

## AN EFFECTIVE INVENTORY TRACKING SYSTEM WITH THE USE OF IT TECHNOLOGY IN RETAIL INDUSTRY

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### ABSTRACT

The primary purpose of this paper is to examine commercial inventory systems and describe the various requirements for those systems as well as the steps involved in setting up and implementing those systems. The paper then, looks at the ways that technology can help those organizations keep track of, and monitor their inventory in such a way that merchandise on-hand is always current. This paper also explains the lifecycle of a product from delivery to sales and the tracking process that surrounds it.

**KEYWORDS:** Inventory, Inventory Systems, Inventory Software, Tracking, Scanner, UPC, Technology, Shrinkage and Theft

### INTRODUCTION

The importance of understanding the system cannot be overstated. Businesses need a good inventory system and the type of system needed depends which type of organization is using it. Any business can benefit from a properly selected and correctly set up inventory system.

Complete understanding is necessary to get the most out of an inventory system, such as preventing misuse and being able to document checks and balances to insure that the system is providing accurate and reliable information. Profits in any business are directly related to sales, and of course the ability to reach forecasted sales depends on the accuracy of the inventory.

Inventory is much more than just having merchandise on hand to sell. Carrying too much merchandise is costly to a business, usually by laying out too much cash in purchasing the inventory. While not carrying enough products is also costly, by not having it on hand for customers to purchase. This is not money paid out, but rather income that has not or will not be generated due to the loss of sales. A good inventory system not only maintains the proper amounts of products, it also maintains the proper type of products, the ones that sell and make profits for the organization.

This paper discusses how inventory management is important and how information technology and software help the retail industry manage its vast quantities of inventory. The paper define different types of applications where inventory management and modern technology is useful. The research looks at some of the problems and challenges that go along with implementing an inventory system.

## **HYPOTHESIS**

In the results of this research, Findings find that tracking inventory through the means of data software and technology is a better way, than tracking inventory manually. When the software is implemented and used correctly, the research believes the results to be in favor of using modern technology as a way to successfully track inventory.

The capability and implementation that updated technology can provide, should significantly lessen the time that it would normally take someone to manually hand count every piece of inventory in a store, on a regular basis. When using a modern computerized inventory system along with updated software and technology, even the largest of inventories can be routinely tracked on a daily basis.

## **IMPLEMENTATION**

Finding an inventory system is the easy part. Setting it up, perhaps not so much. There are many companies that create inventory software and are more than willing to come into a business and assist the company in setting up an inventory system. A transition may be necessary. It may prove to be more difficult getting current employees' onboard with the change. In general, people are not comfortable with change. More specifically, the employees whose jobs will be affected by the change, those who currently do the inventory for the company. Some employees may need to be moved into new positions, while others may need to be retrained and develop new skills in order to run the new inventory system.[2]

## **BENEFITS**

Establishing a good inventory is just the beginning, maintaining it takes practice and strategy. Once the inventory system is implemented a manager needs to know how to maintain the system in order to receive good reliable information based on current on-hands and knowing just how much inventory a company has. Having too much inventory can be just as bad as not enough, and finding that balance can be challenging. [3]

Having an inventory management system that is organized and that has a good strategy plan will keep an inventory in line. From my own personal experience, the more time that is spent setting up and maintaining accurate inventory logs, the better the system will work for the company. Organizing a location for the inventory is extremely important so that inventory doesn't become lost or in some cases become outdated and no longer sellable, which can produce a huge loss to any organization.

Misplaced inventory does happen and the organization ends up absorbing that loss. This turns out to be detrimental and is something that they do not want to endure very often. Managing inventory is not easy, especially when the inventory is large and takes a team of employees to handle. They must work together to come up with a strategy plan, and then stick to it.

Knowing what inventory is available or when a specific inventory will be available, can be a time saver for an organization, by alleviating wasted time spent looking for the product, or having to order it because the inventory count was off. This type of mismanagement can cause for lost time and lost time means lost dollars to any organization.

Technology has allowed organizations to use hand held input devices or scanning devices that improved efficiency and reduces human error by not manually entering long numbers or letters. Trying to locate a product in a large

warehouse can often be a difficult task, but with a well setup the computer system and a scanner, this process becomes relatively easy.

