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### An Optimized Database Management System (ODMS)

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# An Optimized Database Management System (ODMS)

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## ABSTRACT

Most developing countries aim at transforming their economics from underdevelopment state to a more desirable state. Revenue constitutes the vehicle of change that is use to achieve this transformation. Revenue often described as the life wire of development, used for translating plans into actions and providing the means for mobilizing scarce resources and allocating them to the production of goods and services. Hence, this paper seeks to address the edge long challenges faced in major local government areas in Nigeria. Which are namely: Missing documents, multiple record entries, redundancy in data entry and revenue records. Thus, we proposed an Optimized Database management system. In order to maintain accuracy and precision with relevant revenue generated records efficiently. The main objective of this research paper is to mitigate the problem of mismanagement of revenue records, multiple record entries, data manipulation/fraud known as cyber-crime, missing records, redundancy of revenue records and provide solution to the lasting problems of fraud among the local government revenue officers by way of effective management, and present a live Database storage of these records for future use. The paper also developed a good user oriented data bank and designed a suitable database, procuring and installing the necessary database, communication and application software and developed a detailed documentation of all revenue allocated/collected by the local government authorities which will further encourage accountability, transparency and data integrity.

**Keywords:** DBMS, redundancy, Optimized, Revenue-Records.

## 1. INTRODUCTION

Several Crimes exist during revenue collection or entering in the various local Governments in Nigeria, some which are also known as cyber-related crime via the use of Information and communication (ICT) tools. these crimes are major drawback of some developing countries. A major concern of most developing countries is how to mitigate these fraud activities as well transform their economics from this present state of underdevelopment to a more desirable state. In which accurate Revenue collection constitutes one of the key vehicle of change that is use to achieve this transformation. Revenue often described as the life wire of development, translating plans into actions and providing the means for mobilizing scarce resources and allocating them to the production of goods and services. However, revenue is considered to be useful only if it is generated within the required period and meets with the original estimated amount and is satisfactorily providing the light of this, only a handful of local government in Nigeria could clearly be described as a success. Example abounds in every sector of the economy of cases of aborted and abandoned projects due to lack of sufficient revenue generation to continue

with such projects. [1][2][3][4], this is most peculiar to developing countries. A thorough examination of projects failures in Nigeria local government is however, revenue that could be due to weakness in the administration of two or more stage of revenue collection cycle. For the past few years there have been difficulty in maintaining proper records and these have increasingly been the major problem of the local government officers, especially the local government revenue collection officer. There have also been issues of missing document, multiple record entry, redundancy in data entry and revenue records over the years [5][6]. In this research study, we have proposed an Optimized Revenue Generation Database management system. The proposed software was developed using Visual Basic as well as Microsoft Access based on the requirement and specification of the user and the analysis of the existing system, with flexibility for future enhancement. More-so, the expanded functionality of today's software requires an appropriate approach towards software development [7].

The proposed software was precisely developed for Danko/Wasagu local governments in other to maintain accuracy and all relevant revenue generated records efficiently. The research will address issues of mismanagement of revenue records as well as avoids the problems of missing records, redundancy of records, and enhance management of collected revenue records for longtime/life storage. The research tries to establish a good user oriented data bank and design a suitable database, as well as procuring and installing the necessary database, communication and application software and developed a detailed documentation of all revenue allocated or collected which may further encourage accountability and transparency more efficiently. The rest of this paper is well-arranged as follows. Section 1: Overview, Section 2: literature review, Section 3: system Analysis, Section 4: System Design, Input design, Process design, Database design and Output design, Section 5: the implementation and unit testing of the new system, Section 6: Conclusion.

## **2. OVERVIEW OF AUTOMATED REVENUE GENERATION DATABASE**

Considering the growing need of information/data in the 21st century, and the wide acceptance of western education in Nigeria, computerization and processing of Revenue records, becomes a must for every organization, company or Government respectively [8].

### **2.1 Automation**

This is the use of control systems (such as numerical control, programmable logic control and other industrial systems) in concert with other applications of information technology such as computer aided technologies (CAD), CAM) to control industrial machinery and processes, reducing the need for human intervention in the scope of industrialization, automation is a step beyond mechanization [9]. Whereas mechanization provided human operation with machinery to assist them with the muscular requirement of work, automation greatly reduces the need for human sensory and mental requirements as well [10][11][12][13]

### **2.2 Method of Revenue Generation**

Danko/Wasagu is one of the local government areas of Kebbi state. It was excised from Sokoto state and merged with Kebbi state and it is one of the largest local Government in the state. The major sources of internal revenue to the local government are namely: Market charges, Taxes, Rents and royalties, fees and fines, local licenses, Interest, Requirement, Statutory Allocations, and Miscellaneous. However, the revenue office is operating based on a manual database system. This system is of course not proper for safe keeping of record. The collected revenue are recorded on revenue books or cash books. This record is however open to all and sundry as anybody can view the content of the record book.

This manual system is not also fast in calculating the amount collected, daily, weekly, monthly, quarterly and also yearly. There is also a lot of embezzlement by the revenue collectors and officers because of the manual record. The automatic updating of this manual record is not also possible. So in view of the short coming of this manual system, we proposed an optimized database management system, this system is built in such a way that the collection of each type of revenue will be inputted on the computer system. To avoid double entry of a particular record, to ensure data security, to reduce fraudulent acts to some extent, to reduce work load on the revenue officers and account staff, to ease the calculations on monthly, quarterly and yearly revenue collected as the computer will calculate automatically the amount collected on a particular type of the revenue and even the sum up the whole total revenue generated. 2.3. Concept of Information System:

An information system is a purposeful fully designed system that brings data, computers (hardware & software), procedures and people together to manage information that is important to an organization. The main function of an information system is the acceptance of data, processing of this data and disseminating this information through the organization by keeping track of all the transactions carried out by the organization [14][15][16][17]. [18][19] defines an information system as a subsystem that supports the information needs of an organization , which among other functions help people in the organization to gather and use information, communicate with each other and people within and outside the organization and make effective decisions.

