

ELECTRONIC PRODUCT DISTRIBUTION SYSTEM FOR ENHANCED ENTREPRENEURSHIP PRACTICE THROUGH TECHNICAL AND VOCATIONAL EDUCATION

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ABSTRACT

Entrepreneurship has assumed high degree of importance for promoting economic growth and progress in both developed and developing economies. It is a pathway to prosperity, transformation and overall economic growth and development. The effectiveness of entrepreneurship activities very much depends on the efficiency of the entire chain of product distribution systems available in any entrepreneurial environment. Product Distribution System (PDS) ensures that products are transferred from the manufacturer to the consumer through an established electronic system. Unfortunately, most organizations today still rely on manual system with attendant short comings, such as delays, physical damage to products, poor records management. The primary aim of this paper therefore, is how digitalization could be adopted to improve efficiency in products distribution operations such as reduction in inaccuracies arising from human errors, monitoring of supply of goods and services, reduction in maintenance cost and increase in profit. The study will aim to develop an automated inventory control system that could replace the current physical system of managing distribution information with a view to facilitate deliveries, provide higher level security as the system is Pass-Worded to prevent unauthorized access. The application will take care of all supply and orders, aimed at reducing cost for warehousing, transportation and improving customer services. This paper is aimed at computerizing of all product distribution system of manufacturing and wholesale enterprises.

Keywords: *Electronic, Entrepreneurship, Adaptation, Product, Distribution, System.*

INTRODUCTION

Capital formation and production lines have today been simplified and mystified by Information and Communication Technology. Computers

and the internet continue to transform and foster the economy and the society. Yusuf and Wanonyl (2011), postulate that ICT is becoming a powerful tool for mobilization of human and material resources. According to Nagy (2003), ICTs particularly the internet is a networking infrastructure that can connect, empower and coordinate as well as deliver all kinds of services; e-governance, e-accounting and auditing, e-finance, e-teaching and learning, e-health services and care, etc.

Nexus between Entrepreneurship and Technical and Vocational Education

Garba, et al (2019) affirmed that education is the foundation of modern society. It is the fundamental indication of national development. The education of a country is usually associated with its political and socio-economic stability. The purpose of education is not only to perpetuate culture, but also to improve the society in which it exists (Kabir, 2016). Entrepreneurship education is a subset of vocational and technical education. Entrepreneurship in French is "is generally conceptualized as the process of bringing human, materials and other resources together in an innovative way as to make their value greater and better than before. It is also seen as the process of bringing about change through innovation and profitably. According to Garba (2006), as cited in Ganiyu (2015), psychologists see entrepreneurship as the drive for achievement in uncommon areas and things that others avoid, and the need to take risks and conquer in order to escape domination from other persons. Nwoye (2007) defined Entrepreneurship education as training and other support services incorporated within a structured programme designed to assist individual and groups interested in becoming entrepreneurs and starting small businesses. Ali and AbdulGaniyu (2021) explained that entrepreneurship in French is 'Entreprendre' and mean 'to do something', and 'undertaking', or 'business venture'. According to Long (1983), the first formal theoretical use of entrepreneurship as a concept appeared in the work of Richard Cantillon around 1730. According to Ali and AbdulGaniyu (2021), Cantillon defined Entrepreneurship as "self-employment of any and every sort".

Entrepreneurship development has been described as the machinery through which nations assume their importance and relevance in the global economy. No wonder the Nigerian government in recent years recognized this fact in its transformation agenda and pursuance of the Millennium Development Goals (MDGs) and Vision 20-20-20, Odion (2009).

The entrepreneurship world is characterized by innovation and inventions. Entrepreneurship is designed to educate people on skills acquisition and knowledge needed before taking a decision on embarking on a business venture. It helps to enhance the creation of job opportunities and achieve economic growth. According to Utaka (2018) entrepreneurship education is and globally acknowledged as one of the greatest assessments for achieving economic development as well as employment creation. Vocational and Technical Education encourages development of knowledge and information needed by the citizenry to contribute positively to the development of his immediate and remote environments. It is designed to develop skills, attitudes, abilities, work habits and dignity of labour towards the development of good citizens by developing their cognitive, affective and psychomotor domains. Technical and Vocational development involves training in the areas of technical services, agricultural entrepreneurial education, marketing education, accounting education, home education, fine and applied arts education etc. Technical and Vocational Education has been an integral part of National development strategies in many societies due to its impact on national development.

