# CHAPTER ONE

## 1.0 Introduction

Hypermarket is a very big retail and self-service store (Belwal & Belwal, 2017; Grimmeau, 2013) shouldering the highlights of different shops, including departmental shops and grocery store under one rooftop (Polas et al., 2019). It is regard as a cutting edge staple retailing position that gives everything under one roof. Hypermarket is one the main channel for item distribution (Kaliappan et al., 2009) that sells assortment of items (Esbjerg & Bech-Larsen, 2009) in light of self- service idea (Haelsig et al., 2007), malls attract their shoppers or customer’s through price advantage, look and feel or atmosphere, and images (Chotipanich & Issarasak, 2017). It is additionally considered as an ordinary retailing industry that sells in enormous amount and assortment inside an outlet.

With the accelerated development of modern science and technology, the global Internet continues to grow at an exponential rate, bringing with it new ways of communicating, recording, transacting, learning, socializing and transforming just about every aspect of daily life (Nyirenda-jere & Biru, 2015). The Internet and its architecture have grown and continue growing in an evolutionary fashion from modest beginnings, rather than from a Grand Plan (Cohen-Almagor, 2011). But the benefits of the internet are not yet evenly distributed, despite a slow responds to development in Africa, internet use is now rapidly accelerating, and its transformative effects are increasingly accessible. Technology has penetrated into all fields and becomes the necessary tools for various industries, especially internet technology promotion and the establishment of the information highway (Nyirenda-jere & Biru, 2015). It makes the IT industry increasingly shows its unique advantages in the market competition. In this digital age, there are huge data waiting for processing and transmission, which further makes the development and use of database urgent, some small and medium-sized supermarkets under the hypermarket rooftop are falling behind during the informatization. There is increasing interest in understanding the effects of computer mediated shopping environments (Degeratu et al., 2002). To adapt to market competition, it requires efficient handling and management methods, so it is indispensable that speeding up the process of the computerization of hypermarkets.

Hypermarkets have opened all over the world, but they have experienced substantive restructuring in the recent past, and they have generated the necessity to develop new models of managing and strategizing the need to take into account aspects related to the improvement of brand value (Rodríguez et al., 2017). In Europe, hypermarkets have appeared to be a commercial format for success and from their first establishment to the present day, the number of hypermarkets has been growing to reach a figure that was inconceivable for this type of establishment until a few years ago.

Technologically, computer operation and management are increasingly simplified and the knowledge is increasingly popularize. With the fast-changing market economy and intense competition, it must become an inevitable trend that the hypermarket industry uses computers to maintain and manage inventories, sales, and many other linked store actives. As a big market, their main business is selling products. But at present a lot of questions exist in the system, all sales orders are artificially filled, time-consuming and prone to more error; taking inventory using artificial bookkeeping and will leads to been unable to keep track of the most accurate inventory situation. For sales data, it often spends a lot of time and energy to calculate the sales performance of each business membership and each good sales and this will result to customers spending more time in front of the attendant. To solve the above problems and improve the economic benefit, we will prepare a computerized management system for store..

## 1.1 Background of the study

A hypermarket also known as a "supercentre" or "superstore" is a big-box store combining a supermarket, departmental shops and grocery food item shops under one rooftop (Polas et al., 2019). The result is an expansive retail facility carrying a wide range of products under one roof, including full grocery lines and general merchandise, Aziz (2016) said, hypermarkets outfitted the indistinguishable product as grocery stores particularly. In Malaysia, there are various hypermarkets doing their capacities appropriately (Yin & Mansori, 2016). In theory, hypermarkets allow customers to satisfy all their routine shopping needs in one trip. The term hypermarket (French: hypermarché) was coined in 1968 by French trade expert Jacques Pictet (Grimmeau, 2013).

Belwal & Belwal (2017) define hypermarket as a store of about 10,000 square meters containing about $100 million of sales including 35,000 to 50,000 stock-keeping units (SKUs). Food-related items account for 60 to 70 percent of sales, with non-food items for the rest. In differentiating hypermarkets, supermarkets and shopping malls, Hassan et al. (2014) claim that hypermarkets could be considered as a modern retailing stores that provides everything under one roof, but basically focus on fast moving consumer products. Although different store formats compete for heterogeneous and demanding markets, hypermarket particularly constitute a standardized retail format whose development has been led by the innovation and increase in development around distribution chains over the past few decades (Su & Chun-Der, 2012).

Hypermarkets, like other big-box stores, typically have business models focusing on high-volume, low-margin sales and selling blend of retail establishment stocks and staple goods (Arnold & Narang, 2000; Hassan et al., 2014) in a wide combination within a store more than 2,500 square meters (27,777.7 square feet) to more than 8,000 square meters (86,000 square feet) (Hassan et al., 2013). This likewise incorporates parking area (Belwal & Belwal, 2017) and diverse services (Fornari et al., 2020). Hypermarket is the superstores of products or offerings under one rooftop which blends general stores, basic food item shops and departmental stores in which people energetically keep imperative products or services regarding assortment of item classifications, expense limits or special inclusion, stopping offices and networking of marketing method (Hassan et al., 2013) . Because of their large footprints, many hypermarkets choose suburban or out-of-town locations that are easily accessible by automobile.

This project is based on the sales transaction, inventory management, centralized branch monitoring and billing of items in a hypermarket. The first activity is based on adding branches, attribution of branches to individual store managers, and adding the items to the system along with the present price of the items in the supermarket and the name of the items. This authority is given only to admin (Store manager). Any modifications to be done in the item name and the rate can be done only by admin, he may also delete any item. As the customer buys the products and comes to the billing counter, the user is supposed to enter the barcode or name of the item purchased by the customer and the quantity of the item they had purchased. This is not a huge task compare to manual recording.

The sales and inventory system is a cloud-based business solution used to simultaneously track sales activity and inventory and it is a competitive weapon which when strategically employed may lower inventory carrying costs (Mukoya & John, 2019) and improve market share and customer service levels and essentially improve performance of firms in the retail industry (Achuora & Robert, 2020). Manufacturers and trade resellers can both enjoy a thorough solution, where single transaction entry records necessary details on the customer, products purchased, price and date while also updating inventory levels.

Using computerized sales and inventory systems allows for much greater accuracy in stocking and product management. Good inventory control greatly increases profitability by minimizing costs related to storage handling of materials (Chituru et al., 2016). This encourage ease of interaction between employees and shoppers as transactions are processed and items move from the business to the consumer. Computerized sales help provide better insight into which products are most popular. It also allows for enhanced marketing, stocking and oversight of critical sales objectives. Computerized sales and inventory systems save time for businesses by speeding up transactions while raising accuracy (Sison et al., 2019). This allows for confidence in accounting and accountability among employees as it is easy to verify how much cash payment or bank transfer made and what time the transactions took place. They also allow for consistent experiences in terms of customer service (Meuter et al., 2003). People know there is always a uniform interaction at the register that requires tendering payment, taking a receipt and transition of ownership of products and services. This generates confidence in a business and ensures growing consumer relationships. Computerized systems are the most common method of inventory control and sales processing in retail markets.

The only thing the central manager would have to do each day is to print out the report highlighting the inventory to be restocked. The additional benefit of using a computerized inventory system is the accuracy (Schmidt et al., 1983) it ensures. When an inventory list is maintained by hand, the margin of error widens with each update (Chuang & Oliva, 2015). If one mathematical calculation is wrong or one typo is made, disaster may occur. And lastly is the consistency, small business operates most efficiently when its processes are executed consistently. By using a computerized Sales and inventory system, a business owner can ensure that all orders, reports and other documents relating to sales and inventory are uniforms in their presentation, regardless of who has created them, this will allow ease of reading. Also, uniformity creates a professional appearance, which can go a long way to impress associates, such as potential investors.