They further stated that an information system just like every other system performs input, processing and output functions and it also contains feedback and control functions.

### **2.3.1. Categories of Information System**

The concept of an information system is a very broad area as it encompasses different subsystem that work together based on the information needs of the organization or institution. [20], classified an information system into four main categories namely: office Support System, transaction Support System, Management Information System, Decision Support System.

#### **2.3.1.1. The Concept Of Data Processing And Data Management In Automated Revenue Generation Database**

Information/data is a critical resource in the operation and management of all Government establishments hence timely availability of relevant information is vital for effective performance of managerial functions such as planning, organizing or for future use and reference. Data processing and data management are critical components of all information systems making them seat at the heart of an information system[21][22][23][24].

### **2.3.2. Data Processing**

Data processing refers to the process of performing specific operations on a set of data or a database. Data processing embraces the techniques of sorting, relating, interpreting and computing items of data in order to provide meaningful and useful information. It will be evident that to arrive at certain figures, the data must be processed according to predefined procedures and rules arranged in a specific order. The concept of data processing can be summarized into three major steps namely:

1. Preparation of Source Document
2. Manipulation of Data
3. Data Storage [25][26].

**Preparation of Source Document:** The first step of every data processing activity is to obtain the relevant facts/records and Figures and to set these out on source documents. It involves the act of data gathering or capturing of data into a format that is ready for processing which can be done manually or automated[27][28].

**Manipulation of Data:** information, inputs for processing may have to be classified or sorted, it is at this stage that actions are performed on the data to give the desired output. This stage involves transforming the data into useful outputs.

### 2.3.2.1. Data and Information

Data refers to raw, unevaluated facts, figures, symbols, objects and events that can be processed to produce some meaningful information. Information is a collection of facts organized in such a way that it has more value beyond the facts themselves. It is a collection of data that has been processed and converted into meaningful form [29][30][31]. Turning data into information is a process or a set of logically related tasks performed to achieve a defined outcome. This process of defining relationships between various data requires knowledge. Knowledge can be defined as a body of rules, guidelines and procedures used to select, organize and manipulate data to make them suitable for specific tasks. Consequently, information can be said to be considered as data made useful by the application of knowledge from a set of knowledge base.

2.3.3. Characteristics of Valuable Information: The value of information is closely tied to the decision that results from its use. No information has an absolute universal value, hence its value is related to those who use it, how it is used and what situation it is used. The measured difference in performance due to informational factors is called the revealed value or realistic value of information. And the comprehensive impression of information and the amount that people are willing to pay for that information is known as the subjective value of information. [32]. According to Ralph M. Stairs in his book “principles of information system” opines that for information to be valuable, it must possess and satisfies the following conditions. Accuracy: the information should be accurate and free from error,

**Completeness:** the information should contain all the important facts that are required, Economical: the information should be relatively inexpensive to produce, Flexible: it refers to the ability of the information to be used for a variety of purpose and not just one, Reliable: the ability to rely on the information or depending on the information for decision making, Relevant: the information should be able to lead to an improved decision making. If the information has nothing to do with the problem at hand then the information can be considered irrelevant, Simple: it refers to the ability of the information to be simple to find and easy to understand, Timely: this refers to the timely availability of the information to users whenever it is required, Verifiable: this refers to the ability of the information to be checked and validated for accuracy.

## 2.4. Data Management

Data are organized in a hierarchy that begins with the smallest piece of data used by a computer for the purpose of this discussion, a single character such as a letter or number characters form fields such as Select revenue code, Type of Revenue, Revenue code/serial, Date of collection, Amount collected. The constant increase and the demand for information have triggered the need for an effective way of managing information. The essence of data management is to effectively arrange data in an orderly manner that will make information retrieval simple and fast. In the past, the traditional approach to data management consists of maintaining separate data files for each application.

For example, a revenue record file could be maintained for personal record purposes, while an additional file could be maintained for either the management or result purposes. As a result, multiple data files are created for each revenue report and these will result to data redundancy. To overcome the potential problems with traditional data management, the database approach was developed [32][33].

### **2.5. Database Approach to Data Management**

We are constantly being inundated with information as a result of the rapid rise of the internet. The central point or the backbone of every information system is the database that stores that information or data. A database can be defined as a self-describing collection of integrated tables. An integrated table refers to tables that store both data and the relationships among the data. [18]. Database is electronic collections of related data that can be easily stored, sorted, organized and queried. [19].

### **2.6. Database Models**

A database model is the theoretical foundation of a database and fundamentally determines in which manner data can be stored, organized, and manipulated in a database system. It thereby defines the infrastructure offered by a particular database system.

### **2.7. Benefits of Databases in Automated Revenue Generation System**

The benefits of database approach in automated revenue generation system are

1. Databases help in result processing by enabling the storage and retrieval of large quantities of information or data. For example, it stores the entire records or information of all the revenue records in the local Government.
2. It provides facilities for data centralization. It groups revenue records result files, into one single database. Thereby, removing the need for multiple or separate data files and solves the problem of data redundancy.

Specialized hardened computers are frequently used to synchronize the flow of inputs from (physical) sensor and events with the inflow of outputs to actuators and events. Using lead to precisely controlled actions that permit a tight control of almost any industrial process. Automation has had a notable in a wide range of highly visible industries beyond manufacturing. Automation Teller Machines have reduced the need for Bank visits to obtain cash or carryout transactions [21]. In general, automation has been responsible for the shift in the world economy from agrarian to industrial in the 19th century and from industrial to services in the 21th century [22].

