

RETAIL STORE STOCK INVENTORY ANALYTICS

NALAYA THIRAN PROJECT BASED LEARNING

on

**PROFRSSIONAL READINESS FOR INNOVATION, EMPLOYABILITY AND
ENTREPRENEURSHIP**

A PROJECT REPORT

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BONAFIDE CERTIFICATE

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ABSTRACT

In recent years, the correct management of inventories has become a fundamental pillar for achieving success in enterprises. Unfortunately, studies suggesting the investment and adoption of advanced inventory management and control systems are not easy to find. In this context, this article aims to analyse and present an extensive literature concerning inventory management, containing multiple definitions and fundamental concepts for the retail sector. The objective of this project is twofold. First, it proposes an analytic model for hospital inventory management commodities, which would be able to predict the future demands of various inventory commodities. The model takes into account previous demand, population and geographic location and other factors to successfully predict the future demand. Second, the project suggests an optimization model that would minimize the cost involved in supply chain & logistics management so that the required commodities can be made available to the hospitals at the minimum possible cost. As inventory management deals with huge volume and different varieties of information which seems very complex to handle in the daily basis. Inventory stock should be modified or updated based on the customer retention which changes continues with the change in demand which also adds value to the organization in profits by avoiding wastage in the stock. To update the stock data in the organization one should keep on track with the end user demand time to time which can be done by keep track on goods based on First in first out and Last in First Out stock. Nowadays retailers are having access to a raw material of production: big data. In this article, we attempt to focus on the value created by big data for retail industry. While almost of publications of big data and big data analytics are around the technical side, there is a lack of papers and studies which focus on retail.

An efficient inventory management ensures continuous production by maintaining inventory at a satisfactory level. It also minimizes capital investment and cost of inventory by avoiding stock-pile of product. Efficient and Effective Inventory Management goes a long way in successful running and survival of business firm.

KEYWORDS: Analytic Model, Optimization Model, Inventory Stock, Inventory Management, Big Data Analytics, Retail Industry.

CHAPTER 1

INTRODUCTION

Big data refers to datasets which are difficult to capture, store, manage and analyses effectively using current database management software and concepts. This definition remains subjective, we don't define big data in terms of being larger than a certain number of terabytes cause as technology advances, the size of datasets that qualify as big data will also increase. Also the definition can be different from sector to another, depending on software tools are available and sizes of datasets. Nowadays many companies are collecting and processing a huge amounts of data on a daily basis: for instance, Google processes about 24 petabytes of data every day, Walmart collect more than 2.5 petabytes of data every hour from customer transactions alone. With the all of data that being generated, we must have analytics to obtain insights from big data.

A retail store is an interesting amalgam of a factory and a sales office and store employees are responsible for a wide range of execution tasks that collectively determine the success of corporate plans. Factory related store execution tasks include receiving product, moving product from the back room to shelves as needed, putting items moved by a customer back to where they belong on the shelf and checking customers out. Fisher notes similarities between the execution tasks of a retail store and an automobile assembly plant, and suggests drawing on the Toyota Production System as a source of ideas for improving retail store execution. Sales office store execution tasks include all interactions with customers, such as greeting them, asking if they need help, and when requested, providing advice to enable them make a purchase decision and to find the products they have decided to buy.

Interestingly, for many years, retailers have been administering surveys to their customers to measure both their overall level of satisfaction and their opinion of various details of their store experience. Many of the detailed questions relate to store execution. For example, 'Did you find what you were looking for?' is a commonly asked question directly related to the missing inventory issue noted above. It is thus natural to consider using this data to better understand issues related to store execution, including what factors influence the quality of execution and what is the impact of execution on output variables of interest to the retailer, such as sales and overall customer satisfaction.

The present paper focuses on the review of existing literature in the field of Inventory Management which helps in capturing both conceptual and research based studies. A Number of studies have been conducted to find the determinants of investment in inventories and the process is still going on.

1.1 PROJECT OVERVIEW

To accomplish the goals described above, the study follows the Fink methodology. It consists of seven main tasks:

- (1) choosing research questions,
- (2) defining bibliographic or article databases,
- (3) selecting search terms,
- (4) applying practical screening criteria,
- (5) applying methodological screening criteria,
- (6) doing the review, and
- (7) synthesizing the results.

Therefore, the systematic literature review starts establishing the particular needs for knowledge or research questions. For this purpose, the PICO methodology was used. In this case, Population refers to retail companies; Intervention relates to inventory control and management; Comparison refers to identifying systems, methodologies, and tools, and Outcomes refers to answer the research questions.

1.1.1 METADATA ANALYSIS

Based on the literature review, several results were obtained with the codes used. Within these codes are demographic data, such as year and country. In the results obtained between the years 2015 and 2019, it can be seen that studies have been increasingly carried out in such a way.

