

# E – Wallet System Implementation: Impact on Small Scale Business in Nigeria

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**Abstract:** *With emergence of a cashless society which involves electronic transaction and the risk involve carrying cash which lead to theft, lose and stress formed the basis of this project, which is aimed therefore at developing an electronic model to replace the existing physical wallet, with its notes, coins, photos, plastic cards, loyalty cards etc. The aim of this project is to develop an online wallet application system for a small scale organization, where customers registers and create an account with them, thereby giving them avenue to shop without them carrying physical cash. The methodology adopted is structured System analysis and design methodology, it was chosen because it provides clear-cut steps in moving between the phases from the beginning to the end of the systems development life cycle. This project work will be designed using Adobe macromedia Dreamweaver as the IDE (Integrated Development Environment), Hypertext Pre-processor (PHP) was used to connect the text field to database; JavaScript was used to validate text fields and MYSQL for the database creation and management to enhance security of the system.*

**Keywords:** *Cashless society, E – wallet, Electronic transaction, Communication infrastructure, Small Scale.*

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## I. BACKGROUND TO THE STUDY

Any modern economy develops based on the trade exchanges. Electronic payments can be part of the solution and contribute to building buyers confidence and increased conversions. Many electronic payment providers such as PayPal and MasterCard are investing heavily in building market awareness and demonstrating the scalability and security of their solutions. An online wallet application allows users to make electronic commercial transactions swiftly and securely. It functions much like a physical wallet [1]. A digital wallet has both a software and information component. The software provides security and encryption for personal information and for the actual transaction. Typically, digital wallets are stored on the client-side and are easily compatible with most e-commerce transactions. A server-side digital wallet, known as thin wallet, is the one that an organization creates for you and maintains on its servers. The information component is basically a database of user inputted information. This information consists of your shipping address, billing address, and other information.

The simplicity of financial transactions for every society is very important. In traditional methods, business will be done by exchanging physical money. The disadvantages and shortcoming of this method are quite evident. Besides transmission of diseases, the physical security challenges of this method are undeniable. Technology improvement and expansion of communications networks have been thriving e-commerce affairs. In order to solve these kinds of problems, various banks have developed smart card and ATM system they can withdraw money from business transactions. In this method, communication infrastructure is necessary for financial exchange. In many cases, because of communication failures, users notice the error "unable to connect to central server" on ATM display monitor Communication infrastructure defects should not make challenge for customers and availability of banking service is a very important parameter in this respect.

A small-scale organization (SSO) is a business that employs a small number of workers and does not have a high volume of sales. Such organizations are generally privately owned and operated sole proprietorships, corporations or partnerships. Hence, creating an independent online wallet application method for a small scale organization (SSO) in order to exchange cash is very important. That way, the money of the customer should be kept virtually. A solution would be to replace the physical wallet with an online wallet integrated into an existing mobile device or any communication gadget like a cell phone, ipad, mini computers [2].

The problem encountered by customers in carrying physical wallet and cash from one place to the other for their every day to day transaction, ranges from lose of cash, theft, and the stress of carrying bulk of cash and other valid

information in the wallet, formed the motivation for this study to develop an online wallet application to remedy the concept of carrying physical wallet and cash from one place to the other. The following are the problems encountered in the current payment system method:

- Lack of security and financial losses of the contents in the physical wallet.
- Poor record keeping of items bought in small scale organization.
- Inability of small scale business owners in accessing customer's information.

The aim of this project is to develop an online wallet application system for a small scale organization with the following objectives:

1. To develop a concise database management system of information of customers for the small scale business.
2. To design and implement a system that will improve on the current method of payment in small scale business.
3. To design and implement a secure online system that will help customers to purchase their goods and services without stress.
4. To develop an online wallet application system with a feedback mechanism.
5. To introduce a secure online wallet system that will keep proper documentation of all transactions made online.
6. To develop an electronic wallet application that will make paperless money transaction easily for small scale organization.

