



## ABSTRACT

Manual receipt control systems are prone to errors that can affect stock control management and accuracy. This study aims to investigate and evaluate the effectiveness of automating the manual receipt control system through computer integration. The research problem is to identify how computer integration can eliminate errors in the manual

# AUTOMATED INVOICE GENERATION, A TOOL TO COMPUTERIZED INVENTORY CONTROL SYSTEM

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## Introduction

Electronic invoicing System is the most common way of overseeing stock to satisfy client need at the least conceivable expense and with a base venture, ByoungHo (2004). An effectively executed invoicing control program considers such things as buying merchandise equivalent with request, occasional variety, changing utilization examples, and checking for pilferage, Ellram (1996). A starter step during the time spent invoicing control is to decide the surmised expenses of overseeing receipt. As per Langabeer and Stoughton (2001), these expenses incorporate such costs as capacity costs, stock dangers, and the deficiency of chance expenses related with tying up capital. Stock administration is an essential capability to assist with guaranteeing the progress of assembling and circulation organizations and of



receipt control system and improve stock control management. The methodology will use a descriptive or exploratory research design, literature review, data collection methods such as surveys, interviews, observations, and document analysis, data analysis using appropriate statistical methods or qualitative analysis techniques, and interpretation of the results. The study's findings will evaluate the effectiveness of the automated system in reducing errors and improving stock control management, identify the factors that influence the success or failure of the automated system, and provide recommendations for improving the automated system. The study's significance lies in providing a comprehensive understanding of the benefits and challenges of automating the manual receipt control system and developing recommendations for organizations to improve their stock control management accuracy.

late retail locations. The viability of invoicing the executive's frameworks is straightforwardly quantifiable by how fruitful an organization is in giving elevated degree of client care, low stock speculation, greatest throughput and low expenses, Ellram (1996). The test of useful invoicing the executives is to help a vertical pattern in deals while keeping the venture at the most minimal level reliable with satisfactory client support. Control of receipt, which regularly addresses 45% to 90% of all costs for business, is expected to guarantee that the business has the right products available to stay away from stock-outs, to forestall shrinkage (waste/robbery), and to give appropriate bookkeeping, Khan (2003).

Articles put away and later utilized in this manner are referred to altogether as stock. In huge associations, it is normal for stock to be in tens, even many things esteemed at a huge number of naira. Considering this state, it has become normal to have stock things addressed in PC kept up with records. PC particularly microcomputer has turned into a



significant apparatus in a wide range of business from small time tasks up to huge worldwide business firms.

Each business administrator needs to understand what he bought, what he sold and what is staying in the stockroom. For this conspicuous explanation, huge, little and medium associations, organizations and government, overall need computerization of stock control. The speed at which the managerial and paperwork in retail locations increments on regular routine requires a comparing need for a fast and powerful gadget to satisfy up with the need. This venture desires to interface stock control and PC framework.

### **REVIEW OF RELEVANT LITERATURE**

Welsh, Wanberg, Brown, & Simmering, “E-business (also referred to as Web-based management systems) is defined as a new context for business where a large amount of information and services describe the ecommerce practices in different business organizations,” 2003. Sanam Kadge, Uzair Khan, Arsalan Thange, Shamail Mulla, and Harshika Gupta, stated that Sales and Invoice management system with analysis of customer behavior is a system that allows the organizations to manage a company’s sales and invoices using technology to organize, automate and synchronize sales and invoicing activities. This is a customer-oriented feature which includes tracking of customers’ lifecycle right from the point they show interest in a particular product to the time they make the purchase. The system also performs customer behavior analysis based on the same, 2004. Tony Brown said using a web browser, you are able to review and verify invoice details and create payment instructions online. db-eBills is a multi-user system with flexible access rights that can be adapted to your existing invoice approval and payment process. This solution also provides the capability for routing invoice information to the responsible departments or individuals for non-financial approval. Furthermore, you can print bills or integrate the billing information into other accounts payable and Enterprise Resource Planning (ERP) systems, 2004. Thomson Reuters Since electronic billing became a legal



