

On Development of Tax Payment Verification System Using Hybrid Technology

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Abstract

Development of tax payment verification system using hybrid technology is aimed at computerizing tax verification process in Nigeria. In Nigeria today, people avoid paying tax, even multinational companies manipulate their income report in order to evade paying the accurate tax. It is only government employees that pay their tax accurately because it was deducted from the source. This calls for urgent attention as government is losing billions of naira on tax evasion. Tax papers are being forged by individuals and companies whenever there is a check on their tax payment documents. Some tax collectors also compromise their work by defrauding government of the tax paid by companies as they have their fake receipts to issue out to unsuspecting tax payers. This calls for a model that can authenticate tax payment information for companies or individuals. Hence, the aim of this paper is to develop a tax payment verification system for a better voluntary compliance of tax payers using biometric and bank verification number. A centralized database of all taxable adults in Nigeria will be designed and a platform that can enable tax collectors update tax payers receipt online. The system will provide an online verification of company tax payment using the company's registration number with the corporate affairs commission. The methodology adopted is the object oriented and design methodology (OODM) and php-MySQL with java script was used in the implementation. The software developed helped in keeping accurate track of tax payers details and it is very helpful to government and tax payers.

Keywords: Tax, Biometric Technology, BVN, Government

Introduction

Electronic tax system is the system that has been developed to replace the current manual tax assessment and verification system. It is a web-enabled and secure application system that provides a fully-integrated and automated solution for administration of domestic taxes. It Enables Taxpayer internet-based PIN registration, returns filing, payment registration to allow for tax payments and status inquiries with real-time monitoring of accounts[1]. The e-tax system offers electronic registration, filing, and payment, as well as education and information to taxpayers. Broadly, the e-tax system is a comprehensive internet portal that forms a suite of secure self-service options to taxpayers, may provide a single point for information and actions is

typically available 24 hours a day and 7 days a week, and does not require intervention from tax administration staff. An e-tax system is not necessarily a standalone IT component. For example, the e-tax system must be integrated with the core tax system to provide the taxpayer with services, such as the ability to view account information and the status of refunds. The e-tax system is thought of as a separate component, as, unlike other components, it is 'taxpayer-facing'. E-tax systems are often thought of solely as IT support to taxpayer services. It should be clear, however, that e-tax systems do more than provide information, education, and assistance to taxpayers. With components such as electronic registration and filing, they also reduce the cost of administering taxes. Tax is an imposed levy by the government against the income, profits, property, wealth and consumption of individuals and corporate organizations to enable government obtain the required revenue to provide basic amenities, security and well-being of the citizens. Today, corruption of the tax agency is still a problem, especially in developing countries. According to the traditional model of tax compliance [2], taxpayers choose how much income to report on their tax returns by solving a standard expected utility-maximization problem that trade off the tax savings from under reporting true income against the risk of audit and penalties for detected noncompliance. In this framework, both the threat of penalty and audit makes people pay their taxes [3]. 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 the 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 [4]. Tax is a charge imposed by a government on persons, entities or property, administered to generate revenue for that government [5]. 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, among 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 [6]. Tax laws cannot cope with every eventuality and has to be supplemented with administrative procedures and decisions and just as importantly, in order to work, it has to have a reasonable degree of willing compliance on the part of the taxpayers themselves. Therefore, a more appropriate definition of compliance could include the degree of willingness with tax laws and administration that can be achieved without the immediate threat or actual application of enforcement activity [7]. Tax compliance may be viewed in terms of tax avoidance and evasion. The two are conventionally distinguished in terms of legality, with avoidance referring to legal measures to reduce tax liability and evasion as illegal measures. Compliance might therefore be better defined in terms of compliance with the spirit as well as the letter of the law [8]. Nigeria is governed by a Federal system and the government's fiscal power is based on a three-tier tax structure divided among the Federal, State, and Local governments, each of which has different tax jurisdictions. The Nigerian tax system is lopsided. The federal government controls all the major sources of revenue like import and excise duties, mining rents and royalties, petroleum profit tax and company income tax, value added tax among other revenue sources. State and local government taxes are minimal; hence, this limits their ability to raise independent revenue

and so they depend solely on allocation from Federation Account. In 1992, the government introduced self-assessment scheme, under which a taxpayer is expected to fill a tax assessment form to determine his taxable income. Here, the intrinsic motivation to pay tax (that is, tax morale) will determine the level of compliance with reporting requirements. This means that the taxpayer files all required tax returns at the proper time and that the returns accurately report tax liability in accordance with the law. The advent of democratic rule in 1999 has put greater pressure on the three-tier of governments to generate enough revenue and meet electoral promises in terms of provision of basic necessities and infrastructure for the economic empowerment of the people. To achieve these goals taxpayers must pay their taxes willingly as and when due. In other words, a tax payment verification system is required in order to achieve a high degree of tax compliance. Therefore, this paper is centered on designing of secured tax payment verification system using hybrid technology (biometric technology and bank verification number (BVN)).