## **3. SYSTEM ANALYSIS & DESIGNS**

This is a detailed study of the current system leading to the component: Input, Processing and Output specification of the new system. During system analysis, various operations performed following the system and three components are analyzed. System analysis is the process of collecting and analyzing facts of an existing system in order to fully appreciate the prevailing situation in process of designing and implementing an effective computerized system.

### **Existing System**

The existing system is purely manual such that the operation involves staff in the revenue department going round where necessary to get the dues collected and are also charged with the responsibility of putting them on records and documents [20].

### **File Maintenance**

An effective and sufficient record is important for the successful operation of any revenue Generation to triumph excellently in their various dealings with e.g marketers, workshops, product buying license, Haraji and Jangali. Maintaining records is very important as it enable reference. At the early stage of any revenue collection process irrespective of whether it is manual or computerized system there must be a proper documentation of all revenue records and this include. Type of revenue collected. 2. Amount collected. 3. Date of collection. 4. Revenue code and serial number.

### **System Procedure**

This is to describe what goes on during a Revenue collection process.

### **How Revenue is Collected**

This is done usually base on agreement between the revenue officers and the marketers, it may be on market day basis, weekly, monthly or yearly basis [23].

### **Payment**

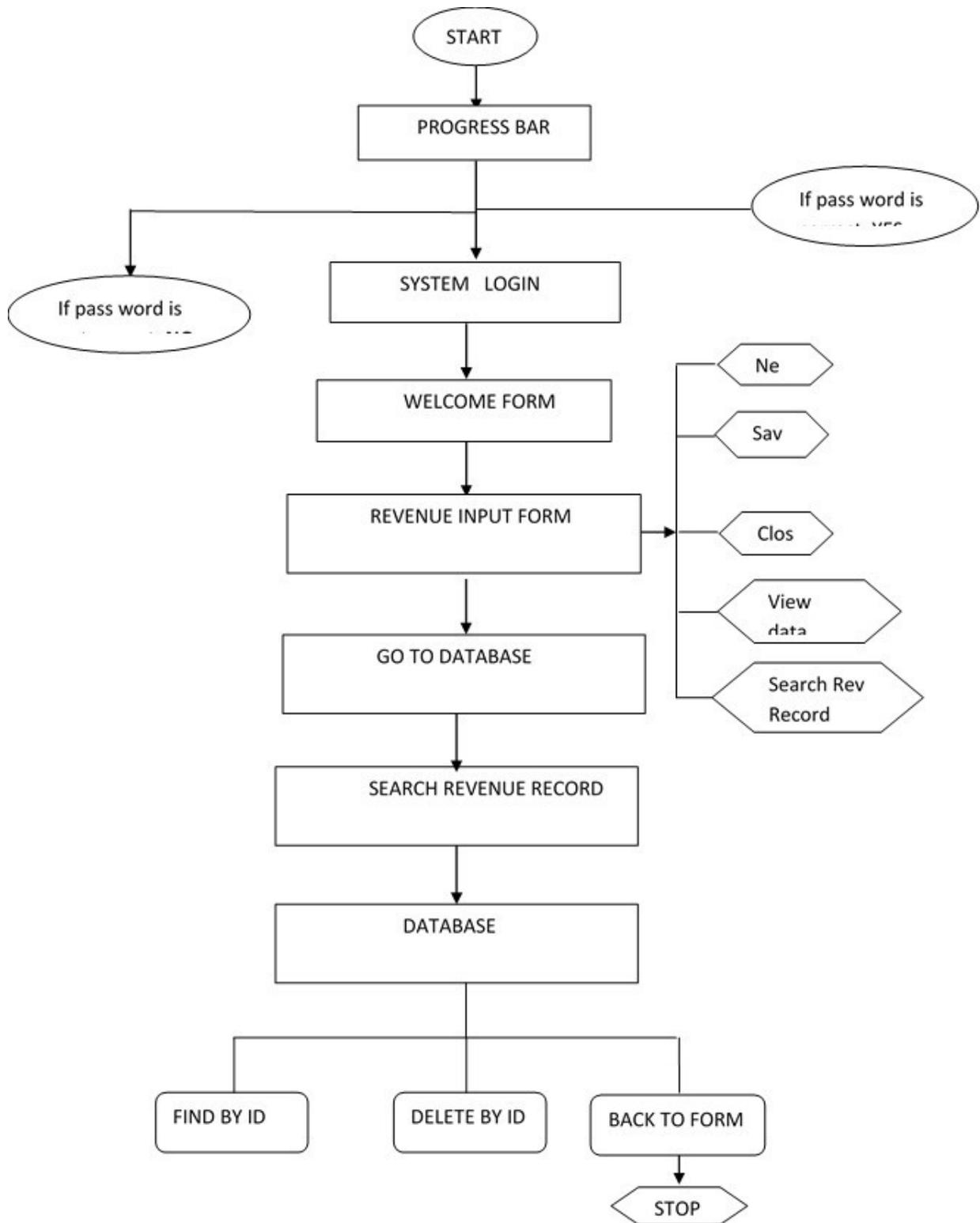
Payment of revenue is done with cash. The amount of money to be paid depends on the kind of business you do (slaughter fee, sales of livestock fee, and sales of mudus fee etc). All payments are made to the Revenue officer who in turns records them in a record book.

**Input Analysis:** The usual method of entering data into the existing system is by manually writing into the record book and file. This information is very vital since it marks the beginning of Generating report.

**The Revenue Input Form:** This form can be filed either by the revenue officers or the deputy director finance, as the case may be when the reports are ready. This form provides the user with an interface to enter all the data information which are namely: i. Select revenue code, ii. Type of revenue, iii. Type code and serial number, iv. enter date, v. amount collected.

