Point Of Sales and Inventory Control System Implementation

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ABSTRACT

For many businesses, creating a captivating retail experience is the key to success, and finding the right technologies to enable that experience is crucial for sustaining a competitive advantage. And these businesses make use of manual method of stock record keeping and point of sales. Due to this, numerous problems have been encountered such as inaccuracy in issuing of receipt, poor record keeping and inability to monitor the inventory of the company. This study will be designed to evaluate a Point of Sale (POS) system and Inventory system for business. The framework for the implementation will includes; initial research and current process analysis, new system evaluation and process comparison, and a final recommendation for management. The study will explore the necessary capabilities of POS and inventory systems; creates a comparison matrix of potential product offerings based upon hardware components, software features, technical support, and price points. This system will be designed using MYSQL as the database, PHP for the programming aspect such as authentication and interaction with the database, HTML and other client-side language for the User-interface.

Keywords: Point of Sale (POS), Businesses, Security, e-Commerce, Trading and Technology

1. INTRODUCTION

An inventory control system contains a list of orders to be filled and then prompts workers to pick the necessary items, and provides them with packaging and shipping information. Inventory control may be used to automate sales order fulfillment process and also manage in and outward material of hardware [2]. Automation is the replacement of human workers by technology [5]. For optimal sales and inventory management process, robust functionality is needed for managing logistics facilities. Warehouse management functions for inventory control cover internal warehouse movements and storage and its support helps in the recording and tracking of materials on basis of both quantity and value. This application takes care of all supply orders reducing cost for warehousing, transportation while improving customer service. It significantly improves inventory turns, optimizes flow of goods. It also improves cash flow, visibility and decision making. It provides efficient execution of tasks using this fast and reliable computerized method.

This study seeks to answer how a retail business can benefit from implementing an electronic point of sale and inventory management system. Furthermore, it seek to discover how that system can inform the decision making procedures of management regarding business functions such as ordering, product positioning, inventory control, customer service, sales projections, demand forecasts, marketing efforts, and seasonality of products. Finally, the study explores how a new point of sale and inventory management system can benefit customers and improve the overall retail experience.

There are three main systems that can increase the profitability of a business when updating from manual checkout processes. The first is a Point of Sale (POS) system, the second is an Inventory Management (IM) system, and the third is a Customer Relationship Management (CRM) system. Updating POS and IM systems are explored within the scope of this Paper work. The initial POS system includes the technology used to complete and record sales transactions on the sales floor. Typically it involves barcoded items, scanning devices, a checkout interface or terminal, and additional features. This recorded information enters a database which is either stored on a company server (normally bought as a software package) or stored on a cloud-based server (Software as a Service [SaaS]).

A POS system is the foundation for the other two systems to function. Inventory information collected by point of sale equipment is summarized into useful data by the Inventory Management system. The Inventory Management system tracks inventory levels for every item on the sales floor according to its stock keeping unit. It is able to produce accurate and current inventory counts based on sold and damaged items which is accessible from either a company computer (software package) or through a POS terminal (Software as a Service). Most company basically operates manually and has several problems facing them and which reveals a number of problems. Which are: The recording of sales and cash received are done manually on a book that appears rough. Thus, the books are exposed to physical damage, information can be lost and dust particles are accumulated; the control system is time consuming, less accurate and less efficient, and the environment is not user friendly; and it often leads to human error.

The manual system is quite tedious and can be reduced or eliminated with the introduction of the proposed system. However, this system does not affect the core operations of a business, and should be viewed as an extra benefit as opposed to a fundamental need.

2. RELATED WORKS

According to Microsoft Encarta Dictionary, (2011). Inventory is the quantity of goods and materials on hand that a manufacturer uses to represent those items that are ready and available for sale. An inventory control system is a set of hardware and software based tools that automate the process of tracking inventory. The kinds of inventory tracked with an inventory control system can include almost any kind of quantifiable goods including food, clothing, books, equipment and other items that consumers, retailers, or wholesalers may purchase. Modern inventory control systems are exclusively based on using technology to track and control inventory [4]. Inventory control systems work in real time using technology to transmit information to a central computer system as inventory is monitored and as transactions occur to ensure an organized management system and generate detail-oriented records and reports that cover all aspects of the business [3].