1.1.2 CONTENT ANALYSIS

In the succeeding part, the qualitative results of the study based on the research questions posed are presented. A retail store must have the same data in all its records, that is, the data that has been recorded in the information system must be the same data that is physically held.

1.1.3 ANALYTIC MODEL

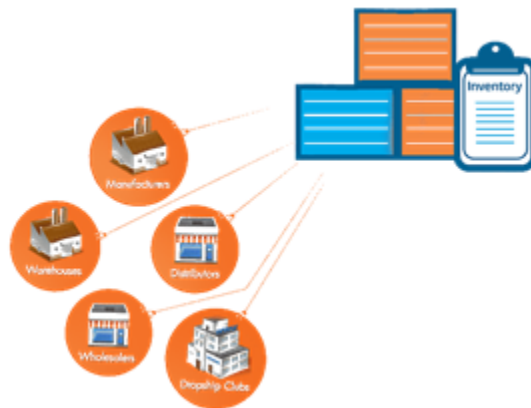
Analytic models are rarely static. Their aim is to model the organization in such a way as to allow managers to investigate what is actually going on and to assess changes to the way it operates. These changes may include looking at price/cost structures; the way in which departments are organized; partnerships; outsourcing; or introducing new products/services into

new territories. Analytic models are a powerful approach for developing theory, yet are often poorly understood in the strategy and organizations community. Our goal is to enhance the influence of the method by clarifying for consumers of modelling research how to understand and appreciate analytic modelling and use modelling results to enhance their own research. An analytical model is quantitative in nature, and used to answer a specific question or make a specific design decision. Different analytical models are used to address different aspects of the system, such as its performance, reliability, or mass properties. Analytical models must be expressed with sufficient precision that they can be formally analyzed, which is typically by a computer. Model checkers are needed to ensure the analytical model is well formed, so it can reliably support the analysis.

1.1.4 INVENTORY MANAGEMENT

Inventory management refers to the process of ordering, storing, using, and selling a company's inventory. This includes the management of raw materials, components, and finished products, as well as warehousing and processing of such items.

- Inventory management is the entire process of managing inventories from raw materials to finished products.
- Inventory management tries to efficiently streamline inventories to avoid both gluts and shortages.
- Two major methods for inventory management are just-in-time and materials requirement planning.



1.1.5 INVENTORY STOCKS

Stock is the supply of finished goods available to sell to the end consumer. Inventory can refer to finished goods, as well as components used to create a finished product. As you can see, all stock is inventory but not all inventory is stock. Since it's a subtle difference in meaning, it might not seem like a big deal to understand how they are used through supply chain. Types of inventories:

- Raw materials
- Work in progress
- Finished goods
- MRO – Maintenance, Repair, and Operation

All the raw materials used to create the notepad, such as pulp, chemicals, metal wires, plastics, and fabric.

1.2 PURPOSE

Retail Sales measures the gross receipts of a retail store by selling durable and nondurable goods. The main components of retail sales are grocery, food & clothing and shoe retailing. In India, consumer spending roughly accounts for over 60% of GDP and is therefore, a vital element in the country's economic growth. Any change in retail sales pattern is important and is seen as the timeliest indicator of wide consumption patterns. Retail sales may have short term and long term goals in nature. Short term retail sales goals are supposed to support and merge into long term goals.

CHAPTER 2

LITERATURE SURVEY

2.1 EXISTING PROBLEM

2.1.1 INVENTORY RECORD INACCURACY: AN EMPIRICAL ANALYSIS

YEAR: 2004

AUTHORS: Nicole DeHoratius, Ananth Raman

This study explores Inventory Record Inaccuracy (IRI), that are observed within and across the product category and the retail stores. Nearly 370,000 inventories from 37 stores of a single retailer is examined and the inaccuracy was found to be of 65%. Thus Hierarchical Linear Modelling (HLM) was applied and the inaccuracy between the inventories are found to be reduced to 26.4%. These inaccuracy involves complexity of the store environment, product distribution structure etc... [4]

LIMITATIONS

The limitations of the inventory record include not knowing an exact inventory count in the middle of the period and running the risk of stock outs. With the periodic system, the company knows the inventory level with certainty only when it physically counts the inventory at the end of each period. Throughout the period, the company takes customer orders without knowing the exact inventory count or whether enough products are available to meet customer demand

2.1.2 A REVIEW OF INVENTORY MANAGEMENT RESEARCH IN MAJOR LOGISTICS JOURNALS: THEMES AND FUTURE DIRECTIONS

YEAR: 2008

AUTHORS: Brent D. Williams, Travis Tokar

This paper reviews the inventory management articles published in major logistic outlets. Two major themes are found to emerge from logistics research focused on inventory management. First, logistics researchers have focused considerable attention on integrating traditional logistics decisions. Second, logistics researchers have more recently focused on examining inventory management. [3]

LIMITATIONS

The names are revealing of the underlying inventory management practices. A business may use one system or the other, or a combination of the two. A manufacture may use a periodic inventory. Raw goods are purchased, stock is drawn to make products for sale, and raw goods are counted on a periodic basis, such as weekly or monthly, at which point additional materials are ordered.