It is expected that the introduction of the new system will help greatly with the problem faced in the current system. The numerous problems associated with the manual system will be minimized, if not totally put to an end. The online Wallet application design for a small scale organization at its completion is expected to place the board for:

- Increase the possibility of a cashless society
- Reduce the risk of carrying money as customers can credit their account at the convenience of their homes with recharge vouchers made available by the super market.
- Fast update and retrieval of information.
- Reduce computation/calculation errors by cahiers/sales representatives at the counter.

## **II. LITERETURE REVIEW**

### **2.1 Information System**

According to Saarinen [3], almost all fields of endeavor such as education, manufacturing, research, games, entertainment, and business treat information systems as a need. Indeed, every activity in our daily life today requires people to get involved in the use of information systems. In an information system, input data consist of facts and figures, which form the system raw material. Information is data that has been usefully processed. However, an information system does not only contain data and information. There are also other elements inside the system, which are related and are in support of one another. The presence of these related elements makes information more useful whereby, it can be made available, can be processed, distributed, manipulated, and saved [4]. This combination gives rise to a system, which is orderly and as such it is called an "Information System". Prybutok [5] opines that Information systems are the software and hardware systems that support data-intensive applications. Information is the basis for economic decisions within the whole value chain, making enterprises dependent on the implementation of modern information systems (IS) to stay competitive, example, by enabling real-time data access or providing business intelligence functions.

### **2.2 Types Of Information System**

It is ambitious to classify the many types of information systems that have emerged in practice. Many classifications for information systems exist in the literature; see classifications by Alter, [6]. The problem is that classification is in flux; that is, a classification developed a few years ago is not necessarily current.

#### **2.2.1 Transaction Processing System (TPS)**

The first class of information systems is transaction processing systems (TPS). A TPS is an Information system that performs and records daily routine transactions necessary to the conduct of the business, TPS process data resulting from the occurrence of business transactions. The TPS has five stages which are Data entry, processing, database maintenance, document and report generation, inquiry processing.

#### **2.2.2 Management Information Systems (MIS)**

According to Stoner et al, [7], Management Information System is the computer based information system used for effective planning, decision-making and control. The concept of the MIS has evolved over a period of time comprising many different facets of the organizational function. MIS is a necessity of all the organizations. The initial concept of MIS was to process data from the organization and presents it in the reports at regular intervals. The system

was largely capable of handling the data from collection to processing. It was more impersonal, requiring each individual to pick and choose the processed data and use it for his requirements. This concept was further modified when a distinction was made between data and information. The information is a product of an analysis of data. This concept is similar to a raw material and the finished product. What are needed are information and not a mass of data. Moeni, [8] stated the role of the MIS in an organization can be compared to the role of heart in the body. The information is the blood and MIS is the heart. In the body the heart plays the role of supplying pure blood to all the elements of the body including the brain. The heart works faster and supplies more blood when needed. It regulates and controls the incoming impure blood, processes it and sends it to the destination in the quantity needed. It fulfills the needs of blood supply to human body in normal course and also in crisis [8].