2.1 Types of Inventory Control Systems

Properly managing inventory requires a system of some sort. It does not matter if the system consists of writing inventory levels on the back of an envelope or using the most sophisticated radio frequency identification system. As the old saying goes, "there are many ways to skin a cat", the different types of inventory control systems all have pros and cons. choosing the right one comes down to which system holds the most value for the company [6].

1.   Manual inventory management system
2.   Barcode technology
3.   Radio Frequency Identification (RFID)
4.   Warehouse Management System

Manual inventory management system: Many small business owners, especially if the business has very few products, keep track of inventory manually using a spreadsheet. Spreadsheets are set up to calculate when products need to be reordered. At the start of each week, the owner manually counts products and materials that are on hand and enters the values in the spreadsheet and also enters expected usage based on existing orders.

Barcode Technology: Barcodes consist of series of parallel vertical lines, or bars, used to assign a unique identification code to an item. The major use of barcode identification system is to track inventory automatically. A barcode combines several sequences to create a unique set of numbers or characters that identifies the item.

Radio Frequency Identification (RFID): This technology is relatively new and it works by having a tag that emits information that can be collected by a reader from a distance. RFID uses two types of technology to manage inventory movement; active and passive technology. Active RFID technology uses fixed tag readers assigned throughout a warehouse such that anytime an item with an RFID tag passes the reader, the movement of the item is recorded in the inventory management software. Active systems work best in environments that require real time inventory tracking or where inventory security problems exist. Passive RFID technology requires the use of handheld readers to monitor inventory movement. Because RFID technology has a reading range of up to 40 feet using passive technology and 300 feet using active technology, it greatly increases the accuracy of moving inventory around a warehouse.

Warehouse Management System: This is the management of storage of products and services rendered on the product within the four walls of a warehouse [7].

2.2 Brief Overview of Point of Sale
The point of sale (POS) or point of purchase (POP) is the time and place where a retail transaction is completed. At the point of sale, the merchant would calculate the amount owed by the customer and indicate the amount, and may prepare an invoice for the customer (which may be a cash register printout), and indicate the options for the customer to make payment. It is also the point at which a customer makes a payment to the merchant in exchange for goods or after provision of a service. After receiving payment, the merchant may issue a receipt for the transaction, which is usually printed, but is increasingly being dispensed with or sent electronically [8].

To calculate the amount owed by a customer, the merchant may use any of a variety of aids available, such as weighing scales, barcode scanners, and cash registers. To make a payment, payment terminals, touch screens, and a variety of other hardware and software options are available. The point of sale is often referred to as the point of service because it is not just a point of sale but also a point of return or customer order. Additionally, current POS terminal software may include additional features to cater for different functionality, such as inventory management, CRM, financials, or warehousing.

Businesses are increasingly adopting POS systems and one of the most obvious and compelling reasons is that a POS system does away with the need for price tags. Selling prices are linked to the product code of an item when adding stock, so the cashier merely needs to scan this code to process a sale. If there is a price change, this can also be easily done through the inventory window. Other advantages include ability to implement various types of discounts, a loyalty scheme for customers and more efficient stock control

2.3 Application of Inventory Control Systems in the Manufacturing Industry
Manufacturers mainly use inventory control systems to create work orders and bills of materials. This facilitates the manufacturing process by helping manufacturers efficiently assemble the tools and parts they need to perform certain tasks. For more complex manufacturing jobs, manufacturers can create multilevel work orders and bills of materials which have a timeline of processes that need to happen in the proper order to build a final product. Other work orders that can be created using inventory control systems include reverse work orders and automatic work orders [1].Its advantages include;

- ❖ **Cost Savings:** It helps companies cut expenses by minimizing the amount of unnecessary parts and products in storage and helps keep lost sales to a minimum by having enough stock on hand to meet demand.
- ❖ **Warehouse organization:** It helps distributors, wholesalers, retailers, manufacturers optimize the warehouses. If certain products are often sold together or are more popular than others, those products can be grouped together or placed near the delivery area to speed up the process of picking, packing and shipping to customers.
- ❖ **Time Savings:** It gives employees enough information access to receive products, make orders, transfer products and do other tasks without compromising company security by issuing administrator passwords to prevent unauthorized access.