2. Methodology

Biometric Matching – Process Flow

The basic process flow for biometric verification and identification is as follows:

- A user initially enrolls in a biometric system by providing biometric data which is then converted into a template
- Templates are stored in the biometric system for the purpose of subsequent comparisons
- In order to be verified or identified after enrollment, the user provides biometric data, which is then converted into a template
- The verification template is compared with one or more enrolled templates
- The result of the comparison among biometric templates is rendered as a score or confidence level, which is compared to a threshold used for a specific technology, system, user or transaction
- If the score exceeds the threshold, the comparison is a match, and that result is transmitted
- If the score does not meet the threshold, the comparison is a non-match, and that result is not transmitted

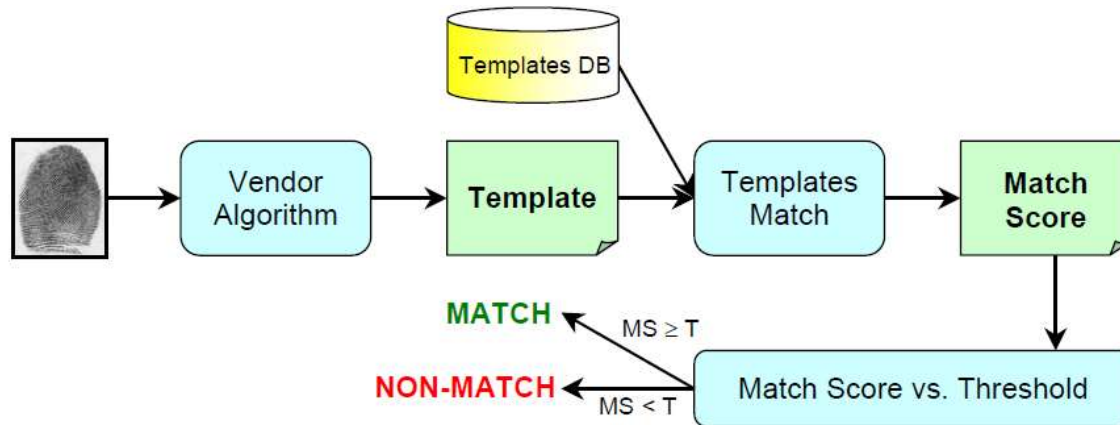


Figure 1: Biometric matching Process Flow Diagram

3. Analysis of the proposed system

After reviewing the existing system and presiding on the features and methodologies to adopt, a follow up in discussing the tools intended for system design ensued. The review of existing system 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 were re-engineered in a system environment. 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. Once an account is created, the fingerprint of the person will be captured and his/her BVN authenticated. 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 with their biometric and BVN captured. 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.

The highlights of the system, its core components and interfaces 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. The Admin person can monitor tax payment compliance and can block individuals banking transactions through the use of BVN where the individual fails to pay tax
- 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.
- 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.
 - v. The Tax Payment Verification Page: The government agencies and parastatal use this platform to verify tax payment status of individuals and companies. For individuals, the fingerprint is verified and the tax details will display. But for corporate organizations, the BVN can be used to link up all the tax payments made by the company.
 - vi. Bank Transaction Page: The banks use this page to verify individuals or company tax payment status before they can carry out any transaction in the bank. If the person defaults in tax payment, access to the persons account will be blocked.