### 2.2.3 Decision Support System

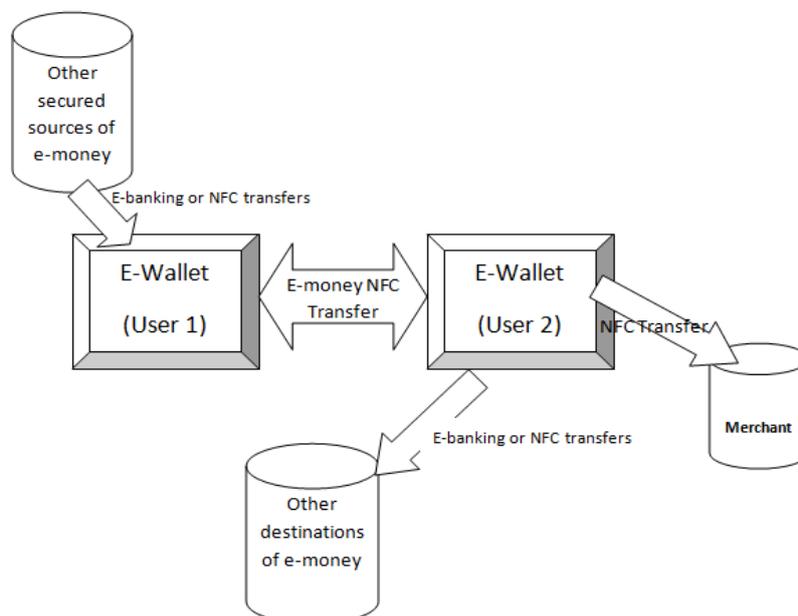
A Decision Support System (DSS) is a computer-based information system that supports business or organizational decision-making activities. An interactive information system that provides information, models, and data manipulation tools to help make decisions in semi-structured and unstructured situations. It is a computer program application that analyzes business data and presents it so that users can make business decisions more easily. It is an "informational application" (to distinguish it from an "operational application" that collects the data in the course of normal business operation).

### 2.3 Electronic Payment Systems

Frankel, [9] defined Electronic payment system as a mode of payments over an electronic network such as the internet. In other words we can say that e-payment is a method in which a person can make Online Payments for his purchase of goods and services without physical transfer of cash and cheques, irrespective of time and location. Electronic payment system is the basis of on-line payments and on-line payment system development is a higher form of electronic payments [10]. It makes electronic payments at any time through the internet directly to manage the e-business environment.

In the modern world the frequent forms of manifestation of the payments involve the money, the checks, and the bank transfers and in case of the business processes such payments are usually preceded by an invoice or followed by a form of the receipt. At this moment, the industry of e-payments is focused on e-transfers based on card emulation and there are many successful implementations described in [11]; [12]; [13]. The electronic payment systems have to meet several minimal characteristics in order to be efficient Lee [14]:

- Atomicity: this characteristic takes into account the fact that during the transfer no existing money is lost and no new money is created
- The impossibility of the non-repudiation: none of the actors involved in the transaction can decline his responsibility conferred by the electronic signature. Also, the solutions of the electronic payments represent the central point of different requests, more or less economical [15]:
- Security: the systems must restrain the possibility of the frauds within the electronic environment
- Fiability: the systems must be accessible and available at any moment in time



**Fig. 1: Architecture of an E-payment model**

### **2.3.1 Electronic Payment Challenges**

The risks of electronic payments fraud are real and multiplying every day. In 2013, three out of every five organizations were subject to attempted or successful payments fraud. According to an Association of Financial Professionals [16], 63 percent of organizations reported either adopting new security measures or plans to do so in the near future. As check, ACH, wires, and credit/debit cards are increasingly vulnerable to a growing array of fraud risks, banks are challenged to provide a sophisticated technology strategy for fraud detection and prevention. As consumers' preferences continue to shift toward mobile and apps for daily banking activities, financial fraud has become increasingly complex and recurrent across all banking channels. Criminals today coordinate fraud schemes across all transaction channels and threshold detection systems often cannot keep up with the wide array of attacks on data and data sources.

#### **Lack of Usability**

Electronic payment system requires large amount of information from end users or make transactions more difficult by using complex elaborated websites interfaces. For example credit card payments through a website are not easiest way to pay as this system requires large amount of personal data and contact details in web form.

#### **Lack of Security**

Online payment systems for the internet are an easy target for stealing money and personal information. Customers have to provide credit card and payment account details and other personal information online. This data is sometimes transmitted in an un-secured way. Providing these details by mail or over the telephone also entails security risks.

