DESIGN AND DEVELOPMENT OF AN E-TAXATION SYSTEM

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Abstract

Tax is any form charge levied on a person or an institution by a governing body or its equivalent such that defaulted payment is punishable by law. The imposition of taxes and the institution of taxing is as old as civilization itself cutting across religion, race and continental borders. Prompt tax payment and reduced tax evasion is always a primary objective of the government in most civilizations that exist today. The issue of tax evasion has proven to be a difficult practice to curb even in nations with a proper database of its citizenry and the current mode of tax payment is redundant and hectic as ascertained through a survey of our case study. Some of the challenges governmental bodies have to overcome in order to encourage the prompt payment of taxes and effectively reduce evasion includes, developing convenient payment methods and having proper records keeping systems. This paper is a concise summary of how the continuous development of computing science and its wide spread ability to be deployed to solve a wide range of problems can be geared towards the development of an electronic taxation system to assist government bodies with convenient tax collection and record keeping. The waterfall methodology was selected for system development. Goals to be achieved by the system are instant access, improved productivity through efficient utilization of resources, database creation and records management, simplification of operations, reduced processing time, user friendliness, portability and flexibility for further enhancement. The E-taxation is not a new system, but a rather local solution to a problem with global purview. This system looks at how tax payment can be encouraged through simplification and increased efficiency in payment processing.

Keywords: Electronic Taxation; Tax Collection; Tax Monitoring System and Tax Payment

1.0 INTRODUCTION

According to a world bank economic report on Nigeria published on the 1st of May 2013, it was stated that 95% of the government's budgeted expenditure depended on its projected oil revenue based on current world oil prices. It was also recommended in the report that the Federal Government, through the improvement of the domestic tax system it can increase its internal revenue and provide in the event of a fall in oil prices a financial backup plan for the economy (The World Bank, 2013). Tax is a charge imposed by a government on persons, entities or property, administered to generate revenue for that government (Black, 1999). Tax is a common source of income generation for financing government activities. Individuals and organizations are expected to fulfill their obligations on tax payment as required by law to give the government the financial power, amongst other purposes of taxation. Effective taxation therefore becomes important as it is a source of required financial power for a government to rule its territory. There are two forms of taxation common to most countries, direct taxes to be paid by the tax payer on his income, profit or asset owned. The other form, indirect taxes is imposed on commodities before they get to the consumer, and are to be paid by the consumer not as taxes but as a part of the selling price per unit of the commodity (Money Control, 2013).

The Nigerian tax system is surrounded by countless problems which include: Little data available on the history of tax revenues or tax payers due to a lack of proper records keeping system (Federal Republic of Nigeria, 1997). A lack of comprehensive tax statistics and a centralized database for the existing ones (Federal Republic of Nigeria, 2002). Deployment of limited man power and other necessary resources into redundant roles and job functions (Ariyo, 1997). Duplication of taxes and its negative effect on tax payers a problem resulting from a clash in the governments' fiscal responsibility and its fiscal power (Odusola, 2002). Deliberate attempts by tax payers to evade taxes (Odusola, 2003). The aim of the e-taxation system is to provide the tax authority a database with details of taxpayers and their transactions. This would reduce the issue of tax evasion and hence an increase in government tax revenue. It would also allow taxpayers process their transactions online without having to visit the office of the FIRS, reducing the workload on the resources available to the FIRS and which consequently give room for the re-allocation of freed-up resources. The objectives considered during the development of the e-taxation system include: Creation and management an effective and efficient database to provide tax payers records, information/bio-data for easy referencing. The

provision of an alternative payment routes for tax payers so as to encourage immediate tax payment and provide relief to those who find it an easier and more efficient payment route. Which will be achieved by creating a web based system in which registered entities log-in and make payment. The availability of an alert system that to notify the regulatory body of outstanding payment by registered entities and workers.

The e-taxation system is to be developed for use by the tax authority at the federal level for tax payment, record keeping and educational/awareness programs in under-developed and developing countries with specific focus on the African continent.

2.0 METHODOLOGY

System development methodology is an aggregate of methods used to engage in the creation of information systems in a defined, organised and stepwise manner, requiring stages of the creation cycle from conception to completion, to be carried out orderly and in the confines of the methodology being implemented (Geoffrey, 2004). Software development methodologies include: prototyping, waterfall, rapid application development, spiral methodology, extreme programming methodology, agile methodology, iterative and incremental development methodology. The chosen development methodology for the E-taxation system is the Waterfall model.

The waterfall development model was inspired by older engineering disciplines (Royce, 1970). It was initially used to develop large scale functional business systems (Geoffrey, 2004). Software development methodologies include the definition of deliverables to be created by a project team to use in the development and maintenance of an application (Centers for Medicare and Medicaid Services Office of Information Service , 2008).

2.1 JUSTIFICATION OF METHODOLOGY

The system objectives and review of related systems formed the core upon which our development methodology was determined. Particular points to mention that influenced our methodology of choice include:
  i.   Stable, unambiguous system requirements.
 ii.   A transaction oriented system.
iii.   Clear objectives with a ready to implement solution.
 iv.   No impending pressure to implement the system.

Based on the above listed points, the Waterfall model was our chosen development methodology. The Waterfall model is a well documentable, process oriented development model with timelines, deliverables and signoffs at designated points of project development.