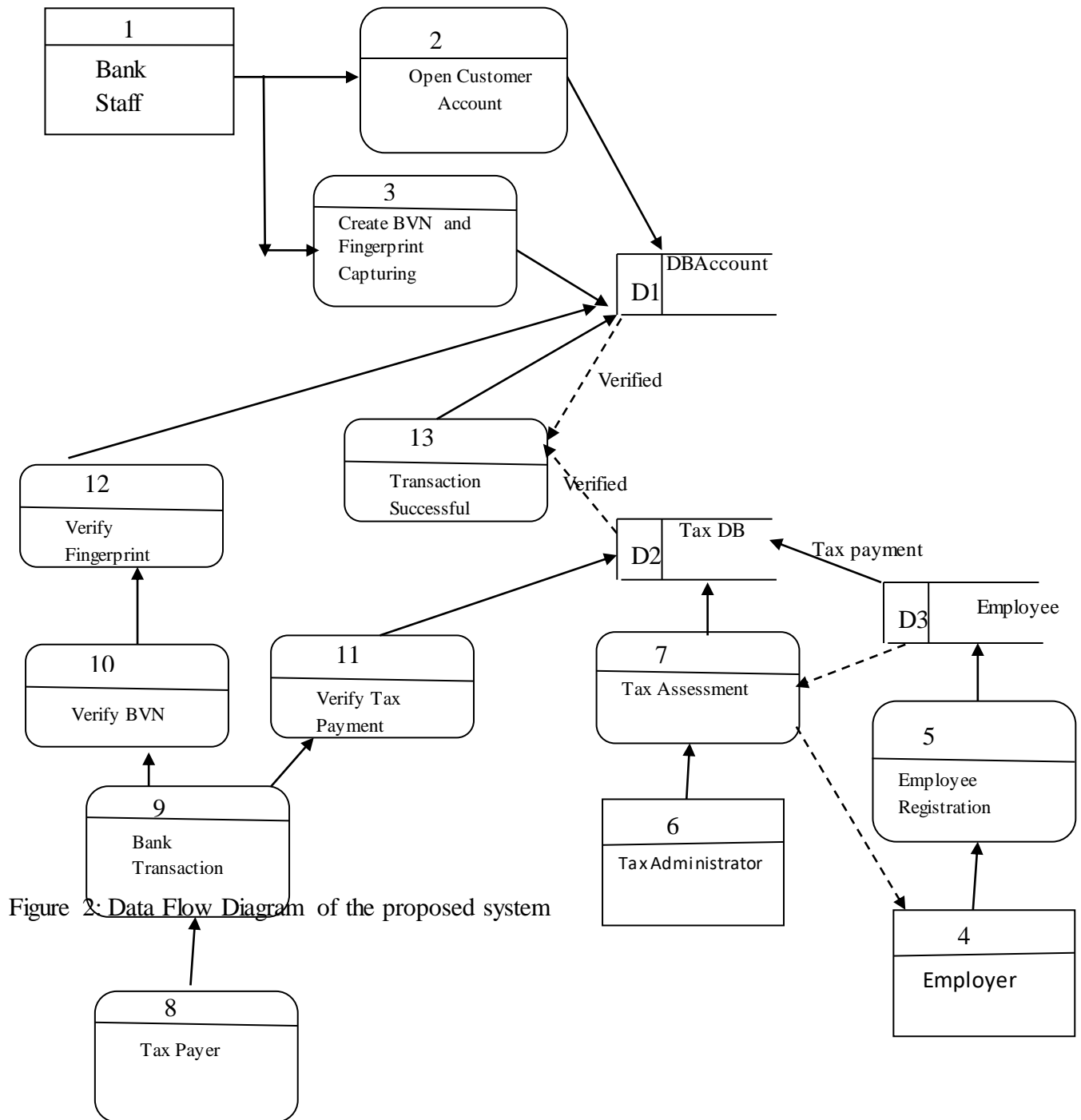


Figure 2: Data Flow Diagram of the proposed system

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Figure 2 shows the logical data flow of events in the system. It shows the connection between the employee, the tax administrators and bank transactions.

Advantages of the Proposed System

The new model of secured tax payment verification system developed has so many features that helped to solve the problem with the existing system. The advantages include:

- (1). Tax payers records are authenticated using fingerprint and BVN thereby eliminating fraud
- (2). Computations of tax assessment are automatically carried out by the system, here eliminating erroneous computations encountered in manual computations.
- (3). Tax data is centralized hence change of work place by employee does not affect his/her tax payment records.
- (4). Compilation of tax payment record is easier and timely as this is automatically done by the system
- (5). Tax payment verification can be done online by any of the government agencies. This will remove the falsification of tax documents by individuals or companies for the purpose of getting contracts from government
- (6). Tax evasion will be eliminated as the new system will block banking transactions of any individual or company that fails to pay tax.
- (7). Double taxation will also be eliminated as federal, state, of LGA are integrated in the same platform for tax payment and verification.
- (8). It also enhances security as access to the system requires authentication. This means that only authorized users can access that system.

Result and Discussion

The user quality assurance and performance scoring test was carried out using evaluation metrics including user friendliness (tool-tip text, soft guide notes, pop-up messages), user interface design, reliability, robustness, ease of use, flexibility (customization features/ control to suit the user's needs) and scalability to incorporate new and advanced features. Performance assessment was carried out by 10 users of the tax payment verification system and the average performance scoring is summarized in table 1 and Figure 3.