2.1.3 INVENTORY MANAGEMENT OF A FAST-FASHION RETAIL NETWORK

YEAR: 2009

AUTHORS: Felipe Caro, Jérémie Gallien

This study shows the financial performance of the fast-fashion brand Zara. Besides other fast-fashion retailers like H&M., World.Co., this new Zara defines their novelty in supply chain architecture that relies on cutting, dyeing and sewing the clothes. This outsourced the traditional activities in developing countries, this product development process obviously helped them to increase labour cost, and provide greater supply flexibility and market responsiveness. [2]

LIMITATIONS

The problem of distributing, over time, a limited amount of inventory across all the stores in a fast-fashion retail network. Challenges specific to that environment include very short product life cycles, and store policies whereby an article is removed from display whenever one of its key sizes stocks out

2.1.4 CONTEMPORARY SUPPLY CHAIN AND INVENTORY DATA MANAGEMENT USING DATA ANALYTICS

YEAR: 2008

AUTHORS: Dr. S. Sai Satyanarayana Reddy, Ch. Mamatha, Priyadarshini Chatterjee and S Nagarjuna Reddy

Here Supply Chain Management is used for enabling the big data analytics. This stock management includes the flow of end-users across the market environment. The Big Data involves in immediate inventory management to access and control the data metrics using cloud

computing technology. The stock management deals with the huge volumes and different varieties of information which seems very complex to handle in daily basis. [1]

LIMITATIONS

Changing a supply chain management system takes financial investment, time, and human resources. If not implemented properly, there will be wasted labor, service redundancy, and missed deadlines that result in significant costs. To avoid these unnecessary costs, high-quality logistics providers always complete a thorough analysis before implementing changes to the supply chain. If searching for logistics providers, always inquire about the training process and the usability of their tools and technology. An experienced provider should start with a clearly defined on boarding or transition process that can then be customized to fit unique teams and timelines.

2.1.5 SUPPLY CHAIN MANAGEMENT BASED ON THE SHARING OF INVENTORY INFORMATION ANALYSIS ESTIMATES

YEAR: 2010

AUTHOR: ShuQing Lv

This studies the Supply Chain Management as the rapid development that gradually enhances the overall strategies. It serves as the value of collaboration in information sharing, in-depth analysis, mining the measured values and pricing models. Inventory information sharing by comparing two-stage supply chain with the traditional order-driven supply chain costs and to establish the value of inventory information sharing model. The realization of information driven by the end of the upstream and downstream inventory information sharing, the manufacturer of a cooperation agreement in the lower reaches of enterprises under the management of inventory, in the lower reaches of the user's assistance program to more effectively. [5]

LIMITATIONS

Supply chain management will reduce uncertainty along the chain, it will also enforce proper inventory levels in the chain. A huge result of an effective system is also minimized delays. This factor will not only benefit a business but will also satisfy consumers, ensuring consumer loyalty and repeated business. An efficient supply chain management system will enable a contemporary business to provide good customer service and to eliminate rushed or unplanned activities that may occur. Most certainly, an effective supply gives a business an upper hand on its competitors in the marketplace. The benefits of this systematic approach impacts areas ranging from product quality to order turnaround times.

2.1.6 THE RESEARCH OF FEASIBILITY ANALYSIS AND RISK PREVENTION MEASURES OF ZERO INVENTORY

YEAR: 2009

AUTHORS: Cui-yun Mao, Qiang Mei, Zhi-qiang Ma

The special concept called the zero inventory was studied here. This concept includes both industrial and the commercial enterprises. Zero Inventory is a form of warehouse of certain items of low number concepts, even for zero, where the inventory does not actually exist. This resolves the problems that included in warehouse construction, management cost, inventory maintenance, storage, transportation and many more. In 20th century, Japan's Toyota Motors implement just-in-time production and in the management means use the billboards management to production units, such as pull production technologies. [6]

LIMITATIONS

A feasibility study is not intended to identify new ideas or concepts for a project. These ideas should be clearly identified before a study is initiated. Assumptions that are partially developed from these ideas provide the basis for the feasibility study, so the more realistic they are, the more value the study's findings will have for a group's decision-making. A study should not be conducted as a forum merely to support a desire that a project be successful. Rather, it should be an objective evaluation of a project's chance for success. Even studies with negative conclusions are useful for group decisions