**Output Analysis:** Output refers to the end result of the report or the outcome.

### Program Flowchart



### **Fig. 1: System Flowchart**

In this paper we employed the commonly used flowchart for the following reasons:

1. The flowchart allows the user to view the logic of the problem's solution in a pictorial fashion.
2. It serves the programmer by breaking up a larger problem into smaller steps which can be individually coded or programmed without having to be concerned with how this smaller segment of the problem will fit into the total solution.
3. It serves as a means of communicating between the revenue officer and the programmer. The revenue officer for example does not have to be familiar with computer codes if he or she is able to understand the flowchart. From flowchart, it can be easily and quickly determined if the proposed computer program solution is logically correct and contains all necessary considerations and limitations.

The flowchart design for the proposed system (Automated Revenue Generation Database system). Has been showed. The system allows inputs to be made and saved so that it can perform any task as modeled by the programmer.

#### **List of Revenue code and Revenue Type**

CODE	TYPE OF REVENUE
1001	TAXES
1002	RATES
1003	LOCAL LICENSE
1004	MARKET CHARGES
1005	RENT
1006	INTEREST
1007	REINBURSEMENT
1008	MISCELLANEOUS
1009	STATUTORY ALLOCATION
OK	CANCEL

#### **Choice of Programming Language**

The programming language for the development of the program is visual basic 6 and MS Access (VB 6). Due to the simple nature of the programming, VB6 is a rapid application Development (RAD) tool that allows programmers to create windows applications in a very little time.

System design: is the systematic process of formulating the suitable objectives for the final system. It involves working from the requirement specification to produce system specification. A system specification provides detailed documentation of the new system. System design usually comes after the information about the system are collected, i.e. the shortcomings and problems are identified, the mode of operation and also the personnel and entities involved.

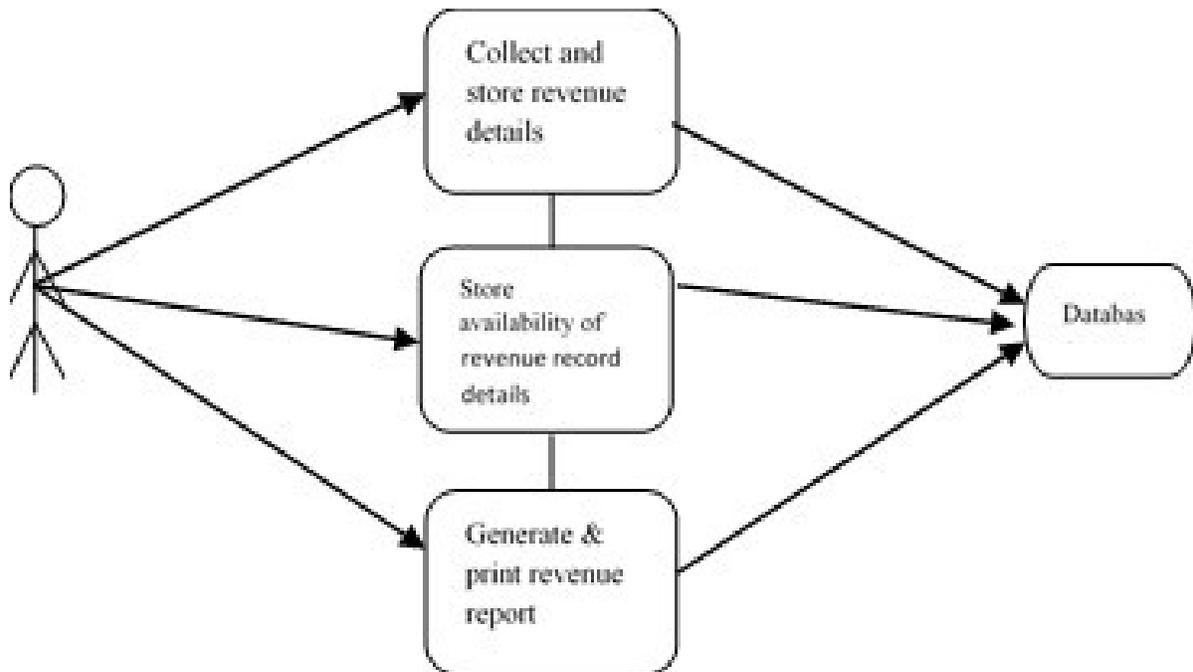


Fig 2: Elements of the Proposed System

#### 4. SYSTEM DESIGN

The proposed computer-based system is a revenue generation database System, which is specifically designed for the finance Department of Danko/Wasagu local Government Area of Kebbi State. Having established what the objectives of the proposed system are, the system was designed so as to achieve these objectives. In designing this system, the system was specified in detail. This involves identification of inputs, files, processing, output, hardware, costs, accuracy, response times and controls. The proposed system however has the following features:

- ✓ It provides reliable security measures, which protect the data and the package from accidental or deliberate threats that could cause unauthorized modifications, disclosures or destruction of the data and protection of the information system by the use of password.
- ✓ It provides an automated revenue records thus, storing information on the system rather than using bulky files.
- ✓ It provides input of data at any time with the ability to update records in the system.
- ✓ It allows automatic and manual record of data
- ✓ It provides efficient and effective means of producing hard copies of information by generating reports on different types of revenue collected
- ✓ It provides a database for storing all the revenue collected.

Use Case Diagram: Use case diagram is a diagram that shows the interaction between user and system to capture the user's goals.