Since the integration of Vocational and Technical Education in the National Policy of Education (NPE, 1977) it has focused on the provision of practical skills and knowledge for competent and self-reliant and workforce for the Nigerian economy. According to Anyanyo and Ajara (2016) Vocational and Technical Education is a kind of education that involves the transfer of knowledge, attitude or ideas and skills which consist of theory and practical so as to impart appropriate skills and knowledge. Sani (2022), postulate that Technical and Vocational Education is a term used comprehensively to refer to the educational process, in addition to general education, the study of technology and related sciences, skills and knowledge relating to occupations in various sectors of the economy and social life. It is a known fact that Technical and Vocational education is a multidimensional concept that can be organized in different ways. T.H. Huxley as in Moodie (2002) and Sani in (2022), said "it passes the wit of man, so far as I know, to give a legal definition of technical education". To further explain the concept, it is important to discuss the various forms through which skills acquisition takes place to society. A large part is through on-the-job training that may not result in recognized qualifications (Barbar, 2003). In countries such as the United States, where the extended, post-compulsory education is totally dominated by high school/junior colleges which provide the students with a much more general education,

job experience in combination with studies has a strong tradition (Goldin and Katz, 2008; Stone, 2002). Under these circumstances, on-the-job training with limited instruction but in combination with frequent job changes and considerable geographical and occupational mobility constitutes an important but largely unrecorded part of vocational education and training, Stern et al, (2004).

The importance of entrepreneurship and Vocational and Technical development of any nation cannot be over emphasized, Rukaiya Rufai (2010) in her capacity as Minister of Education then said, that “a critical success factor in the actualization of Nigeria vision 2020 was the mass production of people with requisite vocational and technical skills in competencies” Utim (2001) in supporting the use of entrepreneurial education and vocational training as a tool for social and economic development of the people, which contributes to economic growth by eradicating poverty through career training, job specification and wealth creation. The underdeveloped and developing countries’ education system is thus expected to devise appropriate strategies for equipping individuals with skills, knowledge, motivation, positive attitudes, innovation for self-reliance to cope with the prevalent problems of poverty, under employment, unemployment, and reoccurring problems of individual, community, national, regional, continental and global insecurity.

Concept of Distribution

Distribution as often said is a system by which products are transferred from the production area to the final consumer through different channels like wholesale, retailers, etc. Distribution started when the idea of producing goods came up. If goods are produced without being sold, it becomes a waste of time, money and resources. In distribution system, there are always a list of ordered goods to be entered and workers to promptly pick the required items, and provide them with branding, packaging and shopping information. For optional sales and management process, robust functionality is needed for managing logistics and infrastructure. Warehouse management provide effective cover for storage, internal movement support in recording and tracking of material on the basis of quantity and value.

Distribution Record Management System

According to Harry (2005), distribution System is basically a detailed list of all the items in stock. Distribution consists of raw materials, work-in-process

and finished goods. In today's highly competitive market, businesses need to maintain an appropriate level of stock to meet the customer demands at any time. Inventory management is part of the supply chain management. Mentzer et. Al, (2001), said that Supply Chain Management (SCM) can be defined as the "systematic and strategic coordination of the traditional business operations". The main aim of Supply Chain Management is to improve the long term performance of each firm as well as the whole supply chain of inventory management that involves "system and processes of maintaining the appropriate level of stock in a warehouse" Barcodes (2010). He equally stated that these activities identify necessary inventory requirements, and create desired replenishment processes, track and monitor the use of items/stock, reconciling inventory balances as well as reporting inventory status. Barcodes (2010) concluded that Supply Chain Management is basically the process of efficiently controlling the amount of stock in order to avoid excess inventory. Reliable inventory management will therefore minimize the cost associated with record. Sande (2003), pointed out that distribution management involves a wide scope of processes ranging from inventory force casting, replacement as well as quality management.

Distribution Control System

Business Link (2006) explained that an organization has an efficient inventory control only when it has the right amount of stock in the "right place and at the right time". Inefficient distribution control system can lead to slower sales and disappointment of customers. Distribution control system basically deals with reducing the total cost of inventory. Distribution system control is very relevant for businesses, especially businesses dealing with a large variety of products, Zenze (2004). Arsham (2006) sited that Distribution Management Systems or control can be used to streamline warehouse processes in order to track orders and shipment. Other important applicants of Distribution Management systems are in manufacturing, shipping businesses. There main factor in inventory control decision making process is Electronic Supplier product catalogs which allows the use of electronic devices such as CD/DVDs to record inventory data. This system ensures accurate inventory records through the use of electronic and wireless technologies that provide error free data. It keeps an efficient and up-to-date record of items, and remove all sold items from the system. It is possible to review stock reports periodically to check the product status, identify low demand products, check against physical stock quantities and ensure level of accuracy.