2.1.7 STUDY ON PARE PARTS INVENTORY CONTROL BY QUANTITATIVE ANALYSIS IN THE ENVIRONMENT OF ERP SYSTEM

YEAR:2011

AUTHORS: Zhou Wen-Yong, Xu Ying, Shen Bing

This paper acknowledges the inventory controls that are necessary for the equipment's stable operation and economic benefits. The development information of an ERP application, where the inventory control and the quantitative analysis of inventory theory are discussed through control models. This combination of ERP system and the inventory management is an inevitable trend in the development of modern business standards. [7]

LIMITATIONS

Quantitative research methodology usually requires a large sample size. However, due to the lack of resources, this large-scale research becomes impossible. In many developing countries, interested parties may lack knowledge and especially the resources needed to conduct thorough quantitative research. Sometimes researchers face problems to control the environment where the respondents provide answers to the questions in the survey. Responses often depend on a particular time which again is dependent on the conditions occurring during that particular time frame.

2.1.8 THE STUDY OF DATA ANALYTICS IN INVENTORY MANAGEMENT

YEAR: 2017

AUTHORS: Mansi Khurana, Deepak Kumar

This paper explains the Data Analytical (DA) tools that are applied in the domain of Supply Chain Management (SCM). Here the practical implementation of the Linear Discriminant Analysis on a large inventory data set to find the dependencies are illuminated. The DA slowly brought a world-wide revolution by empowering the Data Visualization. MNCs like Google, Facebook, Twitter, Wal-Mart etc... adopted this data visualization to simplify the complexity of data handling. This DA in SCM caters the DA application in the inventory level of implementations in different domains by using a huge data sets. [8]

LIMITATIONS

This may breach privacy of the customers as their information such as purchases, online transactions, subscriptions are visible to their parent companies. The companies may exchange these useful customer databases for their mutual benefits. The cost of data analytic tools varies based on applications and features supported. Moreover, some of the data analytic tools are complex to use and require training. It is very difficult to select the right data analytic tools. This is due to the fact that it requires knowledge of the tools and their accuracy in analysing the relevant data as per applications. This increases time and cost to the company.

2.2 REFERENCES

1. Dr. S. Sai Satyanarayana Reddy, Ch. Mamatha, Priyadarshini Chatterjee and S. Nagarjuna Reddy, Contemporary Supply Chain and Inventory Data Management using Data Analytics, International Journal of Mechanical Engineering and Technology 8(12), 2017, pp. 290–295.
2. Felipe Caro, Jérémie Gallien, (2010) Inventory Management of a Fast-Fashion Retail Network. Operations Research 58(2):257-273.
3. Williams, B.D. and Tokar, T. (2008), "A review of inventory management research in major logistics journals: Themes and future directions", The International Journal of Logistics Management, Vol. 19 No. 2, pp. 212-232. <https://doi.org/10.1108/09574090810895960>.
4. DeHoratius, N., & Raman, A. (2008). Inventory Record Inaccuracy: An Empirical Analysis. *Management Science*, 54(4), 627–641. <http://www.jstor.org/stable/20122416>
5. S. Lv, "Supply Chain Management Based on the Sharing of Inventory Information Analysis Estimates," 2010 Second International Conference on Computer Modeling and Simulation, 2010, pp. 443-446, doi: 10.1109/ICCMS.2010.323.
6. C. -y. Mao, Q. Mei and Z. -q. Ma, "The Research of Feasibility Analysis and Risk Prevention Measures of Zero Inventory," 2009 Second International Conference on Future Information Technology and Management Engineering, 2009, pp. 69-72, doi: 10.1109/FITME.2009.23.
7. Zhou Wen-Yong, Xu Ying and Shen Bing, "Study on spare parts inventory control by quantitative analysis in the environment of erp system," 2011 International Conference on Business Management and Electronic Information, 2011, pp. 259-263
8. M. Khurana and D. Kumar, "The study of data analytics in inventory management," 2017 International Conference on Infocom Technologies and Unmanned Systems (Trends and Future Directions) (ICTUS), 2017, pp. 140- 144.

2.3 PROBLEM STATEMENT DEFINITION

Retail store stock inventory analytics is implemented to analyze the dataset which contains the historical sales data of a Brazilian top retailer. The main problem arises in these analytics is how much inventory should be considered. Enormous amount of inventory leads to capital and operational cost. Lack of inventory analysis leads to loss of sales that cause customer dissatisfaction and brand damaging.

By keenly understanding the dataset, identifying the pattern through the fundamental concepts, by working with IBM Cognos Analytics that leads to the visualizations of inventory historical data to create meaningful dashboards. Thus, the final dynamic dashboard helps the retailers that meet better customer service by providing improved visibility and accurate data for all products.