Revenue officer/ Deputy Director Finance

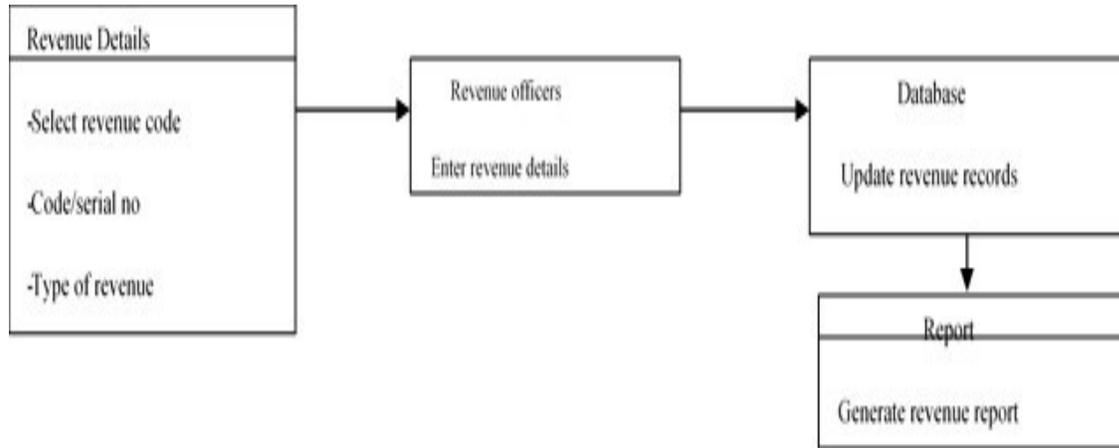


Figure 3: Use Case Diagram

**Class Diagram**

This is a collection of static elements such as classes and their relationships connected as a graph to each other

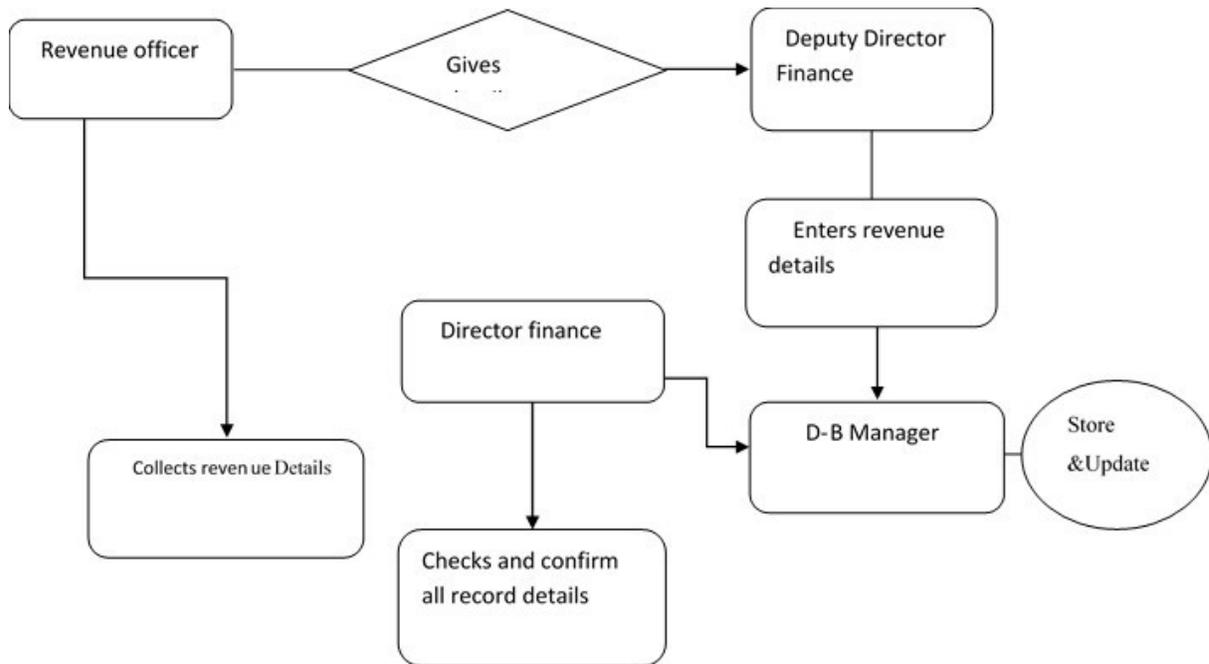


Fig 4: The Class Diagram

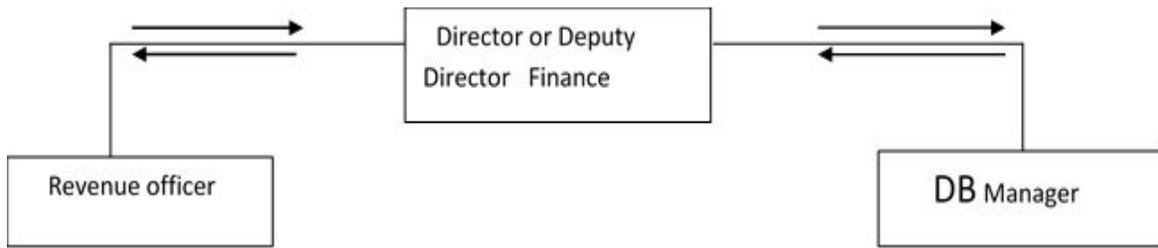


Fig 5: State Diagram: State diagram describe the behavior of a system.