The product can be placed in a predetermined specific location and with the technology of a scanner, the barcodes on the product can be scanned and both the quantity and location of that product can be entered. When the need arises for that product to be located again, it is as simple as pushing a button or scanning the product, and the product is located. This process is often helpful so that anyone can locate the product, not just the person who put the product in a specific location.

Locating the products in an inventory quickly and efficiently not only makes inventory management easy but also makes the person receiving the product happy. Locating products quickly in a retail environment will keep customers happy and they will return because of their pleasant shopping experience. Inventory management can be complicated but with the proper strategy, a good plan, careful implementation and reliable software, this part of running a business can become quite simplified. [3]

Software can help a business determine how much of which kind of a product is best to have on-hand, based on the store's location. Home Depot has stores throughout North America and based on where the store is located, will vary slightly which products will most likely sell. There are high-end stores, which are located in areas that are considered wealthier neighborhoods and not all products are carried in every store due to location as well, such as selling snow blowers in Arizona or at least an Arizona store wouldn't carry the same quantities that a store in the north would carry.

When a new store opens managers are able to determine what types of products would do best based on location and past sales in nearby regions. Past sales can be tracked through software programs and used as a guideline to ship products to a new store.

Once the product arrives it is received and scanned or entered into the store's computer system and the lifecycle of the product begins. The product is then packed out onto the sales floor and ready for purchase. Weekly audits, low sales, product turnover, a price change to a product would be caused for checking the on-hands of that product. This process would most likely require an employee to locate the product and then count and enter the number of pieces they find into a computer system. This system may update the quantity immediately or may not be processed until an after batch is processed that runs later that evening.

When a customer purchases a product and a cashier rings it out at the register, that item is subtracted automatically from the register's computer system that is tied into the overall on-hand system for that store.

It is important that the computer is functioning correctly and that the cashier knows how to accurately capture the item into the system. This is done by running a barcode that is placed on the item and that barcode matches the computer's system that in-hand subtracts however many items are scanned at the register from the computer's on-hand system. The same process happens when an item is returned but the quantity is increased instead of decreased.

The computer or register needs to be correctly set up and maintained for accuracy. Technology has made it possible to capture the quantity of items being bought, total all items, take the customer's charge card or cash, print out a receipt, update system on-hands, and once on-hands fall within a certain predetermined range, place another order.

Placing the order may be done automatically or an employee may have to check to ensure that the quantity in the

store matched what the computer system says. Once everything is checked then the order is placed. Ordering products for a retail store once consisted of multiple pages of products, searching through thousands of codes, or UPC's to find the correct product and then writing up an order by a hand which then needed approval. After this process was complete the order was either mailed or faxed to the manufacture. This process has since been replaced and today is mostly if not totally automated.

In today's business world with the help of technology, a business manager or owner, who may have more than one retail store, has the ability to monitor how the stores are doing without ever setting foot inside one of the stores. Through technology, a corporate manager, a store manager, an employee or even a customer can check the inventory in any given store or location without actually being at that store.

At Home Depot for instance, any customer can login to their home computer or other device that can access the internet and within minutes, log into HomeDepot.com and be able to determine which store has the product that they are looking for. It is also possible to order the product or have it shipped from another store without ever having to go to a Home Depot store. Shopping for some has become less stressful and a real time saver because of modern technology and the ability to shop and locate what one is looking for without ever leaving the house.

People often spend their time running from a store to store looking for a product. But those with the knowledge and use of the Internet can locate almost anything they are looking for and have it shipped directly to their location. All of this can be accomplished thanks to retailers using complex inventory systems.

## **SYSTEMS EVOLVE**

Not all businesses are retail or manufacturing businesses and therefore not all businesses carry an inventory. Those that do however, need an inventory plan. Back in the day, merchants used a pad of paper and their favorite writing implement, usually a pencil (with an eraser), to maintain a list of items or products that they needed for doing business. Much of this information was stored in the owners' or managers' head.[5] Since their livelihood was at stake, they became relatively good at it.

Training a new worker not only involved the pencil and notepad reconciliation method, but also the passing of information from the previous owner/managers memory, to the new employee. Needless to say this could be difficult at best.

Since the late 18<sup>th</sup> century tracking goods and products have changed and improved with the help of constantly changing technology. Using technology like punch cards, barcodes and now Radio Frequency Identification (RFID) capability, gives businesses the edge to stay ahead and in control of their inventory. This type of technology allows businesses and suppliers to stay in constant contact with one another and have up-to-date reliable information.