IDEATION AND PROPOSED SOLUTION

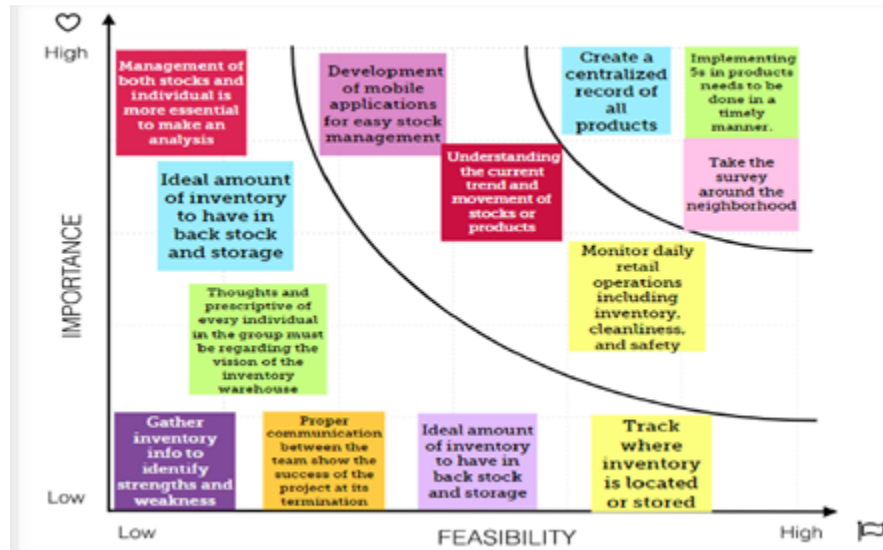
3.1 EMPATHY MAP CANVAS



3.2 IDEATION AND BRAINSTORMING

3.2.1 IDEATION





3.2.2 BRAINSTORMING

Brainstorm & idea prioritization

- 1. Welcome to people
- 2. There is a problem
- 3. All people are involved

RETAIL STORE STOCK INVENTORY ANALYTICS

Brainstorming/feedback

Before you collaborate
A little bit of preparation goes a long way when the meeting starts. Here's what you need to do right before.

- 1. Welcome
- 2. Team gathering
Gather the stakeholders and the team members to the meeting. Discuss the problem and the solution.
- 3. Welcome
Welcome the stakeholders and the team members to the meeting. Discuss the problem and the solution.
- 4. Welcome
Welcome the stakeholders and the team members to the meeting. Discuss the problem and the solution.

Open to all

PROBLEM STATEMENT

PROBLEM

Due to poor inventory control and no real inventory tracking, procedures across different stores and regional offices is inconsistent and not standard. Managing the inventory with paper work is slow and prone to errors and not accurate. But also one needs to have a good understanding of the market data, the store and the customer's need without having a stock or carrying excess stock.

Key rules of brainstorming
To be successful in brainstorming:

- 1. No criticism
- 2. No limits
- 3. No judgement
- 4. No restrictions
- 5. Encourage wild ideas
- 6. Quantity over quality
- 7. Build on the ideas of others
- 8. If possible, be visual

3.3 PROPOSED SOLUTION

S.no	Parameters	Description
1	Problem Statement (Problem to be solved)	<p>Due to manual inventory tracking, procedures across different software and spreadsheets are time-consuming, redundant and vulnerable to errors. Managing inventory with paperwork and manual processes is tedious and not secure. And it doesn't easily scale across multiple warehouses with lots of stock. Retailers can make them fulfil by analysis and visualization of stock data, they can meet the customer's need without running of stocks or carrying excess supply</p>
2	Idea / Solution description	<p>To notify the retailers about the cognos analytic tool, which is used to maintain their stocks and to improve their business by increasing the profit.</p>
3	Novelty / Uniqueness	<p>By using cognos, more efficient visualizations can be done, to distinguish the data easily. Software as a Service (SaaS) made the inventory analysis modest than on premise implementations and support system.</p>

4	Social Impact / Customer Satisfaction	<p>The retailers deliver the product to their customer earlier than before as the retailer's product details are stored in cloud and is easily accessible.</p>
5	Business Model (Revenue Model)	<p>When the retailers want to develop their store with a huge business, they can subscribe to the Premium option in cloud. This helps to enhance the business point in easy and efficient manner. The inventory that reduces the expenses will certainly help in increasing profit.</p>
6	Scalability of the Solution	<p>The Cognos analytics not particularly holds the small or big business. All types are included and treated as the same. Both the customers and the retailers get profited equally. The retailers those who holds the business are satisfied with this stock analyzing process as per their needs.</p>