3.0 REVIEW OF RELATED WORKS

In the course of this research, extensive review of some tax systems were carried out in order to identify basic comparisons between our proposed system and the already existing ones. The systems under consideration are Her Majesty Revenue and Customs (HMRC), South African Revenue Service (SARS) and Electronic Federal Tax Payment System (EFTPS).

3.1 HER MAJESTY REVENUE AND CUSTOMS (HMRC)

The HER MAJESTY REVENUE AND CUSTOMS is a department created by the Commissioners for Revenue and Customs Act (CRCA) on the 18th of April 2005. It was preceded by Inland Revenue Her Majesty Customs and Excise. It is a source of income for the UK's governing body. It helps families and individuals in need of financial support through payment of tax credits and child benefit. Virtually all UK individuals and businesses are direct customers of the HMRC. The aim of the system is tax administration in the easiest and efficient way. It is purportedly created by crown copyright. Crown copyright covers a range of materials created by civil servants and government agencies. Copyrights can also come into Crown ownership through transfer from the legal owner of the copyright to the Crown (National Archives UK, 2014).

3.1.1 FEATURES OF HMRC

Components and features of the HMRC include the following:
  i. PAYE (Pay As You Earn) tax calculator
 ii. Statutory payment calculators
iii. A Company car and car fuel benefit calculator
 iv. An Employment status indicator
  v. A Real Time Information (RTI) system.

3.1.2 OBJECTIVES OF HMRC

Some of the objectives considered and achieved through the development of the HMRC include:
  i. To make it cheaper and easier to pay taxes and claim benefits.
 ii. To tackle tax avoidance and evasion.
iii. Availability of Real Time Information (RTI) displaying live statistics of the system.
 iv. To create an easy online registration process for new businesses, by moving notification of liability for VAT and main direct taxes to online channels
  v. To enforce compliance with tax rules and further investigations on tax avoidance and evasion.

3.1.3 LIMITATION OF HMRC

Tax gap, the HMRC system attempts to produce annual reports containing an estimate and detailed breakdown of this figure which was found to be inaccurate on certain occasions.

3.2 SOUTH AFRICAN REVENUE SERVICE (SARS)

Designed by ACCENTURE. SARS was designed to encourage compliance with tax and customs law, doing so in a way that does not interfere with trading and other economic activities through the imposition of redundant administrative processes on taxpayers. The construed approach is to promote conformity based on three steps. Create taxpayer awareness of their duties, implement a system that encourages the taxpayers to carry them out, identify and appropriately discipline taxpayers that refute law. Embedded is a database which contains the amount of continuously active and consistent taxpayers in South Africa. The intent of SARS is to continually increase the size of its database and in effect as much as possible reduce tax gap. With the development of a real-time tax payment information available, SARS is setup to improve its service to the public and reduce the cost of service delivery. Accenture through a properly established and administered public-private partnership has helped SARS develop a new outlook and confidence by its customers. Employees are increasingly efficient and improved service. SARS has renewed its workforce motivation and drive (Accenture, 2014).

3.2.1 FEATURES OF SARS

Components and features of the SARS include the following:
 i. A registration, payment processing and tax filing facility for individuals and businesses.
 ii. Provision for individuals and corporate bodies to request for their Tax Clearance Certificate (TCC) online.
 iii. A Customs management system for its import, export and cross border activities.
 iv. Electronic interfaces with the South African Department of Home Affairs (DHA) and the Companies and Intellectual Property Commission (CIPC).

3.2.2 OBJECTIVES OF SARS

Some of the objectives considered and achieved through the development of the SARS include:
 i. To increase the number of tax payers by promoting awareness and voluntary compliance.
 ii. Provision of a convenient means of paying taxes.

iii. Provision of a customs service that will maximise revenue collection and facilitate trade.
iv. To provide technical and administrative assistance to the DHA.
v. To verify the tax records of the CIPC and identify companies in the CIPC database not existing in the SARS database.

3.2.3 LIMITATION OF SARS

People rural areas may find it difficult to access the page due to lack of internet connection.

3.3 ELECTRONIC FEDERAL TAX PAYMENT SYSTEM (EFTPS)

The EFTPS is owned by both the Financial Management Service (FMS) and the Internal Revenue Service (IRS), it was launched in 1996. The EFTPS to date has collected more than $20 trillion in nearly 1 billion processed transactions with more than 97 percent of all transactions made electronically. Published IRS data indicates that corporate institutions who engage the EFTPS are less prone to errors that usually leads to a fine or penalty than are businesses who deposit their taxes manually.

The Electronic Federal Tax Payment System (EFTPS) is a free service from the U.S. Department of the Treasury. All federal taxes can be paid using EFTPS and payments can be made via their Web site, a voice response system, or special channels designed for tax professionals, payroll services, and financial institutions. A quick, secure, and accurate, EFTPS is available by phone or online 24 hours a day, 7 days a week. Corporate institutions and private individual payments can be organised 365 days in advance of due date (The IRS, 2014).

3.3.1 FEATURES OF EFTPS

The EFTPS is mainly an online collections service and as such tax calculations are not conducted by the system. The system therefore lacks tax calculation abilities.

Components and features of the EFTPS include the following:
 i. A Tax Payment Scheduling system with payment instructions for individuals and businesses
 ii. Multi-level security, requiring your employer identification number (EIN) or social security number (SSN); a personal identification number (PIN); and an Internet password.
iii. Online cancellations to be made for payments that are scheduled to occur in two or more business days

3.3.2 OBJECTIVES OF EFTPS

Some of the objectives considered and achieved through the development of the EFTPS include:

i. To reduce processing cost of Federal tax payments, thereby reducing the overhead of the Internal Revenue Service.
ii. Maximizing the percentage of tax collections received electronically by the Federal government.
iii. Making tax payment as convenient as possible at any locations in country or even outside the country.