## 1.2 Research Motivation and Goals

The greatest challenge of today’s information system design is to provide users with the required functionality needed for the organization which, in many cases, happens not to be possible or it requires huge resources including money, time and highly skilled personnel. One of the aspects that the grocery retailer needs to take into considerations while be able to serve its customers efficiently is by looking at the effectiveness of their store operations. Information systems of many hypermarket or even supermarket suffer from some of the following challenges:

1. Ineffective management of the large amounts and different types of data.
2. Inability to cater for different user categories with various access privileges and restrictions
3. Lack of related components that need to be integrated together such as central sales and inventory management.
4. Lack of robust, portable and extensible components that support efficient data management.

The objective of the research is to develop a robust information, sale and inventory system with a single integrated data store that overcomes these limitations and more.

## 1.3 Statement of the Problem

Building a standard hypermarket management system with which all branched are centrally managed, allowing all sales transaction, inventory management and credit management looking at the problems of the existing system which includes:

### 1.3.1 Time Consumption

Manual systems are time-consuming not only to the individual store but a rather a more sophisticated problem at the general store manager end, which he has to wait for individual branches to send or bring their daily or monthly sales report to him or her, as the business owner must keep track of market sales daily while updating the system manually and time for each sale person to forward their sales report and manual comparing and adding. Since hypermarkets are having large numbers of people visiting them on daily basis, purchasing and shopping at big malls is becoming a daily activity in cities. We will be experiencing crowd at the malls on holidays and weekends. The rush is even more when there are special offers and discount (Patil et al., 2015).

### 1.3.2 Handling a Whole Business Units

Handling a whole business is a very difficult job to do, especially if the general manager alone with nobody helping him out. So it is possible that the owner will get confused, especially if different store managers are trying to submit a daily sales report at the same time. The owner will get confused because he will try to attend to the needs of the individual while accepting the delivered products. Their ways of managing the sales and inventory are that they manually save records, accounts and their transaction, which results in un-liquidated expenses.

### 1.3.3 Poor Communication

The present system requires manager and employees or attendant to write records each time an item is removed from the store. If one attendant or stock manager forgets to the manager that the last washing machine has been removed from the store, or he was told but there has been misinterpretation (Evans & Kitchin, 2018). Compared with an automated system, an automated system does not require any verbal communication in the workplace.

### 1.3.4 Daily Purchases

Keeping track of daily purchases is one of the most difficult aspect to control in manual systems. Manual system requires the employees to write down each items sold during a single workday. This can be a difficult task, as one employee may lose the list of items sold or another may forget to write down a sale since the receipt is written manually. A manual system does not update the inventory record at the end of the day and this will lower the inventory carrying cost (Achuora & Robert, 2020) and increase the inventory accuracy.

### 1.3.5 Physical Counts

A manual system does not provide any number, as all numbers of stocks are gained through physical counting. One of the difficulties of running a manual system is that physical counting must be performed frequently to control the items in the store. This is time-consuming and can cost the business extra money, if employees must come in to help outside of business hours.

### 1.3.6 Transparency Records

Records don’t coincide with the sales and the cash on hand. The tally or the recorded amounts have their differences especially in the recorded amounts, cash in bank and the cash at hand.

## 1.4 Purpose of the Study

Information, communication technology (ICT), has been the driving force behind the accelerating business growth in the 21st century (Yu, 2010), call it the life blood of an organization (Achuora & Robert, 2020). The proponents now endorse our proposal which can help to implement a good and accurate system to the company. The proponents also gave their best to satisfy the current needs of the business by making a sales and inventory system that will help them in their business. The main purpose of this research work is to design and develop a sales management system for hypermarkets in Nigeria. The specific objectives of the work were to: design an easy to learn and use sales and inventory management system suitable for hypermarkets; build a prototype which can be used as a model for future projects; reduce cost of employing ICT in hypermarkets; expose hypermarkets to the usefulness of ICT to their business processes; make ICT more adaptable and appealing to entrepreneurs of hypermarkets within the region; help hypermarkets introduce more formalized sales transaction procedures into their businesses; and help hypermarkets maximize profits through a more effective sales and stock tracking system. Aiming to design a Computerized and Automated Hypermarket Management System to determine the stock level of all stores under hypermarket store, monitoring when and where to order for goods before they finish from the store, keep status updates of transactions, thereby helping progress level, stock taking and managerial decisions. By using this system paper work can be reduced and the user can spend extra time for monitoring (Dipina et al., 2016).

**Objective**

* To explore the challenges being faced by the manual system.
* To design, develop and implement a module that will handle the security for the system.
* To design, develop and implement a file maintenance module that will handle the files, records and important data of the business.
* To design, develop and implement a sales module that will handle the sales transaction of their company.
* To design, develop and implement a generated module that will handle the sales and inventory reports.
* To design, develop and implement a point of sale.

## 1.5 Significance of the Study

A manual system is definitely not any more appropriate for multiple-starred business (Castillo et al., 2014), retail sector has been mired with several challenges with a number of them enduring worrisome financial woes, accompanied by empty shelves, closure of branches both locally and regionally and complaints by unpaid suppliers (Mukoya & John, 2019). The significance of this study is that it will provide user-friendly UI and easy-accessed systems thus; records will be more reliable and faster, they do not have to hire another employer to do the job. It gives more accurate and secure records of sales and a list of products available. Chituru et al. (2016) said “efficient inventory management system is the central to enhancing store patronage”.

## 1.6 Scope of the Study

This research work covers stock control, management and corrects anomalies in hypermarket business. It analyses the opening of new stocks, stock updates and the ability to view existing ones especially allowing general market overview by the overseer of the business. It provides a quick way of operation by capturing the manual process and automating them. This project is helpful to computerize the transaction, sales activity, record keeping which is a very huge task and maintaining the stock

## 1.7 Limitation of the Study

The major obstacles experienced during the interval of making the research is the lack of some resources needed and lack of proper information about the operations of an hypermarket, and the company stated that the collection of company vital information’s was said to against the company’s policy especially information related to finance of the company, because they feared that passing across some information would either destroy the company’s reputation. Also financial constraints, program failure during the design stage. But I was able to advance more in making sure the project produced quality information needed in finalizing.