industry trend in the 1990s, corporate law departments have been touting its advantages to their law firms. Typically, they claim that processing electronic billing is almost no additional work for law firms, that the invoice approval process is faster, and that the firms will be able to shorten bill-top payment times. But for many law firms, the reality has been very different. Firms are finding they are doing much more work and getting paid no faster—and sometimes not at all. Law firms have not gained the same process and informational advantages from electronic billing as their in-house counterparts, so the idea that law firms will recoup their extra effort and expense when their invoices are paid faster has not come to pass. Some law firms, however, have implemented a product called eBillingHub, which is specifically designed to simplify electronic billing for law firms and help them gain many of the expected process and informational advantages. By comparing—in terms of dollars—the experiences of four major law firms, we can properly quantify the real costs of electronic billing, 2016.

Each year companies send millions of invoices either by post or email (PDF) to the (central) government of the Netherlands. The manual handling of invoices is time consuming and costly for companies and central government alike. Electronic invoicing (e-billing) is a solution that offers benefits for both the sending and receiving parties.

Therefore, the central government in the Netherlands has, after consultation with the business community, made electronic invoicing compulsory for new contracts, starting 1 January 2017.

While suppliers with contracts earlier than 1 January 2017 are exempt from this requirement, they can voluntarily adopt e-billing in consultation with the relevant department. Suppliers who acquire their orders through the central government procurement system will continue to send their invoices in the customary manner. James Hammond, Rainmaker, which states that Law firms have the ability to streamline the electronic bill submission process by switching from their current manual, file copy process of uploading bills to clients to a centralized e-billing hub process. A centralized billing system can facilitate efficiency



and improve cash flow by fully automating an otherwise tedious process and it can eliminate billing backlogs and verify submission to hundreds of clients or other e-billing intermediaries.

The key for law firms is to develop systems designed to counteract costs. Firms can leverage technology and implement good processes to ease invoice upload, avoid costly and time-consuming invoice rejections and provide simplicity into the entire electronic billing operation. Firms have learned that with automated e-billing, they can actually reduce the number of staff members or distribute more meaningful tasks to those extra law firm staff members who were once spending large amounts of time just on billing issues. E-billing is a tool that simplifies and quickens the invoice upload process and provides law firms with a dashboard with ease to invoice status. It also provides template-driven approaches to preparation of e-bills, integrates with leading time and billing systems, performs an e-bill submission and accesses all potential submission errors. An e-billing system offers central visibility into the status of all e-bills, across all clients and there is no additional hardware for firms to purchase, 2008.

As per Arthur Gehring, Datacap, Inc. what's more, Optical Image Technology, Inc, each business knows all about the challenging system of covering bills for labor and products, not to notice the ocean of paper and the data the executives challenge it makes. The endorsement of solicitations and settling of charging inconsistencies can require many worker hours. Shortcomings may keep associations from exploiting receipt limits and may result in late installment expenses or even harm to an organization's standing. Receipt advanced catch and computerized word process tends to these difficulties. Together, they give a consistent progression of precise and opportune data, facilitating handling and saving valuable human resources for more significant activities.

## **METHODOLOGY**

In this chapter, we analyzed the choice of methodology used in this research work, the analysis of the existing system and design. It includes



specific methods which were used in order to achieve the aim of the research, particular requirements for implementation of the project and clear explanation of reasons why such method were used for design and implementation of the proposed system, also included is a brief description of the current system of business premises payment system. The methodology used is Unified Modeling Language (UML). UML is a standardized modeling language enabling developers to specify, visualize, construct and document artifacts of a software system. Thus, UML makes these artifacts scalable, secure and robust in execution. UML is an important aspect involved in object-oriented software development. It uses graphic notation to create visual models of software systems.

UML is designed to enable users to develop an expressive, ready to use visual modeling language. In addition, it supports high level development concepts such as frameworks, patterns and collaborations.

UML diagrams can be divided into two categories. The first type includes six diagram types representing structural information. The second includes the remaining seven representing general types of behavior. Structure diagrams are used in documenting the architecture of software systems and are involved in the system being modeled.