Methods of Distribution Control and Accurate Tracking Goods' Movement

Hedric (2004) stated that, there are several methods of distribution control which include Visual Control, Tickler Control, Click Sheet Control, Point-of-Sale Terminals, Off-line Point-of-Sale Terminals. Oracle (2009) stated that one of the common issues with management systems is accurately tracking moving goods. Large business with hundreds and thousands of items, managing distribution is a difficult task. The challenge now has shifted from managing on-site physical distribution information anywhere in the supply chain complicating the issue, is that most businesses have very complex supply chains where inventory details are recorded across multiple channels and consist of other distinct system.

Management Software

According to Lysons (2001), distribution management software is a computer based system for tracking record levels, orders, sales and deliveries. It can be used in the manufacturing industry to create a work order, bill or materials and other production related documents. Companies use inventory management software to avoid product over stock and outages. It is a tool for organizing inventory data prior to storage in hard-copy or in spreadsheets. It is often association with and similar to distribution software with the following:

Data File Design

Files used in this project are made up of different data types. Since there are different types of data items, we have to define each item separately, indicating the types of data we would like to store as well as the field for it. The data type use for this study are both 'alphanumeric' and 'numeric' which consist of 'Byte', 'Integer', 'Long Integer', 'Float' and 'Double', Aptech Worldwide (2000). Some of the files are designed and linked with data base. There are several advantages of storing data in database and Microsoft Access. All data is stored at one location when a database is used, all tables are stored in a single file thus, and we need not deal with separate buttons using the single database file. Though all data is stored in a single file distinctions exist because tables and is each table is stored as a separate entity in the files. It is possible to define relationship between tables and these are also stored in the database. It is possible to define validation at fields as well as table level and this ensures accuracy of data being stored. Query report, sorting etc are also used.

Input Specifications

Inputs are raw materials that are fed into the computer for processing. The systems accept input through the mouse and the keyboard. The registering of the data of records is done via the mouse and keyboard. The mouse plays an important role in closing windows and validating password. The keyboard is used to enter text and values into the boxes. Aptech Worldwide(2000).

Output Specifications

An output is the information or result obtained from processing data which has been fed into the computer, e.g. screen, printer, etc. the major output documents here will be the accounts and financial reports and also customers, Aptech Worldwide (2000).

Hardware Requirement

Kitso (2001), recommended the following as minimum hardware specifications for effective operation of the new Technology Automated Product Distribution system.

- a) The computer system should be 100% IBM compatible since they are considered done system.
- b) The computer system processor to be used by Intel Pentium technology.
- c) The minimum Random Access Memory (RAM) should be 128MB.
- d) The system should have a hard disk of at least 20GB, .5 floppy drive and CD-ROM drive.
- e) The system should be equipped with 14inch VGA or SVGA monitor (colored)
- f) The mouse, keyboard and printer are also required.

The listed configurations are the minimum requirements, but if the configurations are of higher versions, the processing derived will definitely be better and the programme will run faster.

Soft Ware Requirement

The following specifications are needed, as postulated by Kitso (2001)

- a) Operating System Certified Distribution of Windows.
- b) Front and Visual Basic 6.0 Professional Edition
- c) Black end-Microsoft Access 2007.

Some additional features of VB like Data grind. Data Report.

Input/Output

- i. System shall have a form to accept the customer details
- ii. System shall have a form to customer order
- iii. System shall display transaction details
- iv. System should provide facility for change in address/name
- v. System should maintain details about placing order/dispatch or order status.

Error Handling

- i. System should report any errors on duplicate primary keys.
- ii. System should report out of range values on numeric fields.
- iii. System should report data type mismatches on fields on the form.
- iv. System should report invalid dates.
- v. Systems should report violation of rights authorization.
- vi. System should report invalid login errors.

Implementation of Electronic Product Distribution System

The implementation will require the use of a spread sheet. Besides being used making calculations, spreadsheets can also be used for data work, Kitso (2001). The new system is designed to be put into efficient use, here we will look into the various technical aspects that influenced the successful implementation of this system and determine the effective operation of the system. System implementation follows the approval of the system proposal and its objectives, thus it is to arrive at a satisfactory, implemented, completed, and function evaluated automated system. It also embodied the preparation of resources including equipment and personnel. The supplier login password and identification is entered. He checks, tracts order, dispatch order on customer and sends invoice after which he updates records. The customer studies and makes a list of requirement, places the order, makes payment and receives his invoice.