3.4 PROBLEM SOLUTION FIT

<p>1. CUSTOMER SEGMENT(S) CS</p> <p>Who is your customer?</p> <p>Brazilian top retailer who contains large data sets of historical sales data is our customer.</p> <p>Our Customer is the one, who is doing the retail business.</p>	<p>6. CUSTOMER CONSTRAINTS CC</p> <p>What constraints prevent your customers from taking action or limit their choices</p> <ul style="list-style-type: none"> ★ Inadequate Capital ★ Lack of advanced Technologies ★ Stock quality and quantity ★ Laxity in current trends 	<p>5. AVAILABLE SOLUTIONS AS</p> <p>Which solutions are available to the customers when they face the problem? What have they tried in the past? What pros & cons do these solutions have?</p> <ul style="list-style-type: none"> → Making sure that the right products are available to the right people, at the right time, in their preferred shopping environment. → Precise prediction of profit & Losses by using Linear or Logistic Regression and Random Forest Algorithm.
<p>2. JOBS-TO-BE-DONE / PROBLEMS J&P</p> <p>Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one; explore different sides.</p> <ul style="list-style-type: none"> ★ Unable to track all sales receivables & purchase payables. ★ Daily Transportation Cost. ★ Stockouts & Overstocking. ★ Practice 80/20 rule to increase the sales profit. ★ Analyzing the stock & Inventory Data. 	<p>9. PROBLEM ROOT CAUSE RC</p> <p>What is the real reason that this problem exists? What is the backstory behind the need to do this job? i.e. customers have to do it because of the change in regulations.</p> <ul style="list-style-type: none"> □ If the colleague made a mistake, it will lead to the drastic change in the data. □ Non coordinated communication. □ Retailers Competition. □ Default mindset like managing the inventory through digital will not a ease job and managing the software leads to too much of money. 	<p>7. BEHAVIOUR BE</p> <p>What does your customer do to address the problem and get the job done? i.e. directly related. Find the right solar panel installer, calculate usage and benefits (indirectly associated), customers spend time on researching work.</p> <ul style="list-style-type: none"> ★ Unable to sell the products. ★ Over Stocking ★ Poor Production Planning ★ Poor Communication <p>The process of gathering data on the actions of buyers in a retail environment and then using that data to identify their buying preferences.</p>
<p>3. TRIGGERS TR</p> <p>What triggers customers to act? i.e. seeing their neighbor installing solar panels, reading about a more efficient solution in the news.</p> <ul style="list-style-type: none"> ★ More availability of same goods in near by locality at very affordable ★ Immense wastage of products due to less sales. ★ Reading about innovative ideas. ★ Profit making ★ Good sale ★ Business establishment <p>4. EMOTIONS: BEFORE / AFTER EM</p> <p>How do customers feel when they face a problem or a job and afterwards? i.e. lost, insecure > confident, in control + use it in your communication strategy & design.</p> <p>Before:</p> <ul style="list-style-type: none"> → Customers feel bad to spend more on the product for deliveries and orders . → Frustration → Helplessness → Demotivated → Sense of thrill → Confused. <p>After:</p> <ul style="list-style-type: none"> → Joyous and feeling good. → Feel a sense of freedom → Sense of Freedom 	<p>10. YOUR SOLUTION SL</p> <p>If you are working on an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality.</p> <p>If you are working on a new business proposition, then keep it blank until you fill in the canvas and come up with a solution that fits within customer limit alone, solves a problem and matches customer behaviour.</p> <ul style="list-style-type: none"> → Retailers deliver the product to their customers earlier than before as the retailer's product details are stored in the cloud and are easily accessible. → Creating a proper system to update both customers and retailers on the availability and demands of the goods and stocks in each locality. → Changing the existing software by new ideas, technology, inhibiting new algorithms using data analysis. → Improve the decision making process oriented at reducing costs and increase revenues. 	<p>8. CHANNELS of BEHAVIOR CH</p> <p>8.1 ONLINE What kind of actions do customers take online? Extract online channels from #7</p> <p>8.2 OFFLINE What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development.</p> <p>Online:</p> <ul style="list-style-type: none"> ★ Feedback sessions and query sessions can be made for customers. ★ Advertise with financial influencers to spread awareness and promote it. ★ Own app creation. ★ Modern Omnichannel inventory allows businesses to handle complex supply chains while ordering from multiple vendors . <p>Offline:</p> <ul style="list-style-type: none"> → Informal interactions among loosely organized firms, → Interaction guide by strong organization, → Enables to keep check on the warehouses where you have actually stored the product. → Physical touch and feel of the product. → Events and Trade shows.