## 1.8 Operational Definition of Terms

* **Account Manager:** Account manager’s duty includes maintaining all the sale and purchase records. He has to enter each and every transaction in his register or sheet to maintain the accounts. Account manager enters all the credit and debit related details in the accounts in the retail store and keeps track of cash flow of the store.
* **Area Manager:** Area manager is responsible for handling the retail in a particular area. The area manager maintains the records for all retail stores available in the specific area and presents those in the head office or corporate office.
* **Automation**: This is the use of technology or computers to control and process data reducing the need for human intervention and it also an application of machines to tasks once performed by human beings or, increasingly, to tasks that would otherwise be impossible.**Database**: A database is an organized collection of data, generally stored and accessed electronically from a computer system. Also a database is a collection of information that is organized so that it can be easily accessed, managed and updated. Computer databases typically contain aggregations of data records or files, containing information about sales transactions or interactions with specific customers.
* **Computerization:** This is the conversion of a manually operated system to a controlled, organized and automated system.**Data Bank:** A data bank is a well-organized and maintained collection of data for easy consultation and use. This data repository is made accessible on local and remote servers, and can contain information about a single, dedicated subject or multiple subjects in a well-organized manner.
* **Head Store Manager:** Head store manager is the main co-coordinator between the area manager and other employees. If employees are finding any difficulty in selling the items, he discusses the matter with area manager and comes up with the effective solution.
* **Branch office:** A branch office which will be mostly simply refers to branch in this research, is a location, other than the main office, where a business is conducted. Most branch offices consist of smaller divisions of different aspects of the company such as human resources, marketing, and accounting. A branch office will typically have a branch manager who will report directly to, and answer to, a management member at the main office
* **Inventory Control System**: inventory management is a daily method for ordering, processing, receiving and maintaining stock (Achuora & Robert, 2020; Mukoya & John, 2019). An inventory control system is a system which encompasses all aspects of managing a company's inventories; purchasing, shipping, receiving, tracking, warehousing and storage, turnover, and reordering. Computerized inventory control systems make it possible to integrate the various functional subsystems that are a part of the inventory management into a single cohesive system.
* **Logging:** Is the act of keeping a [log](https://en.wiktionary.org/wiki/log#Etymology_2). In the simplest case, messages are written to a single log file. All logs are automatic logged in the software.
* **Password**: A password or passcode, is a memorized secret, typically a string of characters, used to confirm the identity of a user. A password is a set of secret characters or words used to authenticate access to a digital system. It is made up of numbers, letters, special characters or a combination of any of the above categories.
* **Product:** A product is goods or a service that is sold to customers or other businesses. Customers buy a product to meet a need. This means the firm must concentrate on making products that best meet customer requirements.
* **Purchase request:** Itdetails what items and services are required, the quantity, supplier, and associated costs. Once approved it becomes a purchase order.
* **Regional Managers:** These employees head various regions, according to the extent of the hypermarket’s reach.
* **Sales record:** The information you have on your customers, including but not limited to their contact information, how often they purchase from you, what they purchase and how they pay their bills.
* **Stocking:** Stocking is refer to the process of replenishing and storing goods in the store's backroom or warehouse and taking records of each of the items has they are being sold and stocked .
* **Supplier**: A supplier is an entity that supplies goods and services to another organization. This entity is part of the supply chain of a business, which may provide the bulk of the value contained within its products. Which all the information of each of the company supply will kept for easy reordering of product.

# CHAPTER TWO

## 2.1 Overview of hypermarket

Hypermarkets is expressed in French as “Tout sous le même toit” which means “Everything under the same roof” (Nooh et al., 2013; Perrigot & Cliquet, 2006) like alternative big-box stores (Grimmeau, 2013) which typically have business models specializing in high-volume, low-margin sales (Hassan et al., 2014). Usually covering an area of 5,000 m2 to 15,000m2 (54,000ft2 to 161,000ft2) (Križan et al., 2014), they often have more than 200,000 completely different brands of merchandise available at any one time. Though the sales areas differ according to country, the sales area of Belgium, Denmark, Spain, Greece, Italy, Luxembourg, Netherlands, Portugal range between 2,500m2 and more, with Germany ranging from 1,500m2 to 4,999m2 and from 5,000m2, also Ireland, Great Britain range from 2,323m2 and above (INSEE, 2020). Due to their large footprints, several hypermarkets are always located within suburban or out-of-town locations that are easily accessible by automobile. In 1963, Carrefour opened the first hypermarket in St Genevieve-de-Bois, near Paris, France. By the end of the twentieth century, stores were using labels such as "mega-stores" and "warehouse" stores to mirror their growing size. In North American Nation (Canada) Loblaws established its Real Canadian Superstore chain in 1979. It sells mainly groceries, while also retailing clothing, electronics and housewares. Its largest rival in Canada is Walmart. These are the two major Canadian hypermarkets.

In Europe, the first European hypermarket is commonly mistaken to be the Carrefour store that opened in 1963, at Sainte-Geneviève-des-Bois. The co-founders were influenced by the teachings of Colombian-born American marketing executive Bernardo Trujillo. However, the Belgian retailer Grand Bazar preceded Carrefour by two years when they opened the three hypermarkets in a short span in 1961 under the name SuperBazar after Belgian law restricting the size of department stores was abolished in January 1961. The first SuperBazar, opened in Bruges (City of Bridges) on 9th of September 1961, initially designed to become a non-food department store, however only covered a surface area of 3,300m2 (36,000ft2), and was later converted into a regular supermarket (Grimmeau, 2013). The substantially larger store that opened a week later in Auderghem near Brussels, covering 9,100m2 (98,000ft2), is regarded as a more proper hypermarket that brought the concept to fruition. It was Belgian market development engineer Maurice Cauwe, who adopted the concept from his frequent trips to the United States, particularly inspired from the Grand Union's "Grand Way" centre in Paramus, New Jersey (Wikipedia, 2020).

Americans generally refrain from using the term "hypermarket", instead calling such establishments "big-box stores", "supercentres", or "superstores" (Wikipedia, 2020). Until the 1980s, large stores combining food and non-food items (Coleman, 2008) were uncommon within United States, early predecessors of today's hypermarkets existed. The Pacific Northwest chain Fred Meyer, now a division of the Kroger supermarket company, opened the first suburban one-stop shopping centre in 1931 in the Hollywood District of Portland, Oregon. The store's innovations included a grocery store alongside a drugstore plus off-street parking and an automobile lubrication and oil service. In 1933, men's and women's wear was added, and automotive department, housewares, and other non-food products followed in succeeding years. In the mid-1930s, Fred Meyer opened a central bakery, a candy kitchen, an ice cream plant, and a photo-finishing plant. By the 1950s, Fred Meyer began opening stores that were 45,000ft2. (4,200m2) to 70,000ft2. (6,500m2), and the 1960s saw the first modern-sized Fred Meyer hypermarkets.

## 2.2 Hypermarket in Nigeria

Nigerian’s typically refer all stores, either hypermarket, supermarket or any kind of big stores as supermarket not considering the size of the store, the product sold and the numbers of brands or merchandise in such store. Though traditional retail shops have been gradually replaced in the beginning by supermarkets and are getting replaced by hypermarkets (Reardon & Hopkins, 2006), which has dramatically changed both the market structure and the regulatory policy (Onokerhoraye, 1977). In other to discuss the history of hypermarkets or superstore in Nigeria, will have to start from the developments of supermarket and the development of some notable big-box store which will later categorized or address as hypermarket of superstore because of the store size, product sold in them and number of brand or merchandise in them. Though supermarkets are traditionally viewed by most Nigerian as-well-as other part of the world and also the development economists, policymakers, and practitioners as the rich world’s place to shop (Reardon et al., 2003; Reardon & Hopkins, 2006).

The average Walmart Supercentre covers around 178,000ft2 (16,500m2), with the largest ones covering 260,000sq ft. (24,000m2). A typical Carrefour hypermarket still covers 10,000m2 (110,000ft2.) Suryadarma (2011), while the European trend in the 2000s has rather turned towards smaller hypermarkets of 3,000m2 to 5,000m2 (32,000ft2. to 54,000ft2.) (Grimmeau, 2013). In France, INSEE defines hypermarkets (French: hypermarché/s) as non-specialized markets with a minimum size of 2,500 m2 (27,000ft2). One of the superstore that has been address as supermarket includes Shoprite Nigeria, Shoprite Nigeria is classified as a superstore, Shoprite, on their official site stated that they’ve employed more than 2,000 staffs and their first store in Lagos in December 2005 (Pageone, 2016; Shoprite, 2020), Shoprite Nigeria have launched an additional 25 stores across eight states within the Federation including the Federal Capital Territory (FCT), Abuja, and they more than 16,000m2 in land area, this makes many Nigeria stores qualified to be addressed as superstore or hypermarket.