#### **Issues with e-Cash**

The main problem of e-cash is that it is not universally accepted because it is necessary that the commercial establishment accept it as payment method. Another problem is that when we make payment by using e-cash, the client and the salesman have accounts in the same bank which issue e-cash. The payment is not valid in other banks

#### **Lack of Trust**

Electronic payments have a long history of fraud, misuse and low reliability as well as it is new system without established positive reputation. Potential customers often mention this risk as the key reason why they do not trust a payment services and therefore do not make internet purchases.

#### **Users Perception Regarding Acceptance of Electronic Payment Systems**

User's acceptance is a pivotal factor determining the success or failure of any information system project. Many studies on information technology report that user's attitudes and human factors are important aspects affecting the success of any information system. According to Dillion & Morris, user's acceptance is "the demonstrable willingness within a user group to employ information technology for the tasks it is designed to support". Electronic payment systems are not an exception of it. It means these are not successful without acceptance of users. Electronic payment system is an innovative way for online payments. Issues are not accepting easily because of lack of security in changing business-environment. Online payment system requires improvement of information technology. The failure of electronic payment system is depend on the factor that it neglects the needs of users and the market.

#### **Lack of Awareness**

Making online payment is not an easy task. Even educated people also face problems in making online payments. Therefore, they always prefer traditional way of shopping instead of online shopping. Sometimes there is a technical problem in server customers tried to do online payments but they fails to do. As a result they avoid it.

#### **Online Payments are not Feasible in Rural Areas**

The population of rural areas is not very literate and they are also not able to operate computers. As they are unaware about technological innovations, they are not interested in online payments. So the online payment systems are not feasible for villagers.

#### **Highly Expensive and Time Consuming**

Electronic payment system are highly expensive because it includes set up cost, machine cost, management cost etc and this mode of payment will take more time than the physical mode of payment.

### **2.4 The Need For Online Wallet Application**

Electronic payments are financial transactions made without the use of paper documents such as cheques. Electronic payments include debit card, credit card, smart card, e-wallet, e-cash, electronic cheques etc. E-payment systems have received different acceptance level throughout the world; some methods of electronic payments are highly adopted while others are relatively low. Electronic payments have several advantages such as accessibility, convenience, speed, privacy and control, and that electronic payments are preferred in simple routine service transactions

### 2.5 Operational/Driving Technology

Due to the fraud involve in the online payment using credit cards, master cards, PayPal, some driving technology has been carried out in order to tackle these challenges. Some operational and driving technologies as it concerns security of online payment are enumerated below:

- **Encryption of Data**

Online shopping are very sensitive to notion that e-commerce is insecure, particularly when it comes to online payments. Most online payment systems use an encryption system to add security to the transmission of personal and payment details. There are various encryption schemes in use to prevent from frauds of online payments.

- **Digital Signatures**

The parties involved in online payments, transactions should use digital signatures in order to ensure authentication of transactions.

- **Using Firewalls**

A firewall is an integrated collection of security measures designed to prevent unauthorized electronic access to a networked computer system to protect private network and individuals machines from the dangers of the greater internet, a firewall can be employ to filter incoming or outgoing traffic based on a predefined set of rules called firewalls policies.

### III. METHODOLOGY

A methodology is a formalized approach to implementing the System Development Life Cycle (SDLC) that is, is a list of steps and deliverables. There are many different systems development methodologies and each one is unique because of its emphasis on processes versus data and the order and focus it places on each SDLC phase.

#### 3.1 Analysis Of The Existing System

The system entails the conventional method of purchasing goods by customers at small scale organization. Customers after picking the various items they wish to buy they take the items to the cashier/sales representative at the Point of payment, who will calculate the total amount of the items picked by the customer. The customer pays for the goods with physical cash from his wallet or pocket as the case maybe, and the sales representative issues a receipt of payment to the customer. The sales representative records the sales into an invoice for administrative use, and at the end of the day's activities, the organization's account is balanced using the total amount of goods sold and the physical cash present.