Even the best technology does not weed out the possible error in the transmission of information. Still, knowing that technology failures do happen, businesses are finding that the downside effects of using modern technology, do not outweigh the reasons to keep using technology as a way to keep up with the ever changing world. [6]

With this type of technology, it is more important that businesses have an accurate system in place to track the store's inventory. What would be worse than not having the product on the shelf, having the customer drive to the store to

find out that the on-hands in the computer system was incorrect, and now the customer has not only wasted their time but they are also upset.

## TYPES

Inventory plans can be broken down into two main types, periodic and perpetual. The difference between a periodic and perpetual inventory is that a periodic inventory is done less often, or periodically, possibly weekly, monthly or quarterly, meaning that there is less time spent managing the inventory. It also means that the status of the inventory is only as current as of the time and date that the last inventory was taken.

Perpetual inventory is done daily, or perpetually, based on sales or replenishment of the product. The size of the business often entails how many employees are responsible for inventory, tracking, placing and reconciling as well as how often this task must be done. Too many cooks in the kitchen is not always a good thing.[5]

Although both of these types can be performed manually, more often than not, these days, both types are automated. Automation promotes strong internal controls which can include security tags and theft reduction measures, as well as electronic data interchange (EDI), which is an automated re-ordering procedure that assures that the business has a constantly updated supply of products, which in turn keeps customers happy and enables the organization's profits to remain high.

Improper inventory control is usually costly to a business. Smaller businesses need to spend their money on products that will sell, and try not to stock too many products that do not. These automated systems track the popular sales items as well as what does not sell. With these systems in place, at a glance, managers can know which items are producing profits and which ones are not.[5]

## TRACKING

Inventory is usually a major expense for an organization. A significant portion of its money is tied up in purchasing and storing products for resale. For this reason, it becomes crucial that product inventory is closely monitored and adjusted quickly as needed.

Automated systems utilize various methods to track products. Some use tags on items, skew numbers, Universal Product Code (UPC or barcodes), and Radio Frequency Identification (RFID) systems. [1]

UPC is probably the most widely known form of inventory tracking technology. Depending on the type of business or product, a barcode is placed on the product to identify a specific item. This item can be tracked from the time the barcode is placed on the item until such time that the item reaches the end of its life cycle. Hand held electronic devices can be used to scan the item into the inventory database, to keep track of the item while it is in the inventory, and again, the barcode can be used during the point-of-sale transaction. Each time the barcode is scanned by some form of electronic device, the barcode is read and sends a signal through a computer software program that is used to update than items' status in the database and track that the product. [1]

Radio Frequency Identification systems are not quite as common to the average consumer, but they are in wide spread use, especially in large inventories, primarily stored in warehouses. There are two types of RFID readers, passive or active systems. With passive systems the item must be scanned under a reader device that can be a permanent or a

handheld device. The active system does not require direct contact and does not require the use of human interaction. This type of system would be used for the monitoring real time movement of products and where security issues are a problem. [1]

Although consumers are not as readily aware of the RFID system tracking technology as they are some of the more common tracking types, they are somewhat familiar with RFID “drive by” technology that is used by local governments to read water or gas meters in homes. Their town employees no longer need to go door to door and physically read meters in order to prepare bills for residents, they simply drive by the home and meters are read electronically by devices that are designed to do so.

The tag system does not track the item through inventory, it simply captures the sale at the end and records that to inventory as item sold. This type of system can be used in smaller business that might use barcodes or where security is not a problem. This type of inventory tracking does require human interaction at the point of the tag being applied and removed from the item. [1]

Understanding the life cycle of a product is important to someone who is running a business. Through proper training and a good computerized inventory system that is suited for the size business that it is implemented for, makes tracking inventory with the help of technology a manageable task

## **TRACKING INVENTORY SHRINKAGE**

Tracking inventory shrinkage can be a big issue in some businesses. Inventory shrinkage (missing products) is caused by a combination of factors such as, human error when imputing counts and information by vendors and employees, theft, accidental breakage and shoplifting. Shrinkage can be reduced with the aid of technology like security cameras, tags on products, and alarms that are set to sound throughout a retail store, that detect when an item is being removed from an area without proper assistance.