Despite success of superstores, superstore or hypermarket business model may be under threat from online shopping and the shift towards customization according to analysts like Sanyal (2012), Deutsche Bank's Global Strategist. Sanyal (2012) has also argued that some developing countries may even skip the hypermarket stage and directly go online. But now a days, hypermarkets are not just a place to purchase basic essential groceries for the household but also as a place for shoppers to spend time together with family and friends (Hassan & Rahman, 2012).

## 2.3 Types of Retail Stores

Type of retail store based on consumer behaviour and manufacturers abilities (Wei Guan et al., 2012), there are various types of retail stores which exist in the market. Each of these retail outlets are different based on the products they offer and the way they offer it.

### 2.3.1 Convenience Stores

A convenience store, corner store or convenience shop is a small retail business that stocks a range of everyday items, such as groceries, confectionery, over‐the‐counter drugs, snack foods, soft drinks, tobacco products, toiletries, newspapers, and magazines (Xin et al., 2019). It may be positioned in an urban area, alongside a busy road, near a railway station, in a petrol station (Ortega et al., 2015), or at a commercial transport. They are not the same as general stores they are not located in a rural location and are used as a convenient supplement to bigger stores. Convenience stores usually charge significantly higher prices than conventional grocery stores or supermarkets (Xin et al., 2019); however, they make up for this loss by serving more locations, having longer business hours, and having shorter cashier lines. Typically, most convenience stores provide low-level items which are not even mid-range. The advantage of a convenience store is that:

* It is mostly nearby, so, when you reach home and remember that you have forgotten to buy your favourite food seasoning. All you have to do is visit the store again (because it nearer), buy the food seasoning and come back.
* They offer super-fast service, the shop is a small shop giving super-fast service with a focused approach.

### 2.3.2 Department Store

Department stores are generally located within malls with separate departments for various merchandise lines (Ikeler, 2016). Department stores have a lot of products under their roof. They sell clothing, men’s and women’s accessories, children’s toys, home furnishings and many different things. They generally have separate sections for separate categories. However, the number of categories are not exhaustive. These stores might not deal in as many categories as Supermarkets or hypermarkets. They do not sell items like Soap or shampoo. Even if they sell that, they will limit the categories by some other means.

### 2.3.3 Discount Stores

Discount store is a retail store that sells products at prices lower than those asked by traditional retail outlets (Zielke, 2014). However they commonly use tagline like “Everyday low prices”. Walmart can be categorized in two different kind of retail stores – “The Supermarkets or Discount stores”. However, due to their pattern of discounting and attracting customers on the basis of discounts, it is more qualified to place Walmart as a Discount store. Discount stores sell all products at a good discount which attracts the customers. They do this by buying the products in huge volumes directly from the company. On the front end, they also establish a huge number of supermarkets and hypermarkets so that they can liquidate these products to the customers by passing on the margins.

### 2.3.4 Drug Stores

Drug stores are stores which buy and sell medicines (Shah et al., 2016) and are specialized in it. They can be a form of specialized store, drug stores are now wider and longer than any specialized store because of the population and the number of medicines we need in day to day life. But drugstores now sell many other things besides pharmaceuticals. They have become another form of specialized retail stores where many things can be bought like Health and beauty products, basic snacks, protein supplements, small medical equipment as well as other personal care and healthcare products.

### 2.3.5 E-commerce Stores

E-commerce is the future of retail. Even now, Amazon has a huge market share of retail and has a top positioning in the customer’s mind. If you don’t get a product anywhere offline, you will definitely find it online because the sellers from all across the country sell products online and there is even an option to import the product from another country. This reduces the cost of distribution of product and increases the total number of products available to the end customers. Not only Amazon or Alibaba, there are many small E-commerce retail stores popping up as well. Every specialized retailer or even convenience goods salesperson is launching his or her website and directly selling products from their website which is nothing but a type of E-tailing. In the future, we can see almost all brands having their own online retail stores and cutting the middlemen by directly selling to end customers. If you can buy a Zahara’s outfit online, why will you go to a Zahara’s store or to other fashion retailers? You will directly buy from Zahara, but another aspect to consider is you buying what you’ve not even seen, which might be defers in the true colour of the outfit, texture and quality of the material used.

### 2.3.6 Extreme Discount Stores

These stores have many wares which are very cheap in price and are sold at a very cheap rate. The supply in these stores may or may not be regular and they work more on the “deal” basis. The second feature which separates these extreme discount stores from discount retail stores is that most of the brands they carry are private label brands and are from small manufacturers.

### 2.3.7 Off-price / Used Goods Store

Used goods store are type of retail store that sell used of partially defected products which had some small defect, or they were leftover goods from the manufacturers who did not find the goods up to the mark. Another market which is getting more popular this days is the used goods store. The used goods or resale market is so big that even branded product like Audi or others are now providing ratings and support for the sale of used products, even most consumers are happy buying used products because most of the products are in good condition and are sold at a lower price and will still perform almost same functions as the new ones. Most of this Off-price stores sell items that are with one or two minor defect during the time of manufacturing or during the time of packaging or transporting. The sale of off-price goods is on the rise because of the establishment of E-commerce portals like Amazon and Alibaba. When you sell on these portals, there is a small percentage of products which gets damaged during transit. Most of the products which get damage during transit are directly sold to the off-price type of retail stores which mostly sell it to the end consumers.

### 2.3.8 Speciality Store

A speciality store is one that focuses on one or two specific categories. They have a very narrow line merchandise. However, the advantage of a speciality store is that we can find many things in that store related to that speciality, which you might not find on the open market.

### 2.3.9 Supermarkets

They are known to be vast marketplaces with a wide variety of categories available. Most of these categories are in residential market segmented by dealing in a lot of food varieties (Farber et al., 2014), groceries, necessary and useful products, laundry, bakery products, etc. Supermarkets focus on the fast-moving consumer goods (FMCG) products (Watenga, 2014), which includes milk, food seasoning, fruit and vegetables, soft-drinks, beer, and common drugs. Many customers within the supermarket are trying to change their home inventory and upgrade their home inventory and the best store to fill up home inventory that is the supermarket because we can get all the stuffs we need in very short time. Product assortment is a speciality of supermarkets because the products need to be displayed in such a manner that the customer gets attracted to them and they sell faster.

### 2.3.10 Super Stores or Hyper Markets

Superstores are retail stores which are huge in size and have many different categories under their belt (Grimmeau, 2013). We can assume a Superstore having everything we need under its roof, all the products that we can buy as a “residential consumer” (Nikhashemi et al., 2016). These retail stores are not found in malls. Rather they are malls by themselves. But generally, a superstore or a hypermarket does a good job of balancing the cheap the good, the quality as well as the premium. Basically, you will find low level, mid-level and even high-level quality of products in a hypermarket. Hence it is known as a “complete market”. This category is being affected most heavily since the advent of E-commerce because there is huge cost associated with running a superstore or a hypermarket.