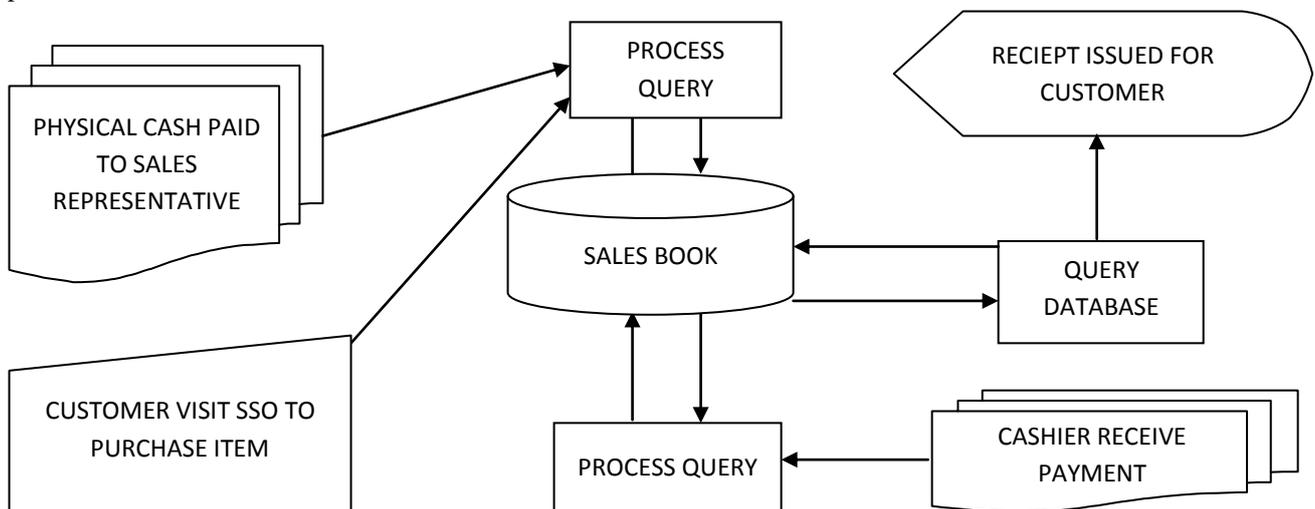


Fig. 2: Flowchart of The Existing System

Figure 3.1 above display the process of the existing system where customer visits the small scale organization to purchase items. The cashier or sales representative receives the payment and generate receipt for the customer manually.