3.3.3 LIMITATIONS OF EFTPS

Some of the impedances in the implementation and use of the EFTPS include:

i. The enrolment procedure is time taking. It requires an Internet password being mailed to you four days after registration before using EFTPS for the first time.
ii. Proper internet connectivity is still an issue in certain areas in the U.S.
iii. The EFTPS does not make provision for calculating taxes, it is simply a tax payment more like collections service.

3.4 COMPARATIVE ANALYSIS OF REVIEWED SYSTEMS

As expected with system analysis and review, noteworthy highlights were discovered and the rest of this chapter will be expended in an attempt to capture these highlights and the roles they played in the proposed system's analysis and design.

3.4.1 SIMILARITIES

During the course of review, it was discovered that a larger portion of the reviewed systems were developed in some sort of public, private partnership between government bodies and information technology firms. Also the scope of the systems were limited to the geographical boundaries in which their governing bodies served. Essential similarities between the reviewed systems which will be implemented in the proposed system include:

i. Serving as record keeping instruments that can be used to monitor to the transparency and efficiency of tax regulatory bodies.
ii. An inclusion of a system that will process financial instruments and make tax payments easier for tax payers.
iii. SARS and HMRC also serve as means of providing and discovering the latest news and information on taxes a function which will be

included in our system while the EFTPS is strictly a payments processing system.

3.4.2 DIFFERENCES

The EFTPS has the option of making or scheduling payments through phone calls, mails and other offline methods not available in other systems and will also not be included in the proposed system.

i. The HMRC has tax payment calculators with varying complexity. This tax calculator function depends on data not readily available in the proposed system's operational environment. As such this function will not be included in the proposed system.

ii. SARS interfaces with systems of other governmental bodies in some symbiotic relationship whereby they provide one another necessary information required to properly carry out their respective duties.

iii. All three systems cater for all forms of taxation while our system will cater for only the Company Income Tax and Pay as You Earn.

Further analysis of the existing systems showed that they were developed with heavy graphic content and media interfaces, thereby increasing the bandwidth requirements of accessing these systems. The proposed E-taxation was designed and developed to be significantly text-based and with minimal graphic content. This will consequently produce two positive outcomes, as follows:

i. A reduction in its Internet access cost. This is in view of the fact that developing countries have poor Internet infrastructures. This is can be proven with data provided NET INDEX in their bandwidth availability/cost survey, the United States has a speed of 35.15Mbps costing 3.51 dollars while the United Kingdom has a speed of 30.84Mbps costing 2.43 dollars. African countries like South Africa has a speed of 7.04Mbps costing 19.06 dollars and Nigeria has a speed of 5.53Mbps costing upwards 115 dollars. In view of the foregoing, the proposed system is expected to work efficiently in such climes without undermining user or system requirements.

ii. An improvement to its search engine optimization. A proper SEO improves your ranking on the result page of search engines. A top tier ranking would increase user awareness, trust and accessibility through search engines which in turn grows traffic.

3.4.3 LIMITATIONS

Also the scope of the systems were limited to the geographical boundaries in which their governing bodies served also their development was limited to the level of support provided by the tax regulating body in the their respective environment. The structure and function of these regulatory

bodies were sometimes reflected in these system and as such their limitations were extended. So also prevailing tax laws and rates in these countries determined the extent of their functions and adoption.

3.4.4 DEDUCTIONS

The review of closely related works highlighted a common consensus that developers of the other systems were either employed, contracted or had the backing of the federal authorities regulating taxes during their system development. It was also discovered that the structure of their systems, its functionalities and limitations depended heavily on the tax system created and regulated by the federal tax authorities. Their systems are largely mock-ups of existing manual tax systems or institutions in the country of implementation. On visiting the Federal Inland Revenue Service to ascertain their level of support we discovered that we won't have the level of support required to develop a fully-fledged system to accommodate the entire tax system, based on this we have limited the objectives of the system to cover company and Pay As You Earn (PAYE) taxes. The system will require companies to register their staff on the proposed portal, providing necessary details pertaining to their earnings which will be used to carry-out and verify tax claims. This will reduce a lot of paper work currently done by both the companies and the federal tax authorities. It will also help the FIRS estimate their monthly and annual incomes. Companies will also allow users to schedule tax payment before the due date. As a result of the initial registration companies will be able to estimate the amount due for tax payment as records of their employee earnings are readily available, it will also be easier for the FIRS to issue tax clearance certificate to those requesting it as they're records of payments will be available and accessible as needed. News and updates such as changes in tax policy will also be available on the system and those of particular high importance will be broadcasted to individual user profiles.