CHAPTER 4

REQUIREMENT ANALYSIS

4.1 FUNCTIONAL REQUIREMENTS

FR No.	Functional Requirement(Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	<ul style="list-style-type: none">● Registration through Form● Registration through Gmail● Registration through LinkedIn
FR-2	User Confirmation	<ul style="list-style-type: none">● Confirmation via Email● Confirmation via OTP
FR-3	User Login	<ul style="list-style-type: none">● Login via form● Login via Email
FR-4	Stock Updating	<ul style="list-style-type: none">● Adding/Removing Stocks● Generating barcodes for products
FR-5	Stock Management	<ul style="list-style-type: none">● Predicting Out of stock and less brought stocks● Periodic generation of reports using Cognos analytics tool● Notification of the product regarding out of stock and expiry
FR-6	Billing Management	<ul style="list-style-type: none">● Fast billing through barcode● Quick generation of invoice after tax calculation● Discounts based on credit points

4.2 NON FUNCTIONAL REQUIREMENTS

+

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	<ul style="list-style-type: none">● Prediction of stocks reduceout of stock sand cost● Compatible with mobile and desktop
NFR-2	Security	<ul style="list-style-type: none">● Authentication of users to defend against other users● People withoutproper credentials cannot access the application
NFR-3	Reliability	<ul style="list-style-type: none">● Provides Accurate Stock prediction● Reduceloss for retailer● Notification systemfor expiry andout of stock products
NFR-4	Performance	<ul style="list-style-type: none">● Instant invoice generation using barcode● Improved accuracy in sales prediction● Real time reportgeneration● Working on large setof data
NFR-5	Availability	<ul style="list-style-type: none">● Accessible by all devices● Suitable for all kindof retail stores● Real timevisibility into stocklevels
NFR-6	Scalability	<ul style="list-style-type: none">● Many Retailers can access the application without any issues● Allows addingof new features

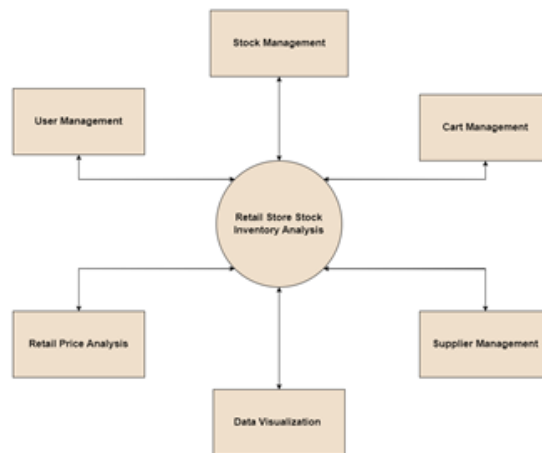
CHAPTER 5

PROJECT DESIGN

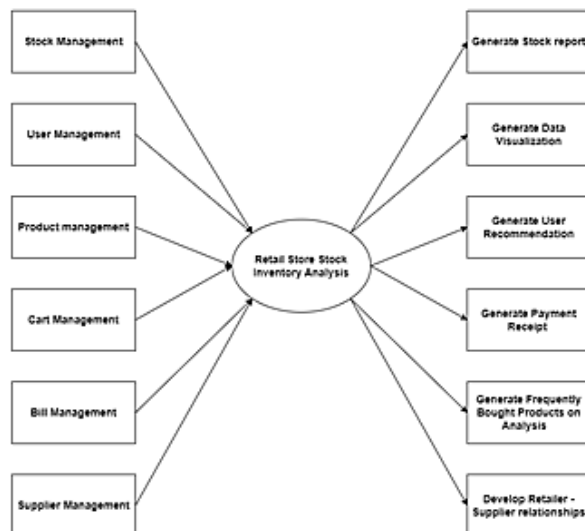
5.1 DATA FLOW DIAGRAM

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.