#### 3.2 Weakness Of The Existing System

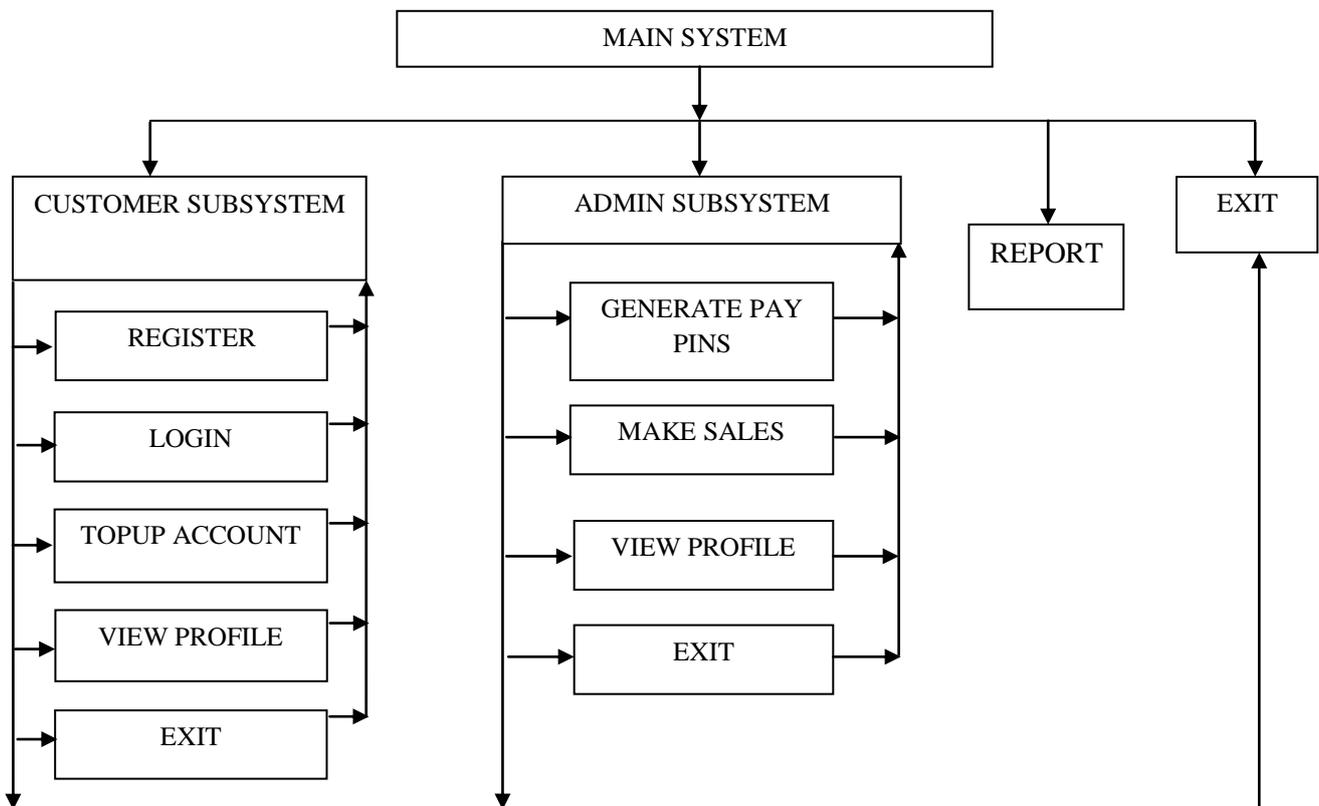
Sales representative/Cashier faces a very big and tasking job attending to their customers and offering them satisfactory services. Some of the problem facing the existing system can be put as follows;

- Having a lot of customers to attend at the same time

- Exposure to attacks by armed bandits as they deal directly with cash and sometimes have to leave such money in saves till the following day.
- Time wasted in calculating the physical cash paid to them by the customers.
- Errors in calculating of physical cash, as most times the amount remitted by the cashiers are not always accurate.

### 3.3 High Level Model Of Proposed System

The high level model of proposed the system which is the new system design of the online wallet application system for a small scale organization (SSO). The system block diagram is a valuable presentation aid, because it shows how the system’s major components fit together. In effect, it serves as a system road map. Block diagram is a diagram of a system, in which the principal parts or functions are represented by blocks connected by lines that show the relationship of the blocks. The figure below shows the conceptual block diagram of the envisaged system. It comprises of the main menu, sub menus and the program modules. This system contains the login subsystem and the main menu or administration subsystem.



**Fig. 3: Model of the Proposed System**

The figure above explains the high level model of the proposed system. It comprises of two users which are the admin module and the customer module. The report is then generated by the system after customer must have made different purchases.

#### 3.3.1 Justification Of The Proposed System

It is expected that the introduction of the new system, will notice a lot of positive changes. The numerous problems associated with the manual system will be minimized, if not totally put to an end. The online Wallet application design for a small scale organization at its completion is expected to place the board for:

- Increase the possibility of a cashless society
- Reduce the risk of carrying money as customers can credit their account at the convenience of their homes with recharge vouchers made available by the super market.
- Fast update and retrieval of information.
- Reduce computation/calculation errors by cahiers/sales representatives at the counter
- Reduces the time taken to attend to customers.
- Accessibility irrespective of location.

#### IV. IMPLEMENTATION SYSTEM



Fig. 4: Main Menu Implementation

The figure above shows the customer main menu of the system. It from here the customer can interact with other sub menus like top up account, details of last transaction, edit customer profile and contact.