4.0 SYSTEM ANALYSIS

After reviewing related works and presiding on the features and methodologies to adopt, a follow up in discussing the tools intended for system design ensued. Adopted methodologies will then be implemented to create a guide that would aid in the design of the system. The review of closely related works revealed that some of the core functions of a tax administrative system should include registration, filing, returns, payments and audit. Some of these revolve round a sound database and as such it would be imperative for us to build a database that is highly secured and has no element of redundancy. The manual processes of the stated core functions would be re-engineered in a system environment with the output being a "to

be" process having established the "as is". As earlier mentioned these systems were developed in some form of government-private partnership, hence developing such an advanced system with robust capabilities would require massive support from the tax authority which is not forthcoming. The alternative is a scaled down system that accommodates the core functions of the Federal Inland Revenue Service (FIRS) and serves as a viable alternative to its customers. The system would significantly reduce the number of journeys users would have to make to the tax office in processing their tax payment. Individuals would register on the system via a registration portal, providing necessary details. On confirmation of the details provided by the tax authority the administrator would verify the individual's registration details and an account will be created. Individuals will have the ability to use the system to schedule taxes and make payment. For companies the super administrator will have to create a company account with a single company administrator. The company administrator in turn then creates accounts for all the staffs in the company. The company administrator also schedules and makes payments on behalf of the staffs and can update their details when necessary. The super administrator will have also a portal that will display the registration and payment details of all users.

4.1 Features of the Proposed System
This portion provides highlights of the system, its core components and interfaces. They include:

i.   The Home Page: It is the topmost portal that is accessible by all users of the system. Its redirects users according to the description to their respective login page.

ii.   The Administrative Page: The Admin page is limited in access and is accessible by only the super-user. It collects information from the user which it then relates to the database and provides access to the system upon validation. Figure 1 shows the use case diagram of a user with access to the administrative page, the actions he can perform and the views available to him/her.

iii. The Company Page/Profile: The Company page or profile is created by the administrative user, it is also limited in access to specific users, and the users of the company page are at an administrative level compared to their employees. It collects information from the user which it then relates to the database and provides access to the system upon validation. Figure 2 shows the use case diagram of a user with access to the company page, the actions he can perform and the views available to him/her.

iv.   The Individual Page/Profile: The employee page is created on the company page after a successful registration and validation of

details with the tax authorities. Figure 3 shows the use case diagram of a user with access to the individual page, the actions he can perform and the views available to him/her.
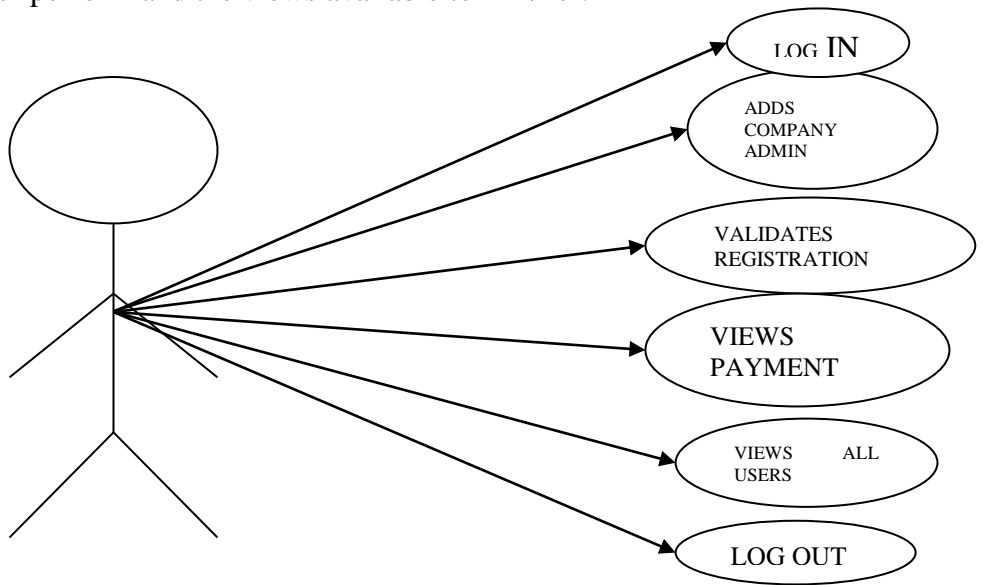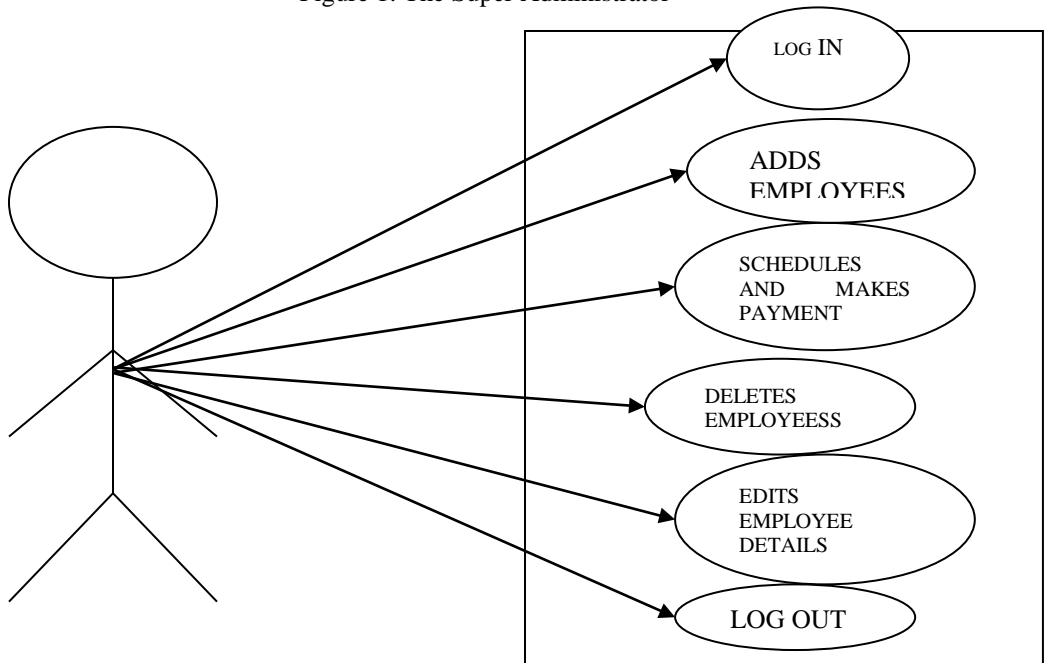