The disadvantages of its application are mostly cost and complexity. Many large companies use inventory control systems but small businesses may not afford it and if an IT technician leaves, the system might be too complex for the users except another technician is employed.

2.4 Automated Inventory Control System Software

The automated inventory control system software is a computer based system for tracking product levels, orders, sales and deliveries. It can also be used in the manufacturing industry to create a work order, bill of materials and other production related documents. Companies use inventory management software to avoid product overstock and outages and also, as a tool for organizing inventory data that was generally stored in hardcopy form.

The software is made up of components working together to create a cohesive inventory control system which include;

i. **Order management:** Once products reach a certain low level, a company's inventory control system can be programmed to tell managers to reorder that product. This helps companies to avoid running out of products or tying up too much capital in inventory.
ii. **Service management:** Companies that are primarily service oriented rather than product oriented can use this software to track the cost of the materials they use to provide services. This way, they can attach prices to their services that reflect the total cost of performing them.
iii. Automated inventory control systems are efficient, effective and have helped to improve the manufacturing industry thereby providing more security to warehouses while improving customer service.

3. SYSTEM ANALYSIS

As we know, manual inventory control systems are quite tedious, time consuming and less efficient and accurate in comparison to the computerized system. The following are problems associated with the existing system (old system).

a. The system cannot inventory stocks by its self or without human help.
b. Compilation of inventory records consumes a lot of time and manpower.
c. Some records get lost over time while some are not easily found.
d. It involves lot of paperwork and data processing is very slow. The environment is not user friendly.
e. The system does not calculate and give financial reports at a glance and as such, the degree of decision making in urgent matters is not applicable.
f. The system is unable to detect faults within the system in case of rectifying fraud.
g. It takes a long time for mistakes to be rectified and sometimes throws the system into confusion.