The above were the type of retail stores and retail outlets in the market. The future of retail is the combination of offline and online. Walmart also has its own E-commerce store now and does a huge turnover through its online store. The advantage of Walmart over Amazon is its offline presence is huge as well. So, if a customer is unhappy with a product, he can go offline and return it to his local Walmart as well. This confidence helps the customer in making a decision.

## 2.2 Benefits of hypermarket to consumers

Some of the important advantages of Superstore includes:

* **Freedom of Selection:** Customers enjoy full freedom of selection in hypermarkets. As salesman are not appointed in these markets, customers select goods of their choice on their own.
* **Fixed Prices:** Prices of all the goods at these stores are always fixed. No bargaining is allowed in prices. Hence, these markets win the faith and favour of customers.
* **Lower Prices:** Prices of goods are generally kept low at the superstore. Thus, these markets are suitable for both rich and poor people.
* **Availability of all the Goods of Daily Need:** Superstore provide almost all the goods of daily and regular needs to the consumers under one roof. Thus, they have not to move from one place to another for making their purchases.
* **Availability of Variety Goods:** Superstore maintain a large variety of all the goods and thus, help customers in the selection of best goods.
* **Availability of Standard Goods:** Superstore deal only in standard goods. Customers believe that they are paying the right price for the right goods of the right quantity.

## 2.2 Benefits of Sale and inventory management to hypermarkets

As commonly used, most business owners think of sales management as a purely accounting process. This conflicts with the definition of sales management as “the attainment of sales force goals in an efficient and effective manner through leading, planning, staffing, training and controlling organizational resources (Laar et al., 2015; Run et al., 2008). Another definition of Sales management by the American Marketing Association (AMA) as “The planning, direction, and control of the personal selling activities of a business unit, including recruiting, selecting, training, equipping, assigning, routing, supervising, paying, and motivating as these tasks apply to the sales force” (AmericanMarketing Association (AMC), 2017). Thus it is clear that sales management is not purely an accounting function. However, it links with accounting in the area of record keeping as accounting is employed to interpret data from sales operations. A sales management system can be thought of as the mechanism used by sales managers to make sales management faster and easier. It has been defined as an “Information System used by sales professionals or business entities for sales tracking which facilitates the sales management process” (Jackson, 1997). A working sales system comprises a point of sales system (POS) at the front end and a detailed implementation of various sales management and tracking functionalities at the back end. This structure directly mimics the sales process in a sales environment where the sales agents are at the front end interacting directly with customers whiles managers handle the reports from the transactions.

## 2.3 Limitations of hypermarket to Retailer

When a company starts to add more locations, the challenges become increasingly complex due to the size of the organization, and it is all the more important to have a system in place to avoid the mounting costs of inefficient operations. Some of the important disadvantages of Superstore includes:

1. **Need for Huge Amount of Capital:** As Superstore is a large scale retail organization and it deals in almost all the goods and services of daily use of consumers, it needs huge amount of capital to be invested.
2. **Problem of Required Space:** Superstore required a large space and that too in the heart of big cities, but it is very difficult to find such a place in a big city these days.
3. **Not Suitable for the Sales of Goods of Technical Nature:** For superstore, is not very practical to provide after-sale services. Therefore, goods of Technical nature sold in superstore mostly does not have after-sale service.
4. **Possibility of Spoil of Perishable Goods:** As Superstore deals in many perishable goods like vegetables, fruits, dairy products, etc. These goods may be spoil if not sold within a limited time.
5. **Minimum Satisfaction of Consumers:** Customers have to select the goods on their own without any aid and no extra facility is provided to them in these markets, and they feel least satisfied.

## 2.4 Overview of cloud computing

Cloud computing is one of the most significant shifts in modern ICT and service for enterprise applications and has become a powerful architecture to perform large-scale and complex computing. Cloud computing is a powerful technology to perform massive-scale and complex computing (Abaker et al., 2015). It eliminates the need to maintain very expensive computing software, dedicated space, and hardware. In simple term, cloud computing is the storing and accessing data and programs over the Internet instead of the mobile hardware (Stergiou et al., 2016) or computer's hard drive. The cloud is just a metaphor for the Internet, it goes back to the days of flowcharts and presentations that would represent the gigantic server-farm infrastructure of the Internet as nothing but a puffy, white cumulus cloud, accepting connections and doling out information as it floats.

Cloud computing provides the facility to access shared resources and common infrastructure, offering services on demand over the network to perform operations that meet changing business needs (Kulkarni et al., 2012). The location of physical resources and devices being accessed are typically not known to the end user. It also provides facilities for users to develop, deploy and manage their applications ‘on the cloud’, which entails virtualization of resources that maintains and manages itself. Some generic examples include Amazon’s Elastic Computing Cloud (EC2) offering computational services that enable people to use CPU cycles without buying more computers.

Thanks to the cloud, the world is able to fight Coronavirus with technology. Business have managed to stay operational and people are connected even amid stringent lockdowns. Given the current situation spurred by the coronavirus outbreak, one thing is clear: businesses need to deal with this pandemic strategically. Migrating to reliable cloud platforms will be an advantageous first step.

Cloud computing as a term has been around since the early 2000s, but the concept of computing-as-a-service has been around for much, much longer -- as far back as the 1960s, when computer bureaus would allow companies to rent time on a mainframe, rather than have to buy one themselves. These 'time-sharing' services were largely overtaken by the rise of the PC which made owning a computer much more affordable, and then in turn by the rise of corporate data centers where companies would store vast amounts of data.

But the concept of renting access to computing power has resurfaced again and again in the application service providers, utility computing, and grid computing of the late 1990s and early 2000s. This was followed by cloud computing, which really took hold with the emergence of software as a service and hyper scale cloud computing providers such as Amazon Web Services. It is a concept of pay-per-use of each IT service and concept of accessing infrastructure, platform and software as a service over the internet by paying the each use of the IT services. There are three services provided in Salesforce Technology and they are called Cloud Services, which can either be private cloud or public cloud deployment:

* **Infrastructure as A Service (IAAS):** Accessing infrastructure such as Application server, storage server over the internet is called IAAS. With IaaS, you rent IT infrastructure, servers and virtual machines (VMs), storage, networks, operating systems from a cloud provider on a pay-as-you-go basis.
* **Platform as A Service (PAAS):** Accessing a platform such as any programming language on which an application is built provided as service over the internet is called PAAS. Platform-as-a-service (PaaS) refers to cloud computing services that supply an on-demand environment for developing, testing, delivering and managing software applications. PaaS is designed to make it easier for developers to quickly create web or mobile apps, without worrying about setting up or managing the underlying infrastructure of servers, storage, network and databases needed for development.
* **Software as A Service (SAAS):** Accessing a software application over the internet is called SAAS. Software-as-a-service (SaaS) is a method for delivering software applications over the Internet (Kulkarni et al., 2012), on demand and typically on a subscription basis. With SaaS, cloud providers host and manage the software application and underlying infrastructure and handle any maintenance, like software upgrades and security patching. Users connect to the application over the Internet, usually with a web browser on their phone, tablet or PC.

Cloud computing is gaining its importance in day to day business scenario because of its scalability, robustness and cost saving capabilities. Management information system is one of the major components of any business organization. It helps to adopt Sales reporting, inventory management, customer management and employee management. It requires a huge investment and a complex management of the whole system. In this research a cloud computing based hypermarket management system is proposed. A cloud computing based hypermarket management system reduces overhead of the implementing organization. Many big organizations will have their own management system which plays a vital role in the development of the business. The system helps the organization to monitor each and every business branches individually, without affecting the access time or the capacity of activities carried at the same time. This system is commonly used by business organizations to evaluate sales, inventory, customers/employee management and report generation.