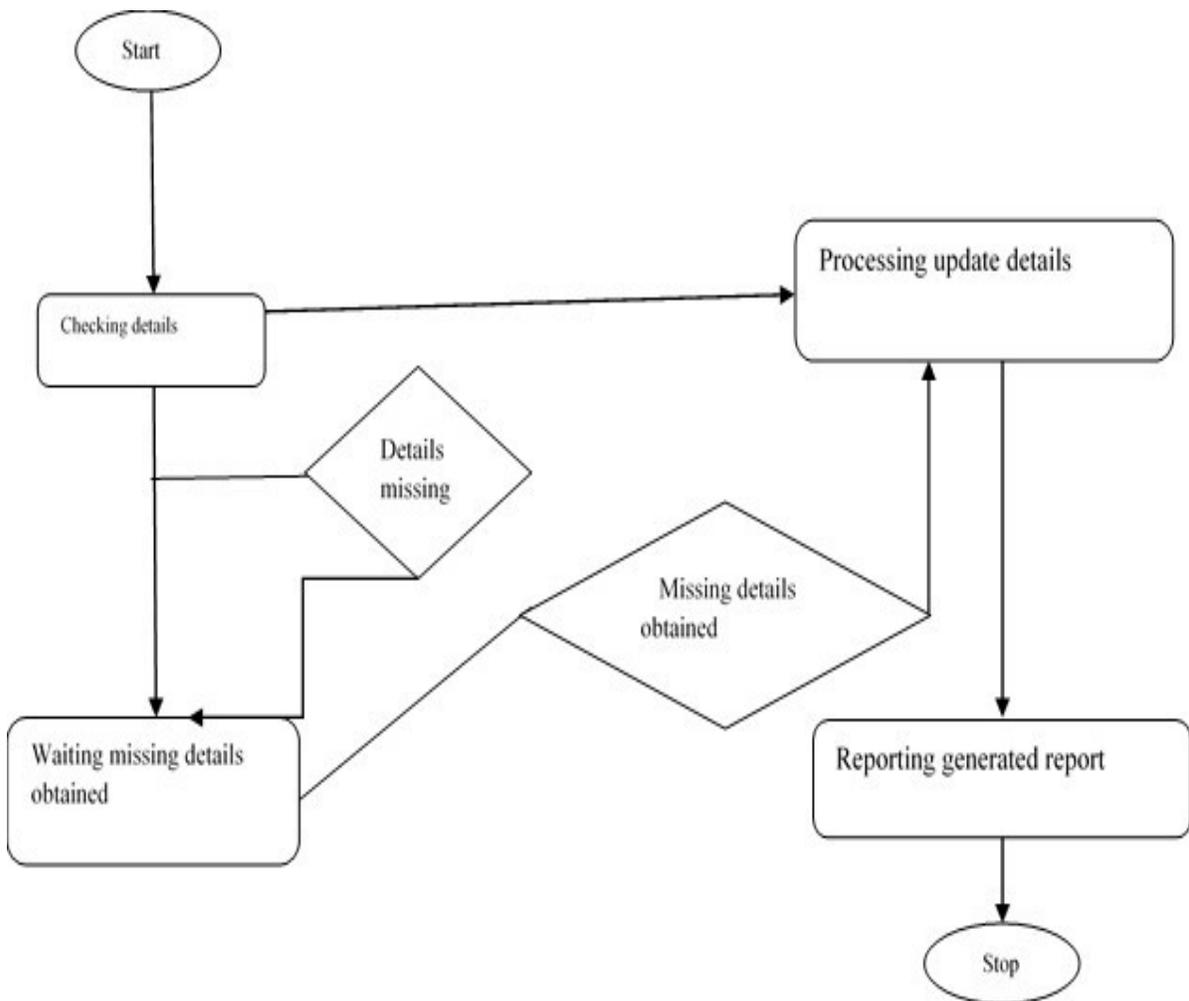


Fig 6: Activity Diagram: describes the sequence of activities

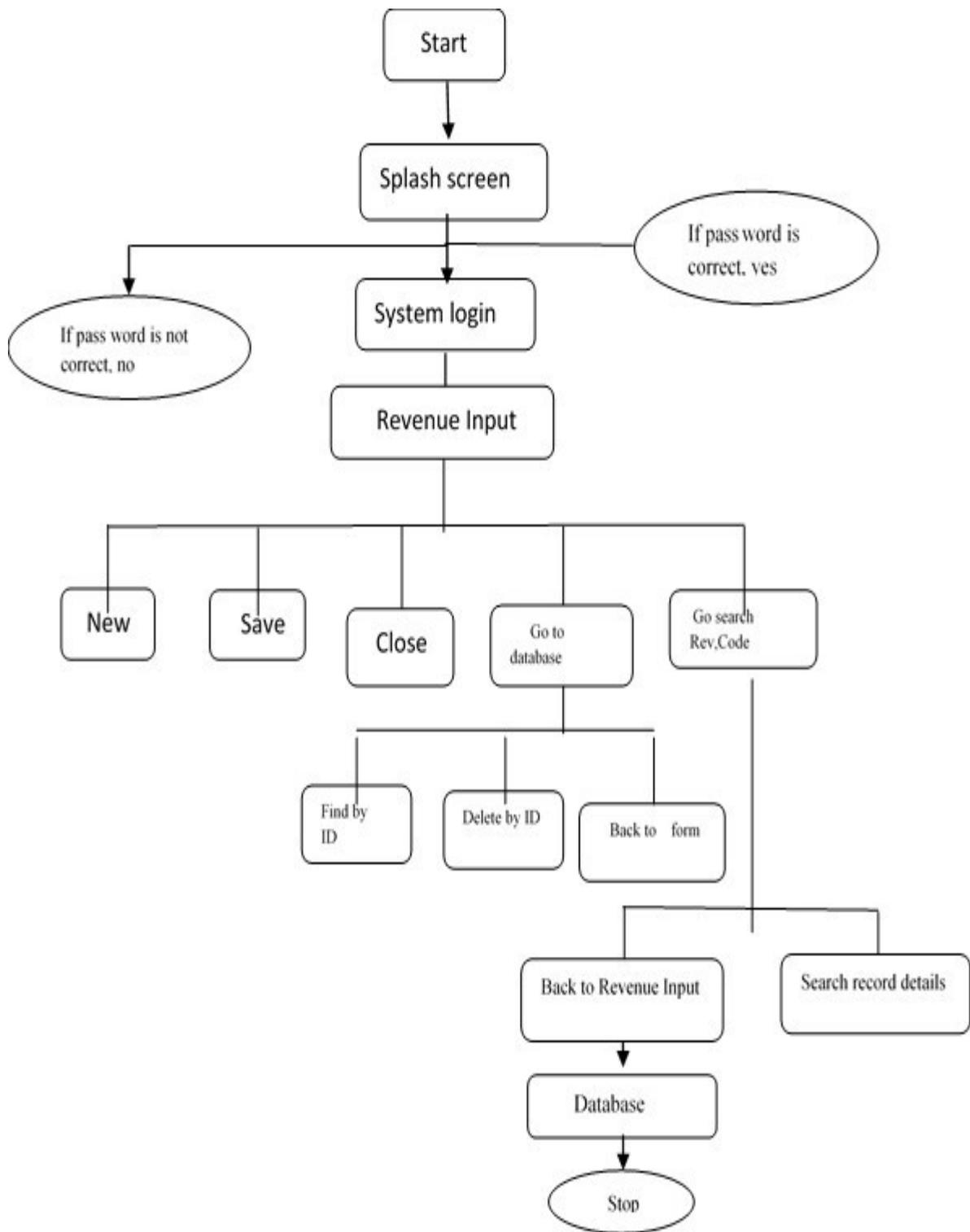


Figure 7: Activity Sequence

#### 4. SYSTEM IMPLEMENTATION AND UNIT TESTING

Revenue\_input

**AUTOMATED REVENUE GENERATION DATABASE FOR DANKO/WASAGU LOCAL GOVERNMENT**

Select Revenue

Revenue Code/Serial Number

Type of Revenue

Date of Collection

Amount Collected

New Save Close Go to Database Go Search Form

**Fig 8: Revenue System Input Interface**

The Output Design displays the output result generated, by the database. The system automatically updates the records whenever entries are made.

Database

**AUTOMATED REVENUE GENERATION DATABASE FOR DANKO/WASAGU LOCAL GOVERNMENT**

Id	Revenue code	Code Serial no	Revenue type	Date of collection	Collected amount
1	001	Rc001/S01	001-Taxes	01/10/2012	40,000
2	002	Rc002/S02	002-Rate	12/4/009	43325
3	001	Rc001/S01	001-Taxes	12/8/2012	1000

Find By ID  Delete by ID  Back to Form

**Fig 9: The Output Design**

**Table 1: File Design**

ID	REVENUE CODE	CODE/SERIAL NO	REVENUE TYPE	DATE COLLECTION	OF	AMOUNT COLLECTED
1	001	RC001/S01	TAXES	01/10/2012		40,000
2	002	RC002/S02	RATE	12/10/2012		43,325
3	009	RC009/S09	STARTURY ALLOCATON	14/10/2012		3,000,000
4	003	RC003/S03	LOCAL LICENSE	18/10/2012		100,000
5	004	RC004/S04	MARKET CHARGES	18/10/2012		100,000
6	005	RC005/S05	RENT	19/10/2012		30,000
7	006	RC005/S05	INTEREST	19/10/2012		7000
8	007	RC006/S06	REIBURSEMENT	20/10/2012		7000
9	008	RC008/S08	MISCELLANEOUS	22/10/2012		2000



**Fig 10: Log In Interface**

This is a login form that requests the user to enter his/her password and user name for validation. It reads its data from the table “users” The user is allowed to load the application successfully if and only if he is an authorized user of the application. It is the surety measure placed on the application.

**System Implementation and Unit Testing**

System implementation and delivery of the entire system into production that is the day to day operation in the local government. This involves the co-coordinating of the effort of the user department and the data processing department in getting the system into operation. Indeed, the main aims of the system implementation are as follows, 1. To check whether the system’s goal and objective have been achieved or not, 2. To determine whether user service requirement have been met, while reducing costs and errors, 3. To determine whether personal procedure,