Figure 1: The Super Administrator

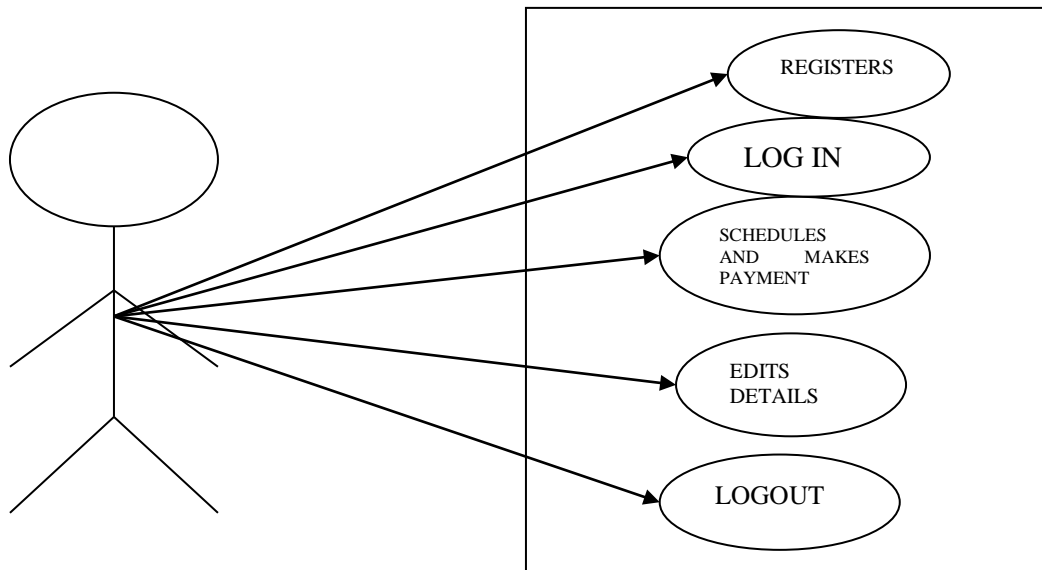
Figure 2: The Company Administrators

Figure 3: The Individual's Use Case Diagram

4.2 DESIGN OF THE PROPOSED SYSTEM

The E-taxation's system design will be represented diagrammatically, using the descriptive Unified Modelling Language (UML). The Unified Modelling Language is a specific purposed concept in software engineering, which is intended to provide a consistent visualisation of a system's design. It was conceptualised and generated by a group consisting of three persons namely; Grady Brooch, Ivar Jacobson and James Rumbaugh between 1994 and 1995 (Grady, 2005). It was inculcated and managed by the Object Management Group (OMG) in 1997 as a standard. In the year 2000 the Unified Modelling Language was also adopted as a standard by the International Organization for Standardization (ISO). Since then it has been periodically revised to cover the latest version of UML (International Organization for Standardization, 2015).

The UML offers a way to visualize a system's architectural blueprints in a diagram, elements such as:
  i.   Activities (jobs)
 ii.   Individual components and their interaction
iii.   How the system will run
 iv.   How entities will interact with other components and interfaces
  v.   External user interfaces (Object Management Group, 2015)

4.2.1 ENTITY RELATIONSHIP DIAGRAM

Figure 4: Entity Relationship Diagram

4.3 Hardware and Software Requirements

We'll be stating the hardware and software requirements essential to the proper running of the system.

4.3.1 HARDWARE REQUIREMENTS
i. An intranet or internet network
ii. A processor with a minimum of 2.5 GHz processing capability
iii. 1024 MB RAM
iv. 100MB of hard disk space

4.3.2 SOFTWARE REQUIREMENTS
i. A Windows vista, 7 or 8 operating system.
ii. SVGA graphics

5.0 SYSTEM IMPLEMENTATION AND TESTING

This section is chiefly the implementation of the application and testing for issues and non-functional properties such as speed and robustness.

The test is simply the execution of the implemented application with sample data to ensure that all specified objectives have been met appropriately in order to ensure a high quality, user friendly application. The different tests to be carried out would be expatiated further in the subsequent sections.

5.1 COMPONENT AND SYSTEM TESTING

This approach aims at testing elementary units of an interactive system. Individual components that make up the system are tested to ensure that the system is completely free from errors. System testing can be described as a series of tests administered on a complete system to ascertain the system's alignment with decided objectives.

5.1.1 DATABASE TESTING

A database is a collection of logically related data. Also, these data are dynamic information required by the system. Each table in the database holds closely linked fields that are guided by a set of rules and constraints limiting the type of data stored in them. The Database Management System (DMBS) avoids abuse and misuse by ensuring that these checks aren't violated. Our E-Taxation System database is made up of 24 tables and each table contains the name of the fields, data types, sizes and other constraints that define the table. Below are few screenshots of each table along with a brief explanation.