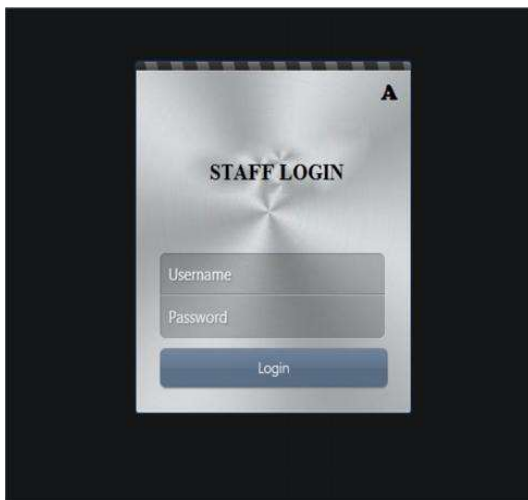**Flowcharts of the system**
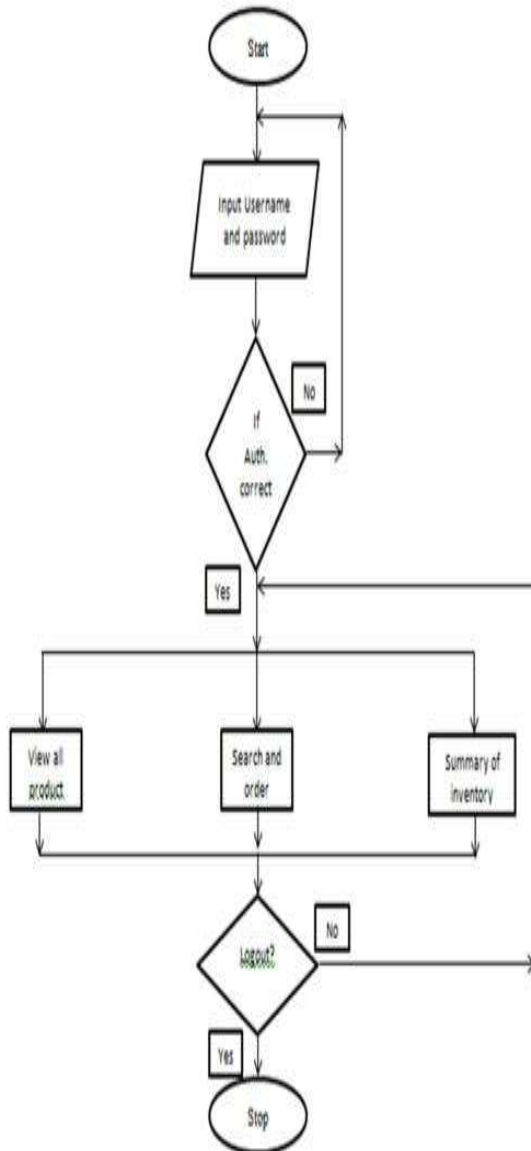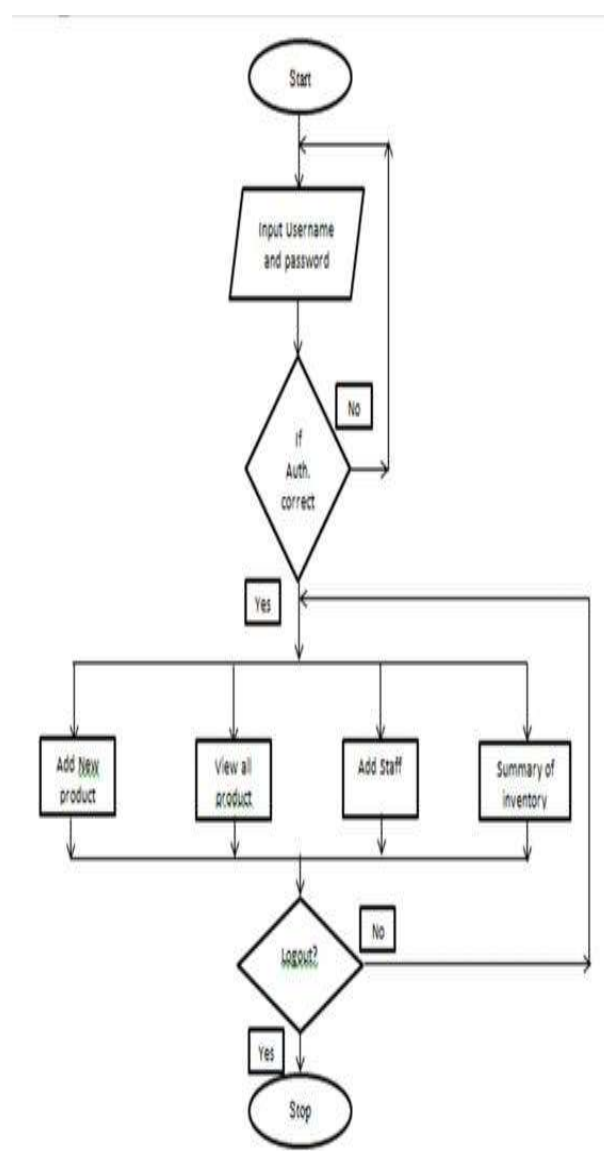
Staff Flowchart   Admin Flowchart

4. SYSTEM IMPLEMENTATION AND MAINTENANCE

The New System consists of different modules working together to achieve the goal of the system. The new system consists of two interfaces, the Administrative Interface and the Staff Interface.
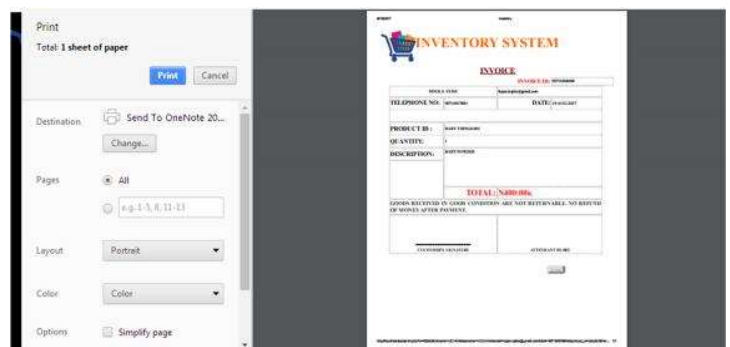
User Interface

Homepage

Main page

Sales/Order Page

Pos/Invoice Page

Admin Interface:

Main Admin Page

Summary of Inventory

5. CONCLUSIONS

Based on the findings of this work, the following conclusions have been researched. The implementation of an automated point of sales and inventory control system will positively increase working performance within the organization. It will eliminate the trial and error which occurs when implementing the manual method. It will also help the manager to make timely decision.

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