Taking these few steps has helped many businesses reduce their amount of theft. By monitoring the inventory closely and noticing items that are either ordered often with low or no sales, or receiving a product that is stated on inventory invoices but the product was never actually shipped, can reduce inventory loss which saves businesses their bottom line. [4]

During holiday shopping and other busy times of the year it is hard to monitor every customer or employee. Installing security cameras can deter someone from shoplifting, but it is nearly impossible to have a security camera that is able to capture every spot in a business or every action. Using other methods such as security tags, or locking items up that allows the customer to view the product but then requires them to seek assistance to retrieve that item, are ways to reduce theft. [4]

Having the technology and software to scan items at both entry and point-of-sale is another way to reduce human error and to capture the item by scanning the barcode. There is still some amount of human error with this process, which could occur when the barcode was created or misguided information was entered into the software system. By printing of software generated reports and inventory management follow-ups, errors like these can be easily spotted and corrected.

The more we are able to rely on and use the information that is transformed through the use of technology, the

less errors are going to happen. The key is to use the software the way that it is designed and to train employees how to effectively use the software. [4]

## **EFFICIENCY**

About sixty percent of businesses are using the perpetual inventory method. From warehouses to shelves, to point of sale, organizations can now track product movement in real time. These businesses are able to track and record each and every transaction and monitor product sales so quickly and efficiently that managers can make price or sales adjustments at any time, instantly. This enables managers to make smarter business decisions faster which in turn helps store profits. It helps eliminate over purchasing some items, while purchasing more of the popular items in a timely manner. [7]

By using a real-time inventory system, a retail business or franchise has the ability to locate items that are currently available at other locations. This process also aides during the replenishing and reordering of what each specific store has sold, instead of using a blanket order for all stores, which can result in inventories becoming overloaded with certain products that are not selling, [7] for example store locations that deal with seasonal products. It's not likely that snow blowers will sell very well in the southwest, or even in the summer months in the northeast. This type of an inventory system would be helpful for sales and restocking.

There are different ways in which technology can be effective in helping businesses and organizations track their product. Retail for instance, needs to have a system that can accurately track their inventory. Managers need to know how much stock a store has at any given time, or how much and what type of product is sold in a week or a month. They need the ability to re-order merchandise and even track theft.

Theft has always been a problem for retailers but finding ways to prevent or deter theft could save their business and bottom line. As technology keeps improving, businesses are able to implement computer software systems that can help with the issues described.

When it comes to the inventory of an organization, tracking could mean the difference between staying in business or going under. It is necessary to have a system that can accurately track inventory that has sold, as opposed to inventory that has disappeared from stock for one reason or another. It is important to know why inventory is missing and what to do about it if an organization wants to stay in business.

Good inventory systems help managers develop theft prevention strategies and aid in keeping loss to a minimum. At the end of the day a business must know where they stand with their numbers and make adjustments were necessary.

Through the use of technology and appropriate software, businesses can determine at a glance how their sales are doing and monitor the inventory flow. With the use of computers, managers that are in charge of operating a business from more than one location can keep tabs on just how well the operation is doing from any location.

## **CONCLUSIONS**

Using technology to track the inventory in a business or an organization is very popular these days. Advanced technology methods and computer intergraded software programs make tracking inventory easy and accurate. With such a wide variety of inventory systems available it is certain that a system can help, in all types of businesses. Tracking inventory with the use of technology saves time and if being use efficiently, can be more accurate than having a human

counting each piece of inventory by hand.

Once the system is set up and the employees are well trained in how the system is used and can properly operate the system, the only thing left to do is weekly or monthly checks they insure the system's accuracy.

Inventory tracking helps a business or organization stay in stock or track where and how their product is selling or is used. From the time the product is manufactured until the time it is sold and the sale is captured at the register, that product has a life, a life that was tracked until sold.

Even after some products are sold they can be tracked through serial numbers and when the product's life expires a company can see how effective the product was through its life. This type of information can be used by the supplier to help improve their product. Tracking inventory is more than just knowing how much stock a business has, but also how well that the product survived during its life.

Some companies like retail, use inventory to know how much stock they have on the shelves and to ensure they have what the customers are buying. The process is a quiet simple, after the product arrives on the truck it is first scanned in with an electronic device that enters the product into the store's inventory. Later when the product is purchased and is scanned through the register by another electronic device, not only is the customer buying the product but the software system in the register now calculates how many products were just sold and deletes that count from inventory.

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