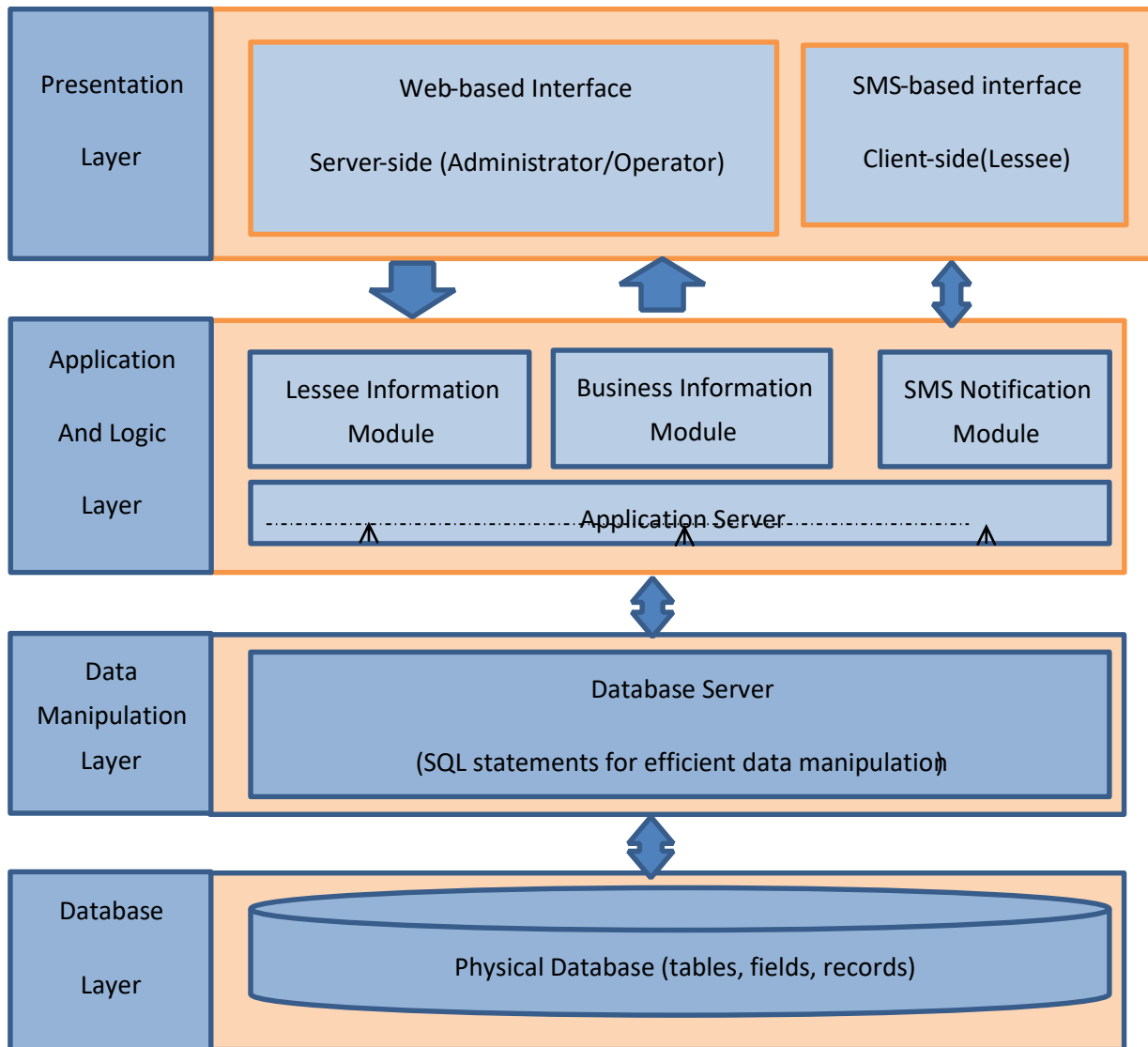

Figure 3. The logical Architectural Design for the Developed System

2.4 Physical Network Topology

Selecting the appropriate construction approach for the developed system is the last objective of the UD phase. Thus, the final task was to present a model that showed the physical network topology that visualized the communication schemes of physical networks arrangement. The physical network topology depicted the placement of the components in the network. It showed the configuration of cables, computers, and other devices.

Since the developed system would be implemented through SMS technology, it made use of the existing infrastructure of the telecommunication companies as carrier of the notification. A GSM-capable modem was attached to the server computer to facilitate transaction such as sending of SMS notification to the taxpayers. The Taxpayer who are the clients of the developed system would only need a GSM-capable phones to receive SMS notifications. Figure 6 shows the physical network topology of the developed system.

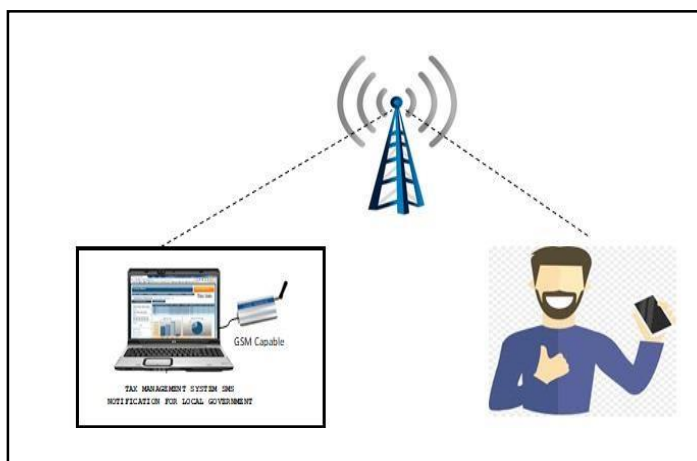**Tax Management System for Local Government Unit with SMS Notification**

Figure 4. Physical Network Topology of the developed System.