operating activities and other control have been confirmed, 4. To check whether known and unexpected limitations of the system need attention.

#### Program Interface and Documentation

The system is designed to work on suite of programs develop in modules. It involves the physical construction of the design. The procedures define the program specification for output, input, file and processing into computer software. Therefore, the program interface and documentation are specified accordingly: 1. start the computer, 2. click on a folder named revenue database system, 3. Double click on the folder; a page of red coloration appears, 4. Click on file at the top left corner of the page, the main menu appears as shown in figures bellow.

Result and Discussion: According to the test carried out, different data values were used to test the program; the values of revenue code/serial number, revenue type, and amount collected and dates were entered, while the program generated an expected result. This implies that the program worked the way it is commanded to. The program is better compared to the manual record that is done in the local government.

#### Program Output



Figure 1: The option to select a revenue type, revenue code/serial number, date of collection and the amount collected. The button “new” allows you to make new entry of the revenue collected, the save button allow you to save it, the Go to Database button takes you directly to the data base, and the close button allows you to close the table. The table that follows also performs similar tasks.

The screenshot shows a window titled 'Revenue\_input' with an orange background. At the top, it reads 'AUTOMATED REVENUE GENERATION DATABASE FOR DANKO/WASAGU LOCAL GOVERNMENT'. The form contains the following fields and values:

Select Revenue	002
Revenue Code/Serial Number	RC002/S02
Type of Revenue	002-Rate
Date of Collection	10/9/2012
Amount Collected	50,000

At the bottom, there are five buttons: 'New', 'Save', 'Close', 'Go to Database', and 'Go Search Form'.

The screenshot shows a window titled 'Revenue\_input' with an orange background. At the top, it reads 'AUTOMATED REVENUE GENERATION DATABASE FOR DANKO/WASAGU LOCAL GOVERNMENT'. The form contains the following fields and values:

Select Revenue	007
Revenue Code/Serial Number	RC007/S07
Type of Revenue	007-Reimbursement
Date of Collection	15/9/2012
Amount Collected	90,000.00

At the bottom, there are five buttons: 'New', 'Save', 'Close', 'Go to Database', and 'Go Search Form'.