#### 4.1 Registration Module Implementation

The registration module implementation enables the customer to enter his/her information for the system to generate an account number, username and password. The registration module implementation is shown below:

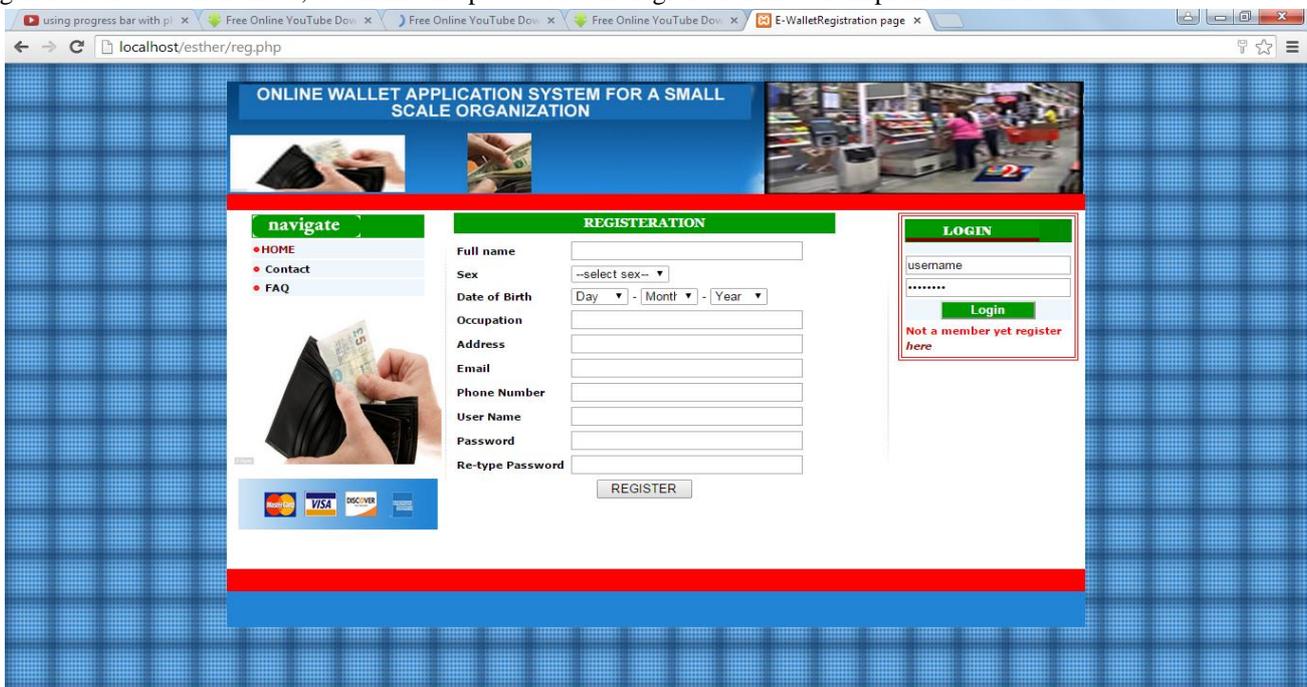


Fig. 5: Registration Module implementation

#### 4.2 Login Implementation

The login implementation is where the user interacts with the system by inputting his or her correct username and password in order to gain access to the main menu. With the login implementation, customers can login to the system main menu. The login implementation is shown below:

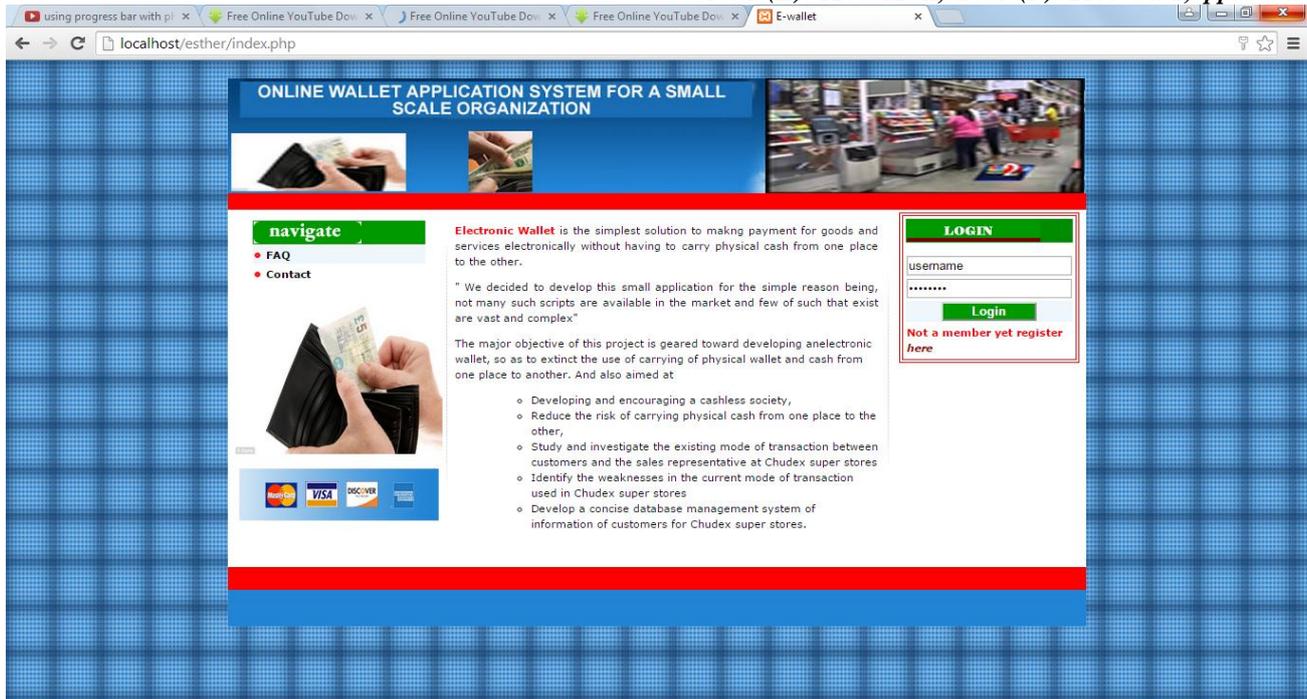


Fig. 6: Login implementation

## V. CONCLUSION

In Nigeria, today's commercial activities purely involves the direct exchange of goods and services with physical cash, electronic transaction (e-transaction) which is a part of information technology is not yet fully utilized. Most business organizations (SSO) need to step up and totally embrace the ever growing technological growth in the business world, where businesses now wholly depend on Information and computer technology for their day to day transaction. Today, however, with the continuing technology breakthrough, coupled with the decline in the longer confers any special advantage any more. What distinguishes a leading business organization from a lagging one is the way and speed with which technology is applied to deliver superior customer services and until e-wallet becomes a natural business partner serving as a twin deliver of value and satisfaction to customers, a business organization will not be able to derive optimum benefits from it.

## VI. RECOMMENDATION

The efficiency of the software can be further enhanced based on the following recommendations: Effort should be made to validate the input data to ensure the integrity of the system. The primary users should be given an initial orientation on how to interact with the system for optimal utilization of the facilities of the system. Though the application is web-enabled, which makes it easier for Users to access the application from anywhere via the Internet, and be able to carry out their work, efforts should be made to enable customers/users shop online so they would have no need of going to the supermarket before they can be able to purchase their goods. And lastly, Government must create the enabling environment to support e-transaction, so that organizations or individuals can afford to have access to the internet and fully make judicious use of the application ONLINE-WALLET.

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