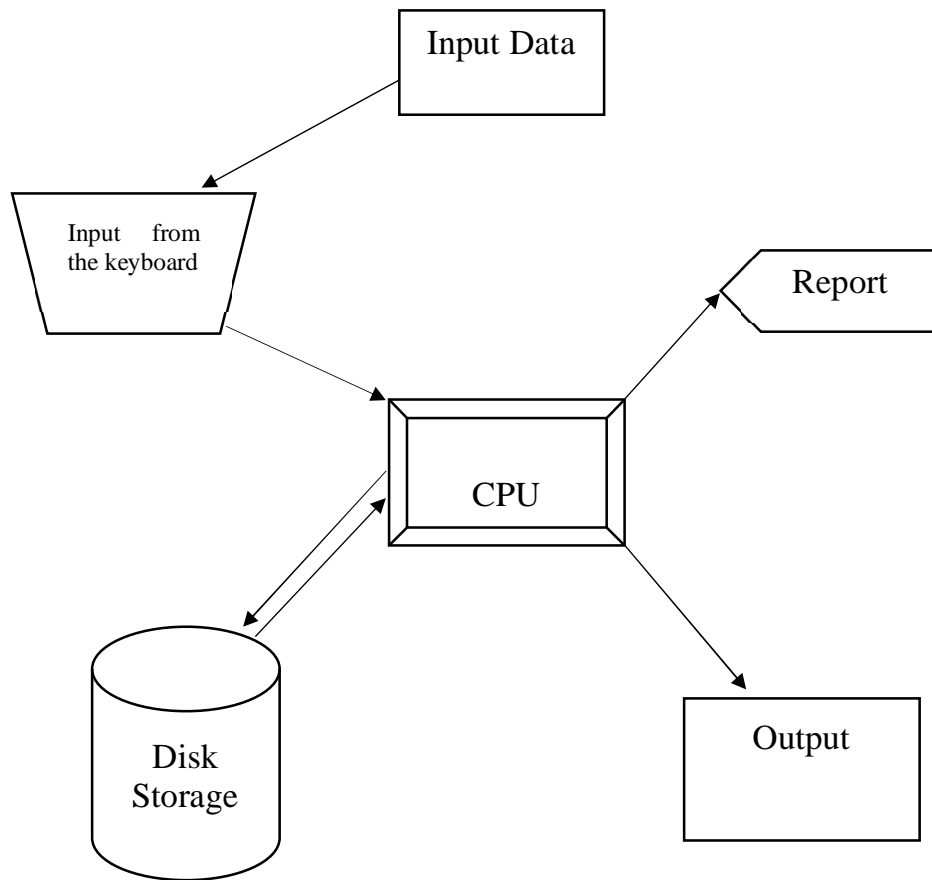
Advantages of using Electronic Distribution Management System

Rabin (2007) said that with manufacturing houses trying hard to recover from the aftermath of economic recession, a fully automated inventory system can surely come handy. Hence manufacturers looking to cut down on their production and labor costs must adopt more technology for better work integration and systematic operation. Adopting technology inventory system for manufacturing operations can surely boost productivity in addition to other advantages.