## 2.5 Benefits of cloud based hypermarket management to business.

Now that companies have to confront the realities of coronavirus and its business impact, users are turning to cloud computing to mitigate the effects that the pandemic will undoubtedly bring. However, if a business doesn’t adequately prepare its cloud solutions to deal with the effects of coronavirus and some other unforeseen related problems, it’s likely to lose valuable assets and suffer inefficient operations because of the emergence of the new government policy of public place and shutting down of crowded place with upfront notice.

* The cloud has provided businesses with the resources necessary to remotely process large amounts of data, build and run mission-critical applications and services, and collaborate with partners across the globe
* The coronavirus pandemic has compelled enterprises to switch to remote operation including video conferencing and working from home, offering good opportunities for them to implement cloud computing-based digital transformation, said Michael Lee, chairman for value-added ICT distributor Sysage Technology.
* Another benefit of using cloud base hypermarket management system is that firms can avoid the upfront cost and complexity of owning and maintaining their own IT infrastructure, and instead simply pay for what they use, when they use it.

Other area of life that cloud computing has been used to solve our real life problem is during this year pandemic, a potential COVID-19 vaccine has been developed by researchers using AI and cloud computing to prevent the Spike protein from binding to the ACE2 receptor on human cells. In case of corona crisis, this cloud computing method helped to considerably accelerate the new target vaccine development as it was realized by Australian research team, where they collaborated Oracle-cloud based technology (Poojary, 2020), Australian researchers have developed and are testing a COVID-19 vaccine candidate to fight against the SARS-CoV-2 coronavirus, the researchers from Flinders University analysed the COVID-19 virus and used this information to design the vaccine candidate. The greatest achievement of this century is the ability of human intelligence to create artificial intelligence algorithms in computers and this leads to machine learning (Poojary, 2020). The usage of deep learning techniques by the help of Artificial Neural Network (ANN) is also helping to build computer models that compare the X-ray crystallography structures of approved and experimental drugs to combat corona virus targeting its key proteins

Whether you hire cloud management services in Berlin, Germany or invest in cloud computing in United State, Switzerland, being on the cloud will help businesses circumvent the chaos from the coronavirus lockdown and any other event which were not yet predicted regardless of your location. Factors such as affordability, scalability, and ease of maintenance make cloud solutions an attractive option for businesses of all sizes.

## 2.6 Limitations of cloud base HMS

Every form of technology, as beneficial as it can be, comes with its cons and cloud computing is no exception. Despite all the efficiency, innovation and speed that comes with this disruptive technology, naturally, it comes with its risks.

* The first and ever recurrent challenge with every form of technology is security and this has been a big issue with cloud storage especially with regards to personal or sensitive information such as health data and bank details. Regulatory bodies are constantly keeping cloud services providers on their toes, advising them to beef up their security measures. Using updated encryption measures, these providers have been able to secure a lot of data but in the event where the encryption key gets stolen or hacked, the data stored by these providers stand a chance of being compromised.
* Internet access is of the limitation we night be thinking, Of course, we may be wondering what happens if we are somewhere without a connection and we need to access our data. This is currently one of the biggest complaints about this system, but this type of system is meant for big companies, where internet access is not even a problem to them, although its offline functionality (that is, non-cloud abilities) are expanding.
* As cloud infrastructures consist of physical hardware, they are prone to wear, natural disasters, power issues, and even program error. A minute of downtime on these cloud resources could cost not only several organizations but the whole economy of a geographical location where these dependent organizations are situated because of the interconnection between products and services. But most of the limitation of loss of data has been handled by most of the cloud provider by locating data centre in different location and different continents.
* In part, that comes from the potential for crashes. When there are problems at a company like Amazon, which provides cloud storage services to big name companies like Netflix and Pinterest, it can take out all those services (as happened in the summer of 2012). In 2014, outages afflicted Dropbox, Gmail, Basecamp, Adobe, Evernote, iCloud, and Microsoft; in 2015 the outages hit Apple, Verizon, Microsoft, AOL, Level 3, and Google. Microsoft had another this year. The problems typically last for just hours. Stores running on traditional web-hosted platforms will probably experience downtime due to their inability to handle the traffic surge. Cloud-hosting platforms, on the other hand, are highly scalable and flexible, protecting businesses from disruption.

## 2.5 Cloud Capacity

The fear of cloud capacity, this year pandemic offers a powerful case study, COVID-19 stress tests cloud services, Industry research firms Forrester and GlobalData assess the impact of the pandemic on cloud service providers on March 24, 2020. With the COVID-19 virus putting millions of more people into the “working from home” category, cloud service providers are being put to the test. In response, global cloud leaders are stress-testing their infrastructure and activating pandemic-specific resiliency testing procedures, research from Forrester indicates.

Both Forrester and research firm GlobalData have published assessments of the impact of the crisis on cloud services. Forrester noted the following efforts in its March 12 report:

* Amazon Web Services has included pandemic response in its resiliency planning and regularly scales to handle spikes in demand, such as on Black Friday. Pandemic response policies and procedures have been incorporated into disaster recovery planning. Measures have been taken to ensure ample capacity and service continuity.
* Google Cloud has formed an internal working group to plan for and mitigate against business impacts resulting from COVID-19. The company expressed confidence its systems can continue to support customers during this time.
* Microsoft Azure has seen a 500 percent increase in meetings, calling, and conferences on its Teams remote collaboration platform since January 31. In the same time frame, it has seen a 200 percent increase in Teams usage on mobile devices. The company maintains cloud service availability by running multiple instances in geographically dispersed locations. However, the unexpected and unplanned migration to the cloud has resulted in minor hiccups for some cloud-based platforms. Microsoft, for example, was said to be experiencing technical issues due to increased usage and bandwidth. However, these snags are usually temporary, with systems up and running soon after.

Forrester advises cloud users not to panic about cloud capacity, given the past decade of massive cloud buildouts. GlobalData sees COVID-19 spurring demand for not only cloud computing, but also other IT solutions such as edge computing. While cloud technology providers such as Amazon, Google, Microsoft, and Verizon might benefit from COVID-19 over a 12-month period, second-tier and tertiary IaaS (infrastructure as a service) providers with less reliable customer bases could lose out, as could cloud service and infrastructure providers whose businesses depend on vulnerable industries hit by the economic fallout.

“As businesses shutter their brick and mortar operations and, where they can, transition to a remote workforce, it is clear how important the cloud is for continuity of operations,” GlobalData said. “Any organization that actively resisted digitalization is now confronted with a harsh reality. This puts cloud providers in a strong position.” After all, there's no central body governing use of the cloud for storage and services. The Institute of Electrical and Electronics Engineers (IEEE) is trying. It created an IEEE Cloud Computing Initiative in 2011 to establish standards for use, especially for the business sector. The Supreme Court ruling against Aereo could have told us a lot about copyright of files in the cloud... but the court side-stepped the issue to keep cloud computing status quo. Thanks to cloud technology, remote work is being carried out with ease. Whether it is accounting, back office tasks, writing and editing, engineering, online marketing, web designing, consulting, or other jobs, there is a cloud-based solution for almost every job.

