Ideation Phase
Literature Survey

Date	1 October 2022
Team ID	PNT2022TMID32631
Project Name	Project – Retail Store Stock Inventory Analytics

1. Problem Statement:

To create an inventory analysis system that will allow retailers to satisfy demand from customers without running out of inventory or holding too much on hand.

2. Need for the application:

Products are regarded as the company's business resources. This involves handling the product in a proper manner so that it may be reviewed as necessary. The existing method is manual, requiring users to keep ledgers, books, etc. to record data on suppliers, inward shipments, deliveries, and returns of goods. Historical data maintenance is quite challenging. Estimating the need for additional raw materials, dealing with the creation of purchase orders, purchase invoices, sales invoices, and debit notes are some of the crucial business procedures. A group of competent workers who are quick with financial computations and have a good memory do all of these tasks. Although the activities are managed effectively, the process takes a long time and is prone to human mistake. A computer-based IMS (Inventory Management System) that can produce reports, keep track of the stock balance, and provide information on purchases and sales made by the company is therefore essential. A big retail business could run out of an essential item if the inventory isn't controlled properly. The wholesaler will be informed when it is time to record by a reliable inventory management system. Automatically tracking large shipments requires the use of an inventory management system. Stock recording mistakes are decreased with an automated inventory management system. Effective retail inventory management really reduces costs and improves knowledge of sales patterns. Tools and techniques for retail inventory management provide merchants with additional data to manage their companies.

LITERATURE SURVEY ON RETAIL STORE STOCK INVENTORY ANALYTICS

S.NO	PAPER NAME	DESCRIPTION	AUTHOR	YEAR	REFERENCE
1.	Combination of Advanced Robotics and Computer vision for Shelf Analytics in a Retail Store	A Double Robot used to patrol the store in fixed path and capture images of retail shelves at real time. These images used to address challenges like stock out problem and misplaced products.	Gopichand Agnihotram, Navya Vepakomma, Suyog Trivedi, Sumanta Laha, Nick Isaacs, Srividya Khatravath, Pradeep Naik, Rajesh Kumar.	2017	https://ieeexplore.ieee.org/document/8423894
2.	Development of Smart Sensor Array Mat for Retail Inventory Management	A piezo-resistive sensor mat is used to track the base structure shape of the stock. The sensor mat was used to reduce the mismatching of items caused by human error.	Ruiqi Lim, Musafargani Sikkandhar, Ming-Yuan Cheng.	2022	https://ieeexplore.ieee.org/document/9816441
3.	Towards Intelligent Retail: Automated on-Shelf Availability Estimation Using a Depth Camera	A consumer-grade depth sensor was used to detect out-of-stock situation. The output of the system is used to generate alerts for store managers, as well as to update product availability continuously. No prior knowledge about the product is required.	Annalisa Milella Antonio Petitti ,Roberto Marani Grazia Cicirelli, Tiziana D' orazio	2020	https://ieeexplore.ieee.org/document/8963979
4.	Exploiting Egocentric Vision on Shopping Cart for Out-Of-Stock Detection in Retail Environments	A deep learning approach for the detection of Out-Of-Stock (OOS) was developed. A Convolutional Neural Network (CNN) was trained to predict attention maps that are useful to find OOS areas and suggest the retail employers where to intervene. This result in both objective measures and subjective measures.	Dario Allegra, Mattia Litrico, Maria Ausilia Napoli Spatafora, Filippo Stanco, Giovanni Maria Farinella	2021	https://ieeexplore.ieee.org/document/9607839
5.	Store-sales Forecasting Model to Determine Inventory Stock Levels using Machine Learning	The prediction models Random Forest and XGBoost regressor are used to give better accuracy in predicting sales.	Akanksha Akanksha, Devesh Yadav, Deepak Jaiswal, Ashwani Ashwani, Ashutosh Mishra	2022	https://ieeexplore.ieee.org/document/9850468