Table 1: **Performance Assessment**

Assessment Tool	Score (%)
Reliability	82
User Friendly	92
Flexibility	75
Accuracy	95
Security	98

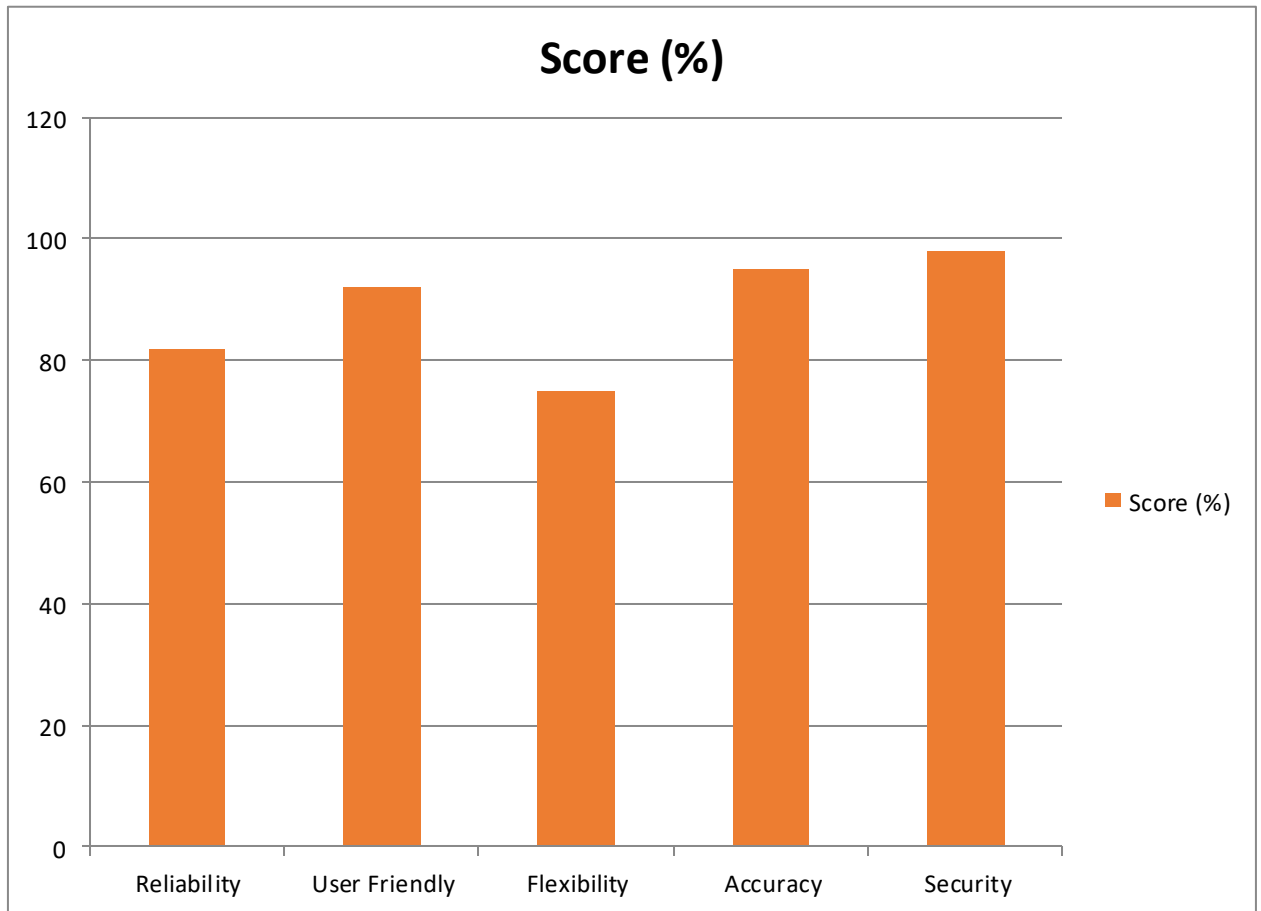


Figure 3: Performance assessment

Conclusion

The tax payment 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. Also, the development of biometric data capture involved many phases. The approach used is a top-down one concentrating on what first, then how and moving to successive levels of details. The research revealed that, fingerprinting has served all governments worldwide during the past 100 years or so to provide accurate identification of individuals. No two fingerprints have ever been found identical in many billions of human and automated computer comparisons. Fingerprints are the fundamental tool for the identification of people with a criminal history in every police agency. It remains the most commonly gathered forensic evidence worldwide and in most jurisdictions fingerprint examination outnumbers all other forensic examination casework

combined. Moreover, it continues to expand as the premier method for identifying persons, with tens of thousands of people added to fingerprint repositories daily — far more than other forensic databases. It is hoped that effective implementation of this software product would eliminate many problems discovered during systems investigation. This will no doubt result in improved operations of tax authorities and with the aid of the biometric authentication and BVN verification system, government will generate more revenue.

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