2.5 System Prototype

After series of phases undergone in this study, prototyping is one of the most critical factors leading to successful development [14]. In this page, the user needs to input username and password to gain access into the system. If the username or the password is not correct the user cannot proceed to the next level, otherwise will be prompted such his user account is invalid. Figure 7 shows the main page of the developed system.
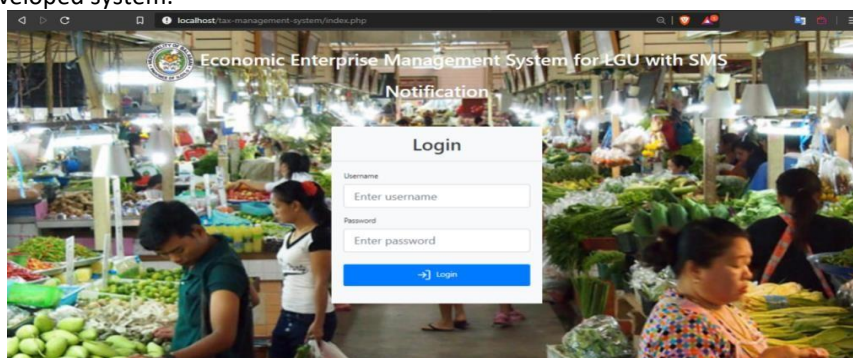

Figure 5. The log-in Page of the Developed System.

3. RESULTS AND DISCUSSION

Degree of Acceptability of the Developed System as Percieved by the Personnel of the Treasurer Office in Terms of Security and Confidentiality

Acceptability refers to the quality of being acceptable-of someone's needs adequately. The confidentiality of information obtained in the course of a tax official's duties is a crucial issue within a tax administration. Failure to properly manage the responsibility of confidentiality can challenge the integrity of the Host Administration, whose audit capacity the Expert is working to build. Additionally, breaches of confidentiality may potentially give rise to litigation by taxpayers for (alleged) breach of the obligation. When respondents were asked as to the degree of acceptability of the developed system, the overall mean was 4.08 and was interpreted as "agree". In terms of security, it yielded a mean score of 4.17 which is interpreted as "agree". In terms of confidentiality, the degree of acceptability of the developed system was computed at 4.0 which was described as "agree". Table 1 shows the data.

Table 1. Degree of Acceptability of the Developed system in terms of security and confidentiality.

Implementation Indicators	Mean	Verbal Interpretation
Degree of acceptability	4.08	Agree
a.Confidentiality	4.00	Agree
b. Security	4.17	Agree

Legend: 1.00-1.80(Strongly Disagree; 1.81-2.60(Disagree)2.61- 3.40(Undecided); 3.41-4.20 (Agree;4.21-5.00(Strongly Agree)

Degree of Performance Efficiency of the Developed System as Perceived by the Expert Evaluators in terms of Time Behavior and Responsiveness.

This exploratory study investigates how increasing tax rates result in individual taxpayers' altering their fiscal behavior in an experimental setting. Maximum output occurred at the lowest tax rate for five of the 17 subjects, at the second lowest tax rate

for seven subjects, at the median tax rate for three subjects, and at the highest tax rate for two subjects. Tax payments were maximized at the highest tax rate for seven subjects, at the second highest rate for eight subjects, and at the median tax rate for two subjects. The results generally support supply-side and neoclassical economic theories of taxpayer behavior, which is important since these theories underpin current tax policy.

The result showed that the performance efficiency of the developed system has an overall mean of at 3.72 which described as "agree". In terms of time behavior the mean was 3.67 which was interpreted as "agree". In terms of responsiveness, the mean was 3.78 which was interpreted as "agree".

Table 2. Degree of Performance Efficiency of the Developed System as Perceived by the Expert Evaluators in terms of time behavior and responsiveness

Implementation Indicators	Mean	Verbal Interpretation
Degree of Performance effeciency	3.72	Agree
a. Time Behavior	3.67	Agree
b. Responsiveness	3.78	Agree

Legend: 1.00-1.80(Strongly Disagree; 1.81-2.60(Disagree)2.61- 3.40(Undecided); 3.41-4.20 (Agree;4.21-5.00(Strongly Agree)

4. CONCLUSION

For the acceptability characteristics in terms of confidentiality and security, the results revealed that the respondents viewed the developed system as agree. The findings implied that using Economic Enterprise Tax Management System for Local Government Unit with SMS Notification is very acceptable. The users believed that through confidentiality and security of the system, The Office of Treasurer of Estancia, staff and lessee can trust the system the developed system in keeping information.

The developed system is time efficient, reliable, confidential, and secured for the ease of the Office of the treasurer and staff, and reducing work time in paper works. The findings implied that the system can be operated only by the Estancia treasurer and staff of The Office of the treasurer and is very greatly needed in keeping track of Economic Enterprise Tax Management System. For the performance efficiency characteristics in terms of time and behavior and reliability, the results revealed that the provided an interpretation as strongly agreed. The result implied that using Economic Enterprise Tax Management System is very useful because it is very efficient and reliable. The users believed that keeping track of Economic Enterprise Tax Management System is more efficient when using the proposed system.

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