## Retail Store Stock Inventory Analytics

## Abstract:

The following are the expected project outcomes. The first one is that the project will have a system that saves time. This means that if the company has a manual inventory system, the electronic system will help to save on time. The other outcome of the project is that the inventory system adopted by the company should have accuracy such that it can reconcile the actual physical stock with the electronic records

## Literature review:

Products are considered as the business resources for the organization. This includes

managing the product with appropriate way to review any time as per the requirement.

Therefore it is important to have a computer based IMS which has the ability to

generate reports, maintain the balance of the stock, details about the purchase and

sales in the organization. Before developing this application we came up with Inventory Management System existing in the market, which helps to give the knowledge for the development of our project. These application software are only used by the large organization but so we came up with the application which can be used by the small company for the management of their stock in the production houses. After analyzing the other inventory management system we decided to include some of common and key features that should be included in every inventory management system. So we decided to include those things that help the small organization in a way or other.

Introduction:

The manual inventory gives an uphill task to the inventory manager, who has to reconcile every receipt and the physical stock. A computerized point of a sale information system that updates the inventory once there is a sale simplifies the inventory management. This may involve installing bar code scanners at the point of sale scanners to mark up every item sold. The inventory should also evaluate how each product is faring in terms of sales. Besides, the systems should provide analysis of the comparison between different products as well as other competitor retails. The inventory systems should also have security measures to keep the inventory away from unauthorized persons.

Objectives:

This project will ensure that the organization saves money and time thereby reducing the cost that the company is incurring while maximizing profits.

Technical Architecture:



**Predicting Out-of-Stock Using Data Analytics**

Out of Stock:

Detection and Prediction Most research on the detection of OOS has been approached from the retailer’s perspective. Presented the use of zero balance walks. In this strategy, the employees walk the store periodically to check for stock outs (physical audits). Implemented an RFID system in a retailer to monitor on-shelf availability used point of sale data (POS data) obtained directly from a retailer information system to detect the occurrence of OOS. Physical audits and RFID to detect OOS have in common their high overall cost, making them barely scalable to a large number of stores, categories, and products. Alternately, the detection of OOS events based on POS data (data-driven) present important advantages such as reducing labor intensity and human error of measurement, making this method scalable and more efficient in terms of overall cost. Some of the challenges of this method are access to the historical POS data, determining which variables are related to the OOS occurrence and developing mechanisms with more efficient detection performance. Usually, the POS data used are product sales (captured by check-out scanners) and inventory records. There is a lack of research in OOS detection from a manufacturer’s perspective. In they partnered with a product manufacturer and a retail service provider to use transactional data shared by the retailer to detect OOS events and correct them with physical audits. Due to the OOS research generated in recent years, knowledge about their consequences and drivers has increased. This has led to the development of a third area of research, which addresses the detection and/or prediction of OOS occurrence, one of the most important challenges related to this problem In principle presented three methodologies for measuring OOS: manual audit method, POS sales estimation, and perpetual inventory aggregation. The first method is the traditional approach, where an auditor looks for “holes” generated by the products that are not visible on the shelf to the consumer. The second method uses point of sale data (POS data) to predict missed revenue due to OOS. Finally, the third method uses perceptual inventory data (PI), “PI systems track sales, and when sales = 0, the item is OOS” In recent times, new technologies and tools have been incorporated to measure and detect OOS, such as RFID, automated identification systems through image recognition, stochastic prediction models, and machine learning techniques. As mentioned previously, presented the zero balance walk method, where employees walk the shop floor regularly to look for stock outs. Some disadvantages of this method include that retailers often choose a small number of items and set a time for conducting these audits due to financial limitations and the lack of staff available to conduct physical audits. As a result, the expense of this approach is prohibitive for maintaining a continuous measurement, and therefore it is not scalable to a broad range of stores or products Currently, the retailer (internal audit) or the manufacturer (external audit) may start and lead the OOS measurement. The manufacturer can perform the audit either directly through their own work teams or via third-party, as retail service providers PI also has disadvantages since its accuracy is less than 50%, and it normally only detects store OOS rather than shelf OOS Reference presented a pilot project that proposed an RFID infrastructure that stored data in real-time, allowing for OSA and OOS tracking, demonstrating the advantages of inventory management in a retail store. However, some authors have stated limitations of the use of this technology.

Conclusion

For the success of the program, the managers of the retail stores must formulate a modern way of managing the inventory by instituting electronic systems to take care of the resources of the company. This ensures that they can be accounted for and there are proper records available all the time for reference to be made when the need arises. Besides, the retail management system is necessary for ensuring that there is accountability in the way the company handles its stock. It helps in saving time.