Different structure diagrams are:

1. Class Diagram: represents system class, attributes, and relationships among the classes.
2. Component Diagram: represents how components are split in a software system and dependencies among the components.
3. Deployment Diagram: describes the hardware used in system implementations.
4. Composite Structure Diagram: describes internal structure of classes.
5. Object Diagram: represents a complete or partial view of the structure of a modeled system.
6. Package Diagram: represents splitting of a system into logical groupings and dependency among the grouping.



Behavior diagrams represent functionality of software system and emphasize on what must happen in the system being modeled.

**Different behavior diagrams are:**

1. Activity Diagram: represents step by step workflow of business and operational components.
2. Use Case Diagram: describes functionality of a system in terms of actors, goals as use cases and dependencies among the use cases.
3. UML State Machine Diagram: represents states and state transition.
4. Communication Diagram: represents interaction between objects in terms of sequenced messages.
5. Timing Diagrams: focuses on timing constraints.
6. Interaction Overview Diagram: provides an overview and nodes representing communication diagrams.
7. Sequence Diagram: represents communication between objects in terms of a sequence of messages.

UML diagrams represent static and dynamic views of a system model. The static view includes class diagrams and composite structure diagrams, which emphasize static structure of systems using objects, attributes, operations and relations. The dynamic view represents collaboration among objects and changes to internal states of objects through sequence, activity and state machine diagrams. A wide variety of UML modeling tools are available to simplify the modeling process, including IBM Rational Rose, Rational Rhapsody, MagicDraw UML, StarUML, ArgoUML, Umbrello, BOUML, PowerDesigner and Dia.

**ANALYSIS OF EXISTING SYSTEM**

The existing record keeping system lacks some important functional units like instant invoicing system, storage of data in voice and easy retrieval etc. Successful automatic invoice generation system design, and development requires a collective and cohesive effort by the



researcher. This is why it is very crucial to study and understand the existing system properly, its problems and lapses, its inefficiencies, and inabilities.



Sample of invoice used during manual registration.

During the course of the analysis, the following problems were discovered:

- a. Cost intensive and time consuming.
- b. Too much paper work.
- c. Loss of invoice.
- d. Double issue of invoice.
- e. Difficulty during annual revenue calculation.

### **ANALYSIS OF PROPOSED SYSTEM**

An E-commerce website is used as a case study for this project, in this e-commerce site, users or customers are required to register and login before making any transaction whatsoever, upon any successful transaction, an invoice will automatically be generated with the details of both users or customers (seller and buyer), and also the product details.

The customers are expected to register with the following information: firstname, lastname, email, phone number etc. The whole process is required because of the need to keep every information or data and transactions hundred percent (100%) automatic.





The sample of the generated invoice is given in the figure below.



Sample of invoice automatically generated with customers and product details.

## DESIGN OF THE PROPOSED SYSTEM

The designing of the proposed system is based on the below specifications.

### DATABASE DESIGN

The database management system used in this research work is MONGODB. This is open-source non-relational database management system that stores data in a document or an object format.

The required documents in the database include the following:

1. customers
2. products
3. completedTransactions

Table 3.1: customers

Field	Data type	Size	Required	Unique
firstname	String	255	True	False
lastname	String	255	True	False
email	String	255	True	True
address	String	255	True	False



phone	String	11	True	True
password	String	255	True	False

Table 3.2: products

Field	Data type	Size	Required
name	String	255	True
ownerName	String	255	True
description	String	255	True
Quantity	Number	255	True
Price	Number	255	True
dateCreated	String		True
Address	String	255	True
imageURL	String	255	True

Table 3.3: completedTransactions

Field	Data type	Size	Required
sellerName	String	255	True
buyerName	String	255	True
fileURL	String	255	True
date	Number	255	True

## CONCLUSION

The most essential part of this project, automatic invoice generation system, is that it allows me to contribute what I have in mind, about record keeping in business parastatals.

This research gives the business owners confidence to buy more of a particular goods, since the record history shows that the goods is moving more in market demand.

## RECOMMENDATION

After my research analysis, we observed that automatic invoice generation system will be the best practice to put in use, especially in this era of computer technology where many people embrace method record that involves the use of computer system. This system will also



reduce embezzlement of money from the apprentice, since the record keeping is computerized and easy to trace back when things went wrong in the office.

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