# CHAPTER THREE

## 3.0 System analysis and design

Hypermarket management system has complete the transmission and management of huge product, thus as to facilitate the management and decision of sales, and scale back a giant burden for hypermarkets and store managers. It can also help to boost the work potency of stores whereas its requirement is to produce the fundamental information maintenance function of workers, memberships and products so managers will through the function to add, delete, and modify the basic information of workers. The staff will through it to add, modify and delete the basic information and products. Hypermarket store management system is extremely convenient for managing inventory both goods from suppliers and goods which are been sold out to customers. So as to make the messy store data to be specific, visualized and rationalized. The different parts of this system known as hypermarket management system share common practicality in several ways. Some are very similar to another. For instance, branch administrator and also the central administrator are parallel component that share vital functionality. Some common functionalities are needed in all components, like the functionality to view history log and inventory. Some similar functionality is used in all applications, but they differ from each other slightly. For example, all branch administrators can view individual inventory but the central administrator have the administrative privilege to view all the branch inventories, although they may not be the same. In the following, we provide an overview of the requirements and functionality for each component.

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## 3.1 Analysis of the existing system

The store manager or the business owner monitor and manage all core business operations, this core functions includes department operations, human resources, business accounting, stock management and some other financial activities. The current hypermarket management system operates on manual centralised sales transaction, inventory and credit management, which all daily transaction records are brought together at the end of every day sales by the departmental managers and are manually computed by the store manager. Also all customer credit sales request always take many days before they are fulfilled. These type of management are prone to errors, incompleteness, and insufficient data for sales and stock analysis. Information regarding stocks, products, sales and purchases are only computerise at each departmental store or branch store. Current system is not properly organized or managed because all sales activities are still managed manually by the store general manager. All department or branch store will have to printout all their daily sales report and all printout are taken to the general store manager at the end of every day. This same daily routine are repeated for monthly report, so as to allow the store manager to have an update of all branch store including both monthly and daily report, while all operations are not being properly handled. Accurate procurement assessments are based on monitoring inventory needs and patterns to avoid overstocking and under-stocking of products. The issue of overstocking is especially important for items that have short expiration dates. Additionally, store manager must know dates and times for all expected delivery to insure that proper stocking are done. As a result of all this limitations encounter by the general manager, processing, updating and managing all stores are not possible.

### 3.1.1 Limitations of the current system

The system which is currently use is called BizBi, which is an accounting software that are been use as sales management systems. BizBi at a glance is a form of spreadsheet application, which is equipped with enormous accounting functions. Because I was unable to study the system in full details because of the organisation policy but from glance view the package allows its users to customize how entries are made into the system. BizBi seams difficult to use by people with very little accounting knowledge and expensive to implement due to training cost. Also the current system consist of functions most business will never use and paying for such functions is therefore seen as an unnecessary business expense.

#### Inventory Reconciliation

The current system does not support matching stock records with the physical store, so there is always need for periodic physical inventory counts and weigh it up it to the business's digital stock records. Additionally, after any successful sale, reconciling stock record against the available stock of items is an added challenge. Many times, store owners go with one of three options. Either they skip over the task entirely, agree to put in hours upon hours of tedious labor with the entire staff having to come in early or work late, or hire an expensive reconciliation specialist. The risk with skipping the process entirely is that if there is an issue with theft, low stock counts, irregularities on pricing, etc. they often don’t know that’s it’s a problem until they’ve already lost a considerable amount of revenue. Studies published in the California Management Review indicate that inaccurate inventory records alone cost companies, on average, 10% of profits a year! (DeHoratius & Ton, 2009) Knowing what to buy, when to buy it and when to mark down or clear underperforming products has always been a key part of remaining competitive in the retail environment. Poor financial performance is the obvious result of carrying too much stock or too many slow-moving items (Gallino et al., 2017). However, being too lean on inventory can be almost as bad– studies indicate that retailers lose about 3.4% of potential sales due to the desired products being out-of-stock! (Kang & Gershwin, 2005). And the last two are expensive and inefficient.

#### Managing multiple departments

Managing multiple departments by the owner is another challenge facing the current system. Many times these departments are run independently from the main retail side of grocery store operations. However, this method of keeping the departments separate can get inefficient very quickly. The traditional way to manage the different departments is to have a customer go to one of the counters, the meat, deli or bakery department makes up an order rings up a price for the item, the customer waits for the item and takes the item with a label to the check-out counter and the item is rung up again and then the cashier processes check out.

This usually works fine, unless there is a hiccup along the way. A couple common problems grocery store managers face are; forgotten or abandoned items being left in the store aisles left to go bad, no communication or inventory tracking across departments, and catering orders in these departments are wholly left out of the process.

#### Running Multiple Locations/Multi-Store Management

Keeping track of business the way it need to, is the solution to the problem of expanding in a business, but they have grown beyond the ability of the owner or single trusted manager to keep a close eye on operations, with a need for more robust sales and inventory control system than would serve a typical single store. Poor record keeping and lack of information management are very pronounced among Nigerian businesses. These phenomena, undoubtedly pose many challenges to the success of business in Nigeria (Adisa et al., 2014). The current system cannot track real-time changes in sales and inventory the moment they are processed. There is no proper sales report which can help the manager to be more efficient in it retail operations. And also the inventory lot control cannot be track across multiple lots of inventory across all stores (Onestepretail, 2018). We also determined that small to midsized chains, especially those who wish to continue their growth, face an even greater set of challenges than single stores or large retailer.

#### Poor record keeping and information management

Poor record keeping and lack of information management are very pronounced among Nigerian businesses (Adisa et al., 2014). These phenomena, undoubtedly pose many challenges to the success of small business in Nigeria. The overwhelming majority of small business owners interviewed do prioritise record keeping, and very few that keep records do not do it professionally.

## 3.2 Analysis of the proposed system

The most common challenges or limitations faced by the businesses include high cost of sales tracking, misrepresentation of sales, difficulty implementing marketing strategies, loss of goods and profit, high cost of acquiring software licenses and customer dissatisfaction which may be cause many reasoning which include poor inventory system, poor sales recording etc. (Laar et al., 2015). Though some of the challenges listed above will be tackle by the proposed sales management systems, many businesses are been confronted with many other challenges which might not be handled in the proposed system. The proposed system will provides a rich graphic user interface and basic functions such as generating invoices, tracking daily sales, generating reports, keeping track of stock and making it easier for managers and store owners to track the daily tasks with less time and effort. However, the system has no official documentation and provides no guarantee of satisfying the user’s maximum needs at the time of design. It is also designed using PHP, MySQL, bootstrap, JavaScript and CSS.

In summary, one of the major challenges with the existing systems which is the high cost of acquiring full software packages, special hardware requirements of some functions, systems not satisfying unique goals of each businesses, requirement for understanding some accounting principles, the cost of paying for extra functions that are not needed and the ability of individual adding or removing any module to suite individual business will all be conquer by making this programme an open source in order to allow all other developers to modify the proposed system, and the proposed system will support all operating system which is connected to the internet and any internet browser application that support html5 and above.

### 3.2.1 Advantage of the new system

The propose system seamlessly integrates the inventory and credit management systems providing accurate and instant updates at the point of sale. The inventory is updated every time sales and payments transaction are make, therefore it is easier to control costs and track orders.

The proposed system inventory control module helps in tracking product cost, usage, and maintains inventory at optimum levels. Having too much cash tied up in slow or non-selling items, or running out of fast-moving items, can have a major impact on the business financial success. With the inventory control we will have a complete picture of the status of our inventory, quantities at hand, quantities committed, and the flow of inventory items sold by the business when needed at all time.