**Figure 2: Select Reimbursement, the program will generate an automatic serial number for Reimbursements, Enter the amount and click on save. The Figure above will displayed. Security: involves taking the necessary measure in other to avoid any hazards.**

### **Maintenance**

Are the minor enhancements or corrections to problems that surface in the system's operation. Maintenance is also done based on fixing the problems reported, changing the interface with other software or hardware enhancing the software. Any system developed should be secured and protected against possible hazards. Security measures are provided to prevent unauthorized access of the database at various levels. An uninterrupted power supply should be so that the power failure or voltage fluctuations will not erase the data in the files. Password protection and simple procedures to prevent the unauthorized access are provided to the users .The system allows the user to enter the system only through proper user name and password.

## **5. RECOMMENDATIONS**

1. The major shortcoming that have been Observed is inadequate and unreliable data.
2. Poor accountability and haphazard implementation of money projects.
3. The local government should exploit and encourage other sources of revenue generations internally instead of relying mainly on the statutory allocation from federal government.

## **6. CONCLUSION**

We have developed a revenue generation database management system software. The addressed the problems of missing records, redundancy, inaccurate revenue records by appropriately managing records, and eliminate the problems of manual method. The software is designed in other to maintain accurate and all relevant revenue generated records. The implementation and resultant output of the proposed software have highlighted the advantages and need to formalize and standardize the input activities and outputs of revenue generation process in general. By establishing a good user oriented data bank, designed suitable database, procuring and installing the necessary database, communication and application software and developed a detailed documentation of all details including revenue allocated, which further enhance accountability and transparency of the entire process of revenue generation.

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## REFERENCES

- [1] Adeyemi J.O, (1995), Brief on plans, budget and project department periodicals, March.
- [2] Alan Evans, Kendall Martin and Mary Ann Poatsy, (2008), database approach to data management.
- [3] Ayo E.J. (1988),Development plan in Nigeria,university press limited, Ibadan.
- [4] Asukumar, (2003), this article observed that the Computerizing modal revenue offices, revenue divisional offices, collector ate at state,Headquarters.
- [5] Beynon-Davies P., (2004), Database Systems 3rd Editio. Palgrave, Basingstoke, UK.
- [6] Bill Daley, (2007), the concept of information system.
- [7] Boyd D .R. (1991), secretarial administrationand management, prentice hall, inc.
- [8] Brownstein M. gutierrerd. Database iv willey (1991).
- [9] David M. Kroenke, (2006), database approach to data management.
- [10] David B. Mclocallow, geogetown University, (1975).
- [11] Davis F.R (1980), introduction to revenue law, Sweet and Maxwell limited.
- [12] Dharani (2007) computerization of land records.
- [13] Diane Chen,(2012),The-Fundamentals-of-Revenue-Forecasting.
- [14] George Beekman and Michael J Quinin, (2008), the concept of information system.
- [15] D.D Wisdom, A.B Ismail, A.B Abubakar, M.B Ribah, E.A Ajayi, and O.S Akinday(2020) Combatting Cybercrimes in the Education Sector International Journal of Engineering Applied Sciences and Technology, 2020 Vol. 1, No. 8, Pages 1-6
- [16] M. A Ahmad, D.D Wisdom, S. Isaac (2020). An Emperical Analysis of Cybercrime Trends and its Impact on Moral Decadence Among Secondry School level Students in Nigeria, ISTEAM-IEEE Technical Paper Series.
- [17] D. D. Wisdom, E. A. Ajayi, S. O. Akindayo, Y.M.Yanah, E. Kwaido, S. A. Shehu (2019). An Efficient Automated Revenue Generation Database Management System, Annals Journal of Computer Science Series. 17th Tome 2nd Fasc.
- [18] M.R. Bawa, D.D. Wisdom, A. B. Ismail, A.B. Abubakar, S. Abdullahi, M.G. Abdullahi (2020) The Role of ICT Education in Harnessing Human Capital Development in Africa, Annals.Computer Science Series. 17th Tome 2nd Fasc.–2020.
- [19] D.D. Wisdom, M .R Bawa, E.A Ajayi, O. A Sunday, S. A. Shehu, and E kwedo (2020) Cybercrime in Education, A Threat To Moral Society, International Journal of Engineering Applied Sciences and Technology, 2020 Vol. 1, No. 8, Pages 1-12
- [20] E. I Tukur, E. A Hyacinth, U. C Arinze, D.D Wisdom M. B Umar, Y. S Enemona (2021) ICT in a Digital era a Means of Entrepreneurship and Wealth Creation for the Girl Child, ISTEAM-IEEE Conference Technical Paper Series, 2021.
- [21] John W. Kam V. (1990) , accounting theory.
- [22] Joseph V. Car cello, (2008) , Financial& Managerial Accounting,McGraw-HillIrwin p199, ISBN=978-0-07-299650-0.
- [23] Kevin Hinton, (2012), The-Fundamentals- of-Revenue-Forecasting.
- [24] Kerman, M.C. and Donald, rill (2001), computer programming fundamentals with application in vb 6.0.
- [25] Kingsley,( 2006) computerization act of land records.
- [26] Meigs W. (1970) financial accounting, mc graw-hill.
- [27] Rajas tan, (2000), computerizing the revenue generating activities of the Rajas tan state.
- [28] Patrick Gillespie, (2012) visual basic 6.0 code bank.
- [29] Tsitchizris,D.C.andF.H.Lochofsky,(1982). DataModels.Englewood-Cliffs,Prentice-Hall.

- [30] Vinayshil Gautama PhD, (2012) automation and computerization, fras London.
- [31] Williams, (2006), p.51, financial accounting US Department of the Treasury, p. 22.
- [32] Williams, (2006), financial accounting. p. 64 and 196.