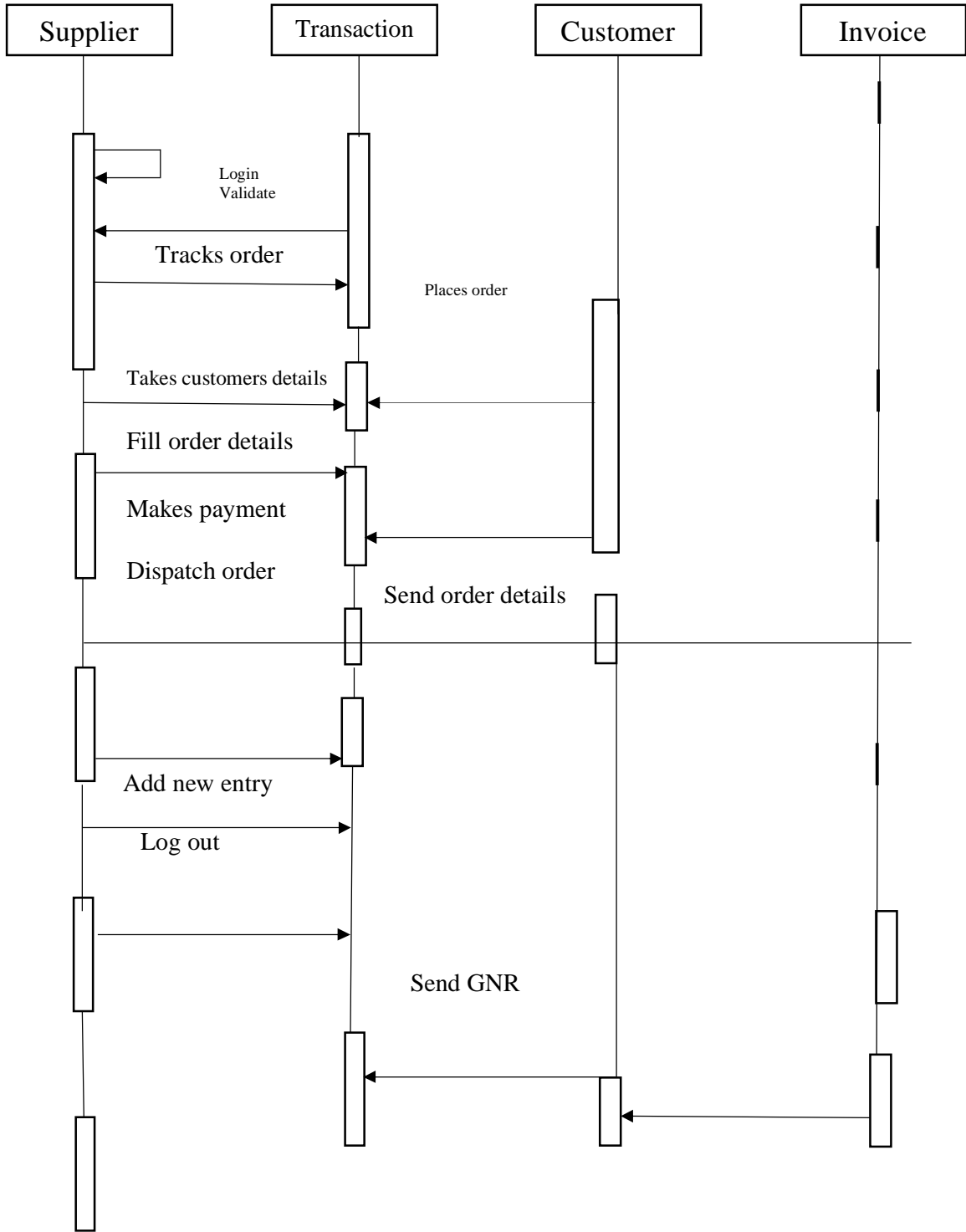
Future of Electronic Distribution Management Systems

Kenneth (2007) stated that a large amount of businesses investing in integrated order which were basically designed to reduce the amount of inventories as well as manage stock level (replenish stock). There were a wide range of system integration options based on the business needs and financial ability. However, these “stand-alone” systems do not integrate well with each other. David (2004) said that the future success of many businesses depends on the coordination and co-operation of efforts, thereby making supply chain management important.

System Flow Chart



Sequence Diagram for Supplier



System Testing

Testing presents an interesting anomaly for the software engineer where he attempts to build Software from an abstract concept to a tangible product. During testing, the engineer creates series of test cases to discard preconceived.

Summary

The main objective of the study has been to

- i. determine the electronic control system for manufacturing and related subsidiary organizations
- ii. provide total asset visibility to ensure the reduction in record stocking levels giving full record history
- iii. reduce lead time, shelf space and errors due to damage
- iv. determine staff fatigue and overall cost of operations.

In order to provide a theoretical framework for examining the above issues, related literatures were reviewed. The literature reviewed covered the concept of development of record management system, impact of distribution and record management system, best practice in record management system, benefits of using distribution management system, successful record management, future of distribution management system, analyzing distribution record management system, challenges of record, accurately tracking a moving goods, and finally, the advantages of using electronic distribution control management system.

RECOMMENDATION

Having fully discussed and analyzed the benefits of electronic product distribution system to especially, manufacturing and bulk product distribution firms and their subsidiaries, this paper wish to recommend as follows:

1. Manufacturing firms in Adamawa and beyond, such as the Adama Bottling Company Limited Yola; Sebore Farms Nigeria Limited, Mayo Belwa; Dangote Sugar Refinery Numan; the Petroleum Equalization Fund Management Board Yola; NNPC Distribution (Mega Stations) and IPMAN dispensing outlets, etc. should set up a powerful computer based system.
2. The above mentioned organizations and others not highlighted here should have computer analysts, engineers and operators to ensure continuity and uninterrupted operations of the system.
3. Maintenance and repair of the computers should be regularly done by professionals

4. Prior must be place on the provision of adequate security against hackers for example, etc.

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