Figure 5: Company Administrator table

Figure 5 shows the company administrator database table and this contains the login details of all those authorized to access the company administrator section of the website. The table keeps track of the id, username and password of each administrator.

Figure 6: Bank Report table

Figure 6 shows the bank_report database table and this contains and generates a monthly report detailing all the transactions carried out by each user of the system.

Server: localhost ▸ Database: finance ▸ Table: salaries

	Field	Type	Collation	Attributes	Null	Default	Extra	Action
☐	**id**	int(11)			No	None	auto_increment	
☐	staff_id	varchar(20)	utf8_general_ci		Yes			
☐	allow_salary	varchar(1)	utf8_general_ci		Yes			
☐	month	varchar(20)	utf8_general_ci		Yes			
☐	year	varchar(20)	utf8_general_ci		Yes			
☐	statement	varchar(20)	utf8_general_ci		Yes			
☐	closed	varchar(1)	utf8_general_ci		Yes			

Check All / Uncheck All With selected:

Figure 7: Salaries table

Figure 7 shows the salaries database table which contains how much each staff in an organization earns.

Server: localhost ▸ Database: finance ▸ Table: users

	Field	Type	Collation	Attributes	Null	Default	Extra	Action
☐	id	int(11)			No	None	auto_increment	
☐	**username**	varchar(20)	latin1_swedish_ci		No			
☐	password	varchar(32)	latin1_swedish_ci		Yes	NULL		
☐	**pin**	char(10)	latin1_swedish_ci		No			
☐	surname	varchar(100)	latin1_swedish_ci		Yes	NULL		
☐	other_names	varchar(120)	latin1_swedish_ci		Yes	NULL		
☐	sex	char(6)	latin1_swedish_ci		Yes	NULL		
☐	email	varchar(120)	latin1_swedish_ci		Yes	NULL		
☐	phone	varchar(15)	latin1_swedish_ci		Yes	NULL		
☐	address	varchar(200)	latin1_swedish_ci		Yes	NULL		
☐	designation	char(30)	latin1_swedish_ci		Yes	NULL		
☐	allowed_modules	varchar(2000)	latin1_swedish_ci		Yes	NULL		
☐	image	varchar(200)	latin1_swedish_ci		Yes	NULL		
☐	alert	char(1)	latin1_swedish_ci		Yes	NULL		

Check All / Uncheck All With selected:

Figure 8: User table

Figure 8 the user database table contains information about the users of the system.

Figure 9: Staff members

Figure 9 shows the staff_members database table which contains all the necessary details required to calculate the tax to be paid by users.

5.2.2 INTERFACE TESTING

Interface testing is the process of testing our electronic taxation system's graphical user interface to enforce compliance with specified objectives in terms of ease of access and user friendliness. Interface testing was also done to check whether the constituent modules are communicating properly. The interface test of the E-taxation system was conducted using the Black Box Testing technique. It is also known as Functional and Behavioral testing and its result is preconditioned on the examination of the system's specification without regards to internal processes. This technique was selected based on the fact that it is generally undertaken by individuals without prior knowledge or information of the system's processes or workings, especially since one of the primary objectives of the system is to ensure easy usage (Clarke, 1998).

Figure 10: Home Page

Figure 10 displays the system's landing page which provides the logon facility for the administrative user.

5.2.3 LOGIN MODULE TESTING

Previously conducted and concluded system analysis prescribed access denial for logon activities without validated credentials and therefore it was concluded that an appropriate examination for the login module would be attempted logon processes with invalid credentials.. The image below shows the output of the test a user attempts system access with invalid logon credentials.
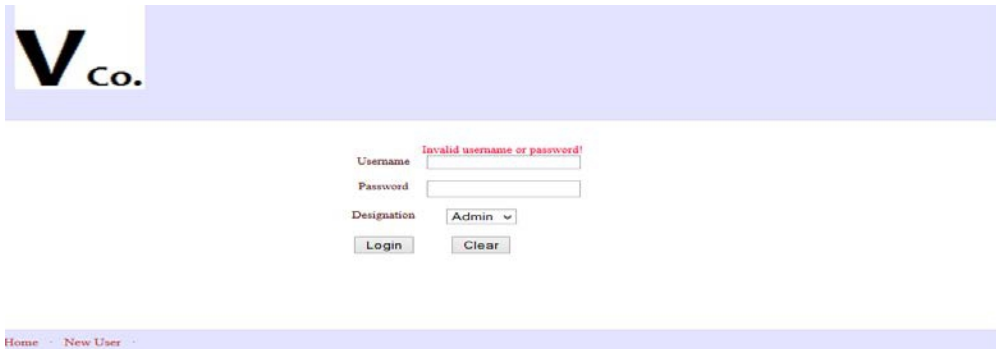

Figure 11: Error page

Figure 11 shows the error thrown by the system in the event that the login information provided by any user is incorrect.
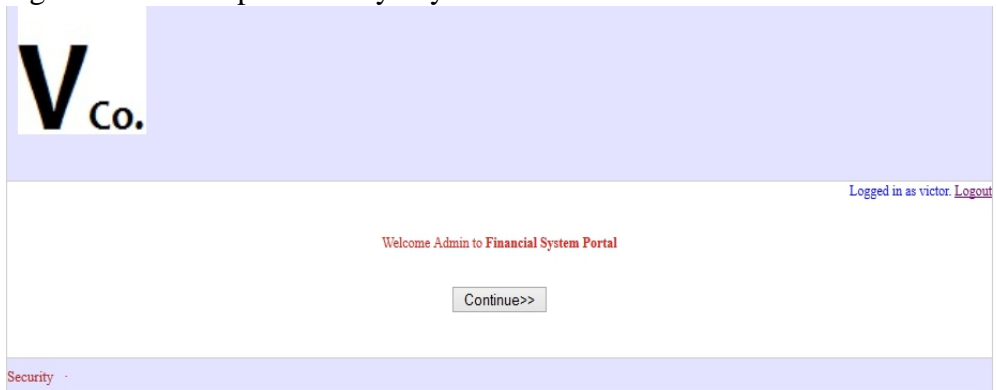

Figure 12: Welcome page after successful login.