Each product will be given a part number code of one to twenty characters using the barcode of the product, and assigned category. The only limit on the number of items that can be maintained is disk space. With the powerful SQL database tables and web-based HMS system the inventory numbers are just a click away.

A variety of reports are available in the Inventory Control module. Reports can be view and printed, listing all items in the master file; product categories and current selling prices; inventory activity showing units purchased and sold; or re-order points and quantities.

The proposed system will also support multi store/branch support, hypermarket management system allow to easily interact with other stores or branches directly through the retail system. This will gives the flexibility to quickly see what is in stock at each store or branch and then easily move items between locations to meet demand.

With the correct security levels of the proposed system, we can review transactions of all stores or branches, giving the general manager the complete visibility across the entire business.

The proposed system provides secure log on and gives the flexibility to customise workflow and workstation settings. And we can also protect the integrity of each shift and the transactions with user logs. This is ideal for high transaction environments or where the operator is often away from the register.

A range of additional modules are available and can be adopted and tailored to business. With the help of developer, modules can easily be remove and new modules can be easily added to specifically design for different business requirements

### 3.2.2 Limitations of the proposed system

## 3.3 Methods of Data Collection

For the system to satisfy the need of the business manager, the owner and for staffs to complete transactions at speedy rate and to reduce the time spent on que by the customer for them to make payment for their purchases. Though, some data were not disclosed during the process of data collection due to organization policy, but other data were collect through interview and observation.

### Interview Method

During the collection of data some of the staffs and the general manager was interview on how activities were been carried out within the business organisation, and the process which the activities are been followed starting from how they take new order, how they know if some products are running out in the store, how sales record are been recorded, how the store manager prepare the daily and monthly sale report and what they also ask about those thing they to see been automated.

The manager consent that all data collected can be used for this research work only. It was found out that the supermarket indeed was in a need for automation of its activities to realize its maximum potential. It was also observed that when a customer buy a product all the details was not well managed by the current system, I came up with this system to clearly address those problems while managing the store.

**3.3 System design**

**System Architecture**

**3.4 Modelling the system**

The aim of the design is to produce the best possible design within the limitations imposed by the requirements and facilities which includes the verifiability of the design, the completeness, the consistency, the efficiency and the simplicity of the system. The above mentioned properties was exhibited and integrated so that the design process were strictly followed during the development of the program

## 3.4 Architectural Design of the Proposed System

The system will cover two part which are the Administrative part and the Users part. **Administrative**

Admin can add staff, Registered Staff, Add Item, Search Item, Report, Warehouse and Logout.

* **Add staff:** the administrator have the administrative privilege to add new user, staff or cashier and appoint a particular role and branch to the new staff or cashier pre-existing branch or new branch. In other to add new staff the administrator is expected to click on staff and enter the staff detail and appoint the store to the new staff.
* **Remove Staff:** an administrator can remove any registered staff or cashier and make any pre-existing active staff inactive, grant staff access to the system and restrict him or her the privileges from accessing the system.
* **Reset Staff Password:** this module allows the administrator to reset or change any staff or cashier password which password has been compromised or forget his or her password.
* **Add branch:** an administrator can add new branch or add new pay point to pre-existing branch.
* **Staff profile update:** any individual with the administrator privilege can update individual pre-existing staff profile which includes staff name, address, phone number etc.
* **Reports:** this module allows the administrator to view or print all sale, purchase inventory and creditors report for either individual store or branch within specified time range. This includes:
  + **Sales report:** A sales report, or sales analysis report, gives an overview of the state of sales in a branch within a selected date range. It shows the different trends happening in the sales volume over a certain time frame, but also analyses the different steps of the sales funnel and the performance of sales executives.
  + **Inventory report:** the inventory report contains summary of a retailer's existing stock. It distils details like how much stock remain, which products are selling fastest, category performance, and other information about the status and performance of inventory.
  + **Purchase report:** The Purchase Report is used to determine what payment transactions occurred within a selected date range. This report lists all the items that were purchased. It is accessed via the ‘Report’ page.
* **Respond to credit request:** Only the administrator have privilege to accept or reject credit application.
* **Update admin profile:**
* **User log:** this module allows the system to actively monitor and track the behaviour of user or cashier across this system, such as login record and reordering record. This is often achieved via user log, which makes it easier to log user activity. The user activities are logged so as to track, identify and protect against security, insider threats that originate from within the organization, whether those threats are intentionally malicious or not.
* **Logout:** this module will end the current session and take the administrator out of Admin system to the login page.

**Users**

User’s or cashier can logged sale record, Product and generate sales and inventory report for his or her store and Logout.

* **Purchases:** this module allows the user or cahier to enter the buyer purchase request indicating the product, quantities and prices of the products or services.
* **Stock keeping unit:** this module allows vendors or user to automatically track the movement of inventory.
* **Add customer**: thismakes it super easy for the cashier to add and manage information about your there customer which includes customer contact details, credit application history and there sales history.
* **Add supplier:** the user or cahier have the privilege to add new product suppliers detail, including suppliers name, phone number and products they do supplied.
* **Credit Application:** this module allow the cashier to create a credit application for customer and waited for the application to either be accepted or rejected by the administrator.
* **Add product:**
* **Reorder:** It is used to control the purchasing of products from external suppliers.
* **Report:**
* **Sales report:**
* **Inventory report:**
* **Purchase report:**
* **Update profile:**
* **User log:** this module allows the system to actively monitor and track the behaviour of user or cashier across this system, such as login record and reordering record. This is often achieved via user log, which makes it easier to log user activity. The user activities are logged so as to track, identify and protect against security, insider threats that originate from within the organization, whether those threats are intentionally malicious or not.
* **Logout:** this module will end the current session and take the administrator out of Admin system to the login page.

choice for this project.

UML offers ten different diagrams to model a system. These diagrams are listed below:

* Use case diagram
* Class diagram
* Object diagram
* Sequence diagram
* Collaboration diagram
* State diagram
* Activity diagram
* Component diagram
* Deployment diagram
* Package Diagram

In this project, the Use case diagram, Class diagram, Sequence diagram, Activity diagram, Collaboration diagram, Component diagram and State diagram will be used for system modeling.

**dsjdkls**

Component Diagram

Class Diagram

Activity Diagram

Sequence Diagram

Gantt Chart

ERD Diagram

What is needed

1. Literature review
2. Creating a site with multilingua

How do you store my customer data safely?

Can I order directly from the POS based on inventory alerts and reports?

How do we keep track of individual sales;

Can I access the system remotely?

Does I have the ability to see what is on order by department by store?

Is your POS system scalable if we add locations or terminals?

While the POS will likely be cloud-based, does it have failsafe backups so if it goes offline, I can still make sales?

How can you make inventory easy if I have multiple locations?

Do you allow having a negative inventory? If so, how is that reconciled?

Can I easily lookup past purchases by customer size and style?

Does it have the ability to view full customer history data from more than one store?

How easy is it for my employees to learn your POS system? Do you offer on-demand video training or am I stuck with manuals?

Can I reprint receipts if someone comes in without theirs for a return?

Does your system show units per transaction on all receipts?

Can I upload a picture of an item so an associate can match to the item and avoid switched tags?

Do you offer mobile checkout from a variety of devices without an employee having to come to a counter?

How comfortable are you with technology?

What do you like and dislike about the sales process?

What is the biggest obstacle on the present system?

If you had a magic wand and could fix one problem, what would it be?

What are the issues with the current system?

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