Figure 12 details the message displayed by the system upon successful user logon.

Figure 13: Modules

Figure 13 shows the 5 available modules for the company administrator to work with. Which are:
  i.   Entries
 ii.   Basic Salaries
iii.   Monetary
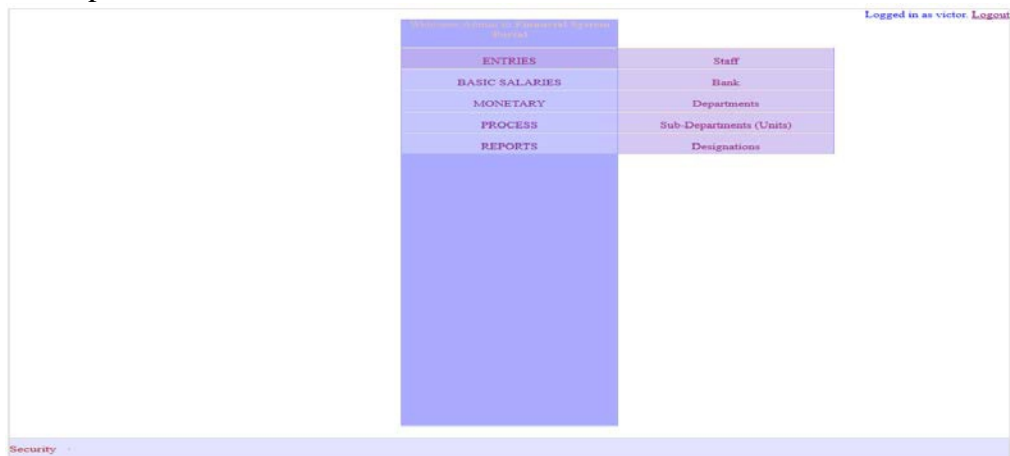 iv.   Process
  v.   Report

Figure 14: Entries Module

Figure 14 shows the Entries module which allows you enter starting information for staff members, banks, departments and sub-departments in the organization, designations (positions in the organization) etc.

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Figure 15: Basic Salaries Module

Figure 15 shows the Basic Salaries module which allows you to input basic salaries for different positions in the organization.

Figure 16: Monetary Module

Figure 16 display the monetary module where you manage allowances (earnings) and deductions.

Figure 17: Process Module

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Figure 17 shows the Process module which is used to process tax payment that covers staff salary.
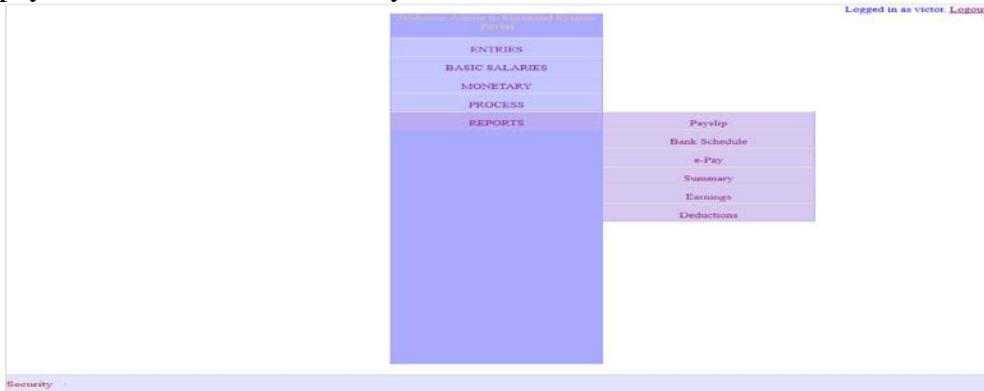

Figure 18: Reports Module

Figure 18 shows the Reports module allows you to view and print reports of the financial activities of the organizations. This is where you see the tax deductions of employees reflected in their pay slip which you can print if you want to. Also, the company's Tax is also shown here if you go to Payroll.

5.2.4 SYSTEM TESTING

This is the integration of multiple system components and in turn functions and features. This is followed by a performance test of the integrated components in multiple runs. The outcome of such testing method is the conception of what is a seemingly isolated but is in fact an actual group test on the integrated components. It is in two major phases:
  i. Integration testing
  ii. Release testing

5.2.5 INTEGRATION TESTING

Integration testing is system building from its components and examining the outcome of component integration for issues that may result from the integration and interaction of system component. This sort of testing is chiefly composed of a fault test and defect discovery in the developed system. System integration includes the identification of component clusters that conduct specific system functionality and coupling them through the addition of codes that make them function together. We shall consider the administrator page for this test. The administrator is responsible for:
  i. Adding staff.
  ii. Editing staff details

Figure 19: Adding and editing staff details.

Figure 19 shows the Staff add and Staff edit page, containing input fields that would hold staff information.

Figure 20: Staff added successfully message

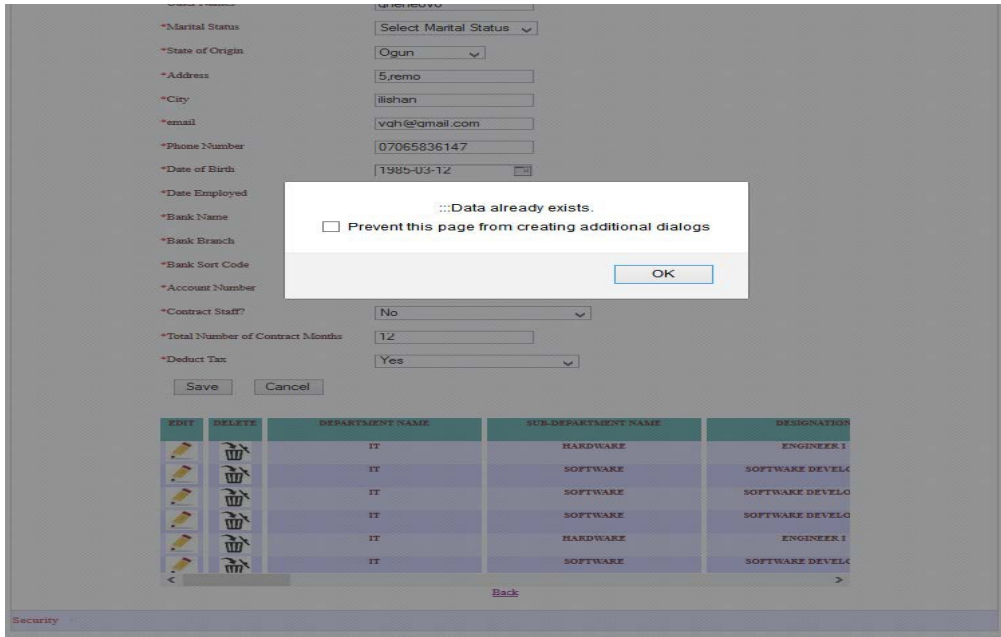Figure 20 displays the message that would be shown upon the successful addition of each staff.

Figure 21: Staff exist error message

Figure 21 shows the error message that would be displayed if a staffs' details already exist in the database.

6.0 DISCUSSION OF RESULTS

During the course of our research we realized that building an E-taxation system is a rigorous task. Furthermore, this research project has exposed us to the importance of simple and yet attractive design. The design allows users to easily navigate the site and carry out tasks with minimal hindrances. Being able to access the E-taxation system even under poor network conditions will greatly improve the usefulness of the system. An attractive layout also ensures that the user does not get bored while using the system. The appearance of the E-taxation system has to be catchy and should appeal to the senses of the user. The software is developed using HTML and CSS as front end and MySQL as back end in Windows environment. The goals that are achieved by the web application are instant access, improved productivity, optimum utilization of resources, efficient management of records, simplification of operations, less processing time and getting required information, user friendly, portable and flexible for further enhancement.

The project has been completed successfully with the maximum satisfaction of users. The constraints were met and overcome successfully. The system, developed as decided in the design phase. The project gives

good idea on developing a full-fledged application satisfying the user requirements.

The system is very flexible and versatile. This web application has a user-friendly screen that enables the user to use without any inconvenience. The application has been tested with live data and has provided a successful result. Hence the software has proved to work efficiently.

6.1 SUMMARY

The E-Taxation system offers multiple solutions to both sides of the taxation system. The tax collector's job is more effectively carried out as access to data required to determine the volume of taxes currently paid is readily available and can confidently estimate deficits. The tax organization is seen as more transparent and effective in carrying out its duties as it has records to support stated facts in its report. The tax payers in general are more receptive to taxation as the whole process is convenient and flexible. It doesn't require visits to the tax office. Even the government as a whole would benefit from the implementation of this system as it would have the ability to properly prepare its budget based on expected income, since it has historical records and a database showing payments trends. The system can also be used by the government to measure the level of the public's reception of changes in tax laws, rates and their responses to the changes.

6.2 RECOMMENDATIONS

The system meets desired expectations but would perform better if the following recommendations and suggestions are considered:

i. The software is designed to accommodate the needs of its scope of study and as such implementation outside this scope could be limited. But bearing in mind possible implementation outside the defined scope of study, it was developed using Object Oriented Programming concepts and as such can easily be modified to accommodate the needs of implementation environment.

ii. The E-taxation system can also be interfaced with other governmental agencies and institution to furnish them with information that wouldn't necessarily be available to them.

iii. The E-taxation system should be implemented in a secured server environment as it contains several important information about its users.

iv. The E-taxation system can also be used by the government provide more accurate estimates about the income pattern of its citizens and their response to the implementation of new tax policies.

6.3 FUTURE RESEARCH

The software can be enhanced further to include multiple modules as its initial development system is in view of the future, for example its database can be interfaced with the database of other governmental institutions and they can have access to the information it provides. It can be employed for the purpose of research. Also it's important to keep abreast of the latest software and network security protocol so as to properly secure the information of users. Biometric means of system access would also be highly beneficial as it would increase the user convenience.

6.4 CONCLUSION

The E-taxation is not a new system, but a rather local solution to a problem with global purview. This system looks at how tax payment can be encouraged through simplification and increased efficiency in payment processing. Individuals can depend on this platform to carry out their duties as citizens.

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