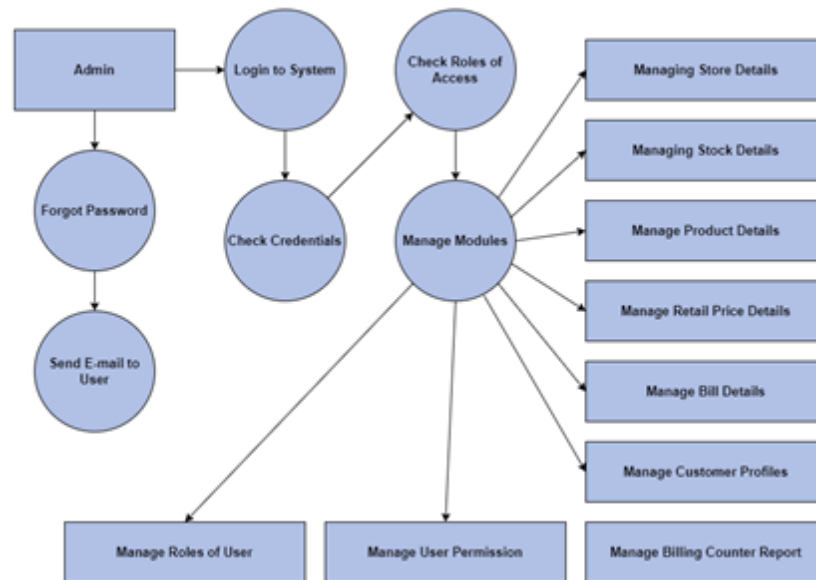
5.1.1 Zero level diagram



5.1.2 First level diagram

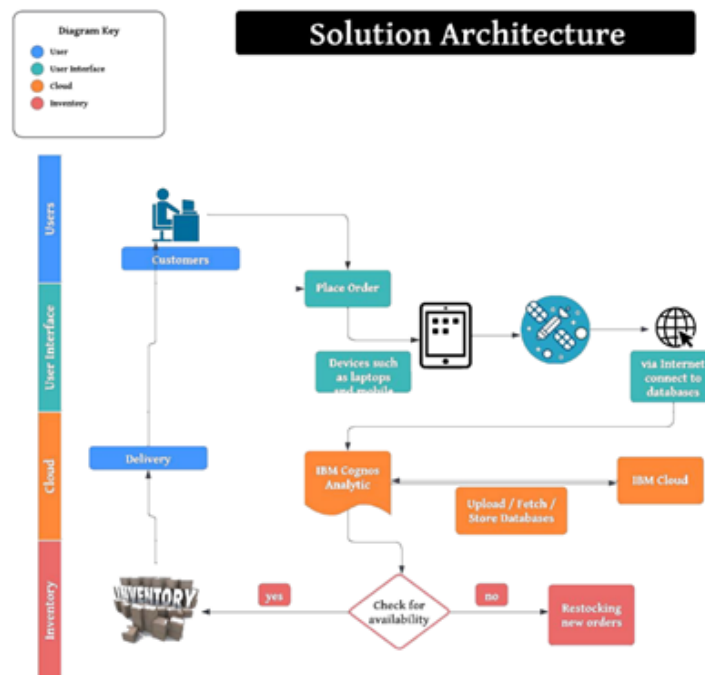


5.1.3 Second level diagram



5.2 SOLUTION AND TECHNICAL ARCHITECTURE

5.2.1 SOLUTION ARCHITECTURE



5.2.2 TECHNICAL ARCHITECTURE

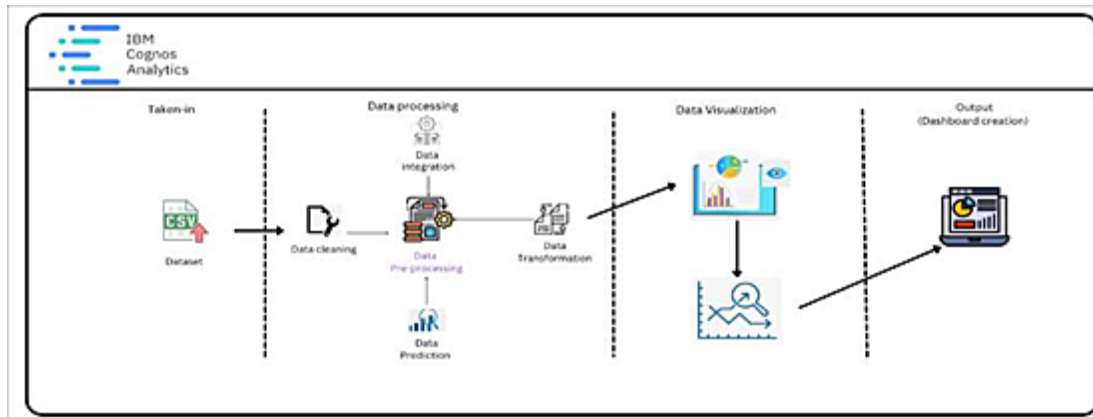


Table-1: Components & Technologies:

S. No	Component	Description	Technology
1.	User Interface	The user interacts with application using Web UI	HTML, CSS, JavaScript
2.	Data Processing	The data from the dataset is pre-processed	IBM Cognos Analytics
3.	Cloud Database	The clean dataset is stored on IBM Cloud	IBM Cloud
4.	Data visualization	The data is visualized into different forms	IBM Cognos Analytics, Python
5.	Prediction	These Algorithm techniques are used to predict the proper way to make the stock in store.	ML algorithms –Logistic Regression, Linear Regression, Random Forest, ABC Techniques.

Table-2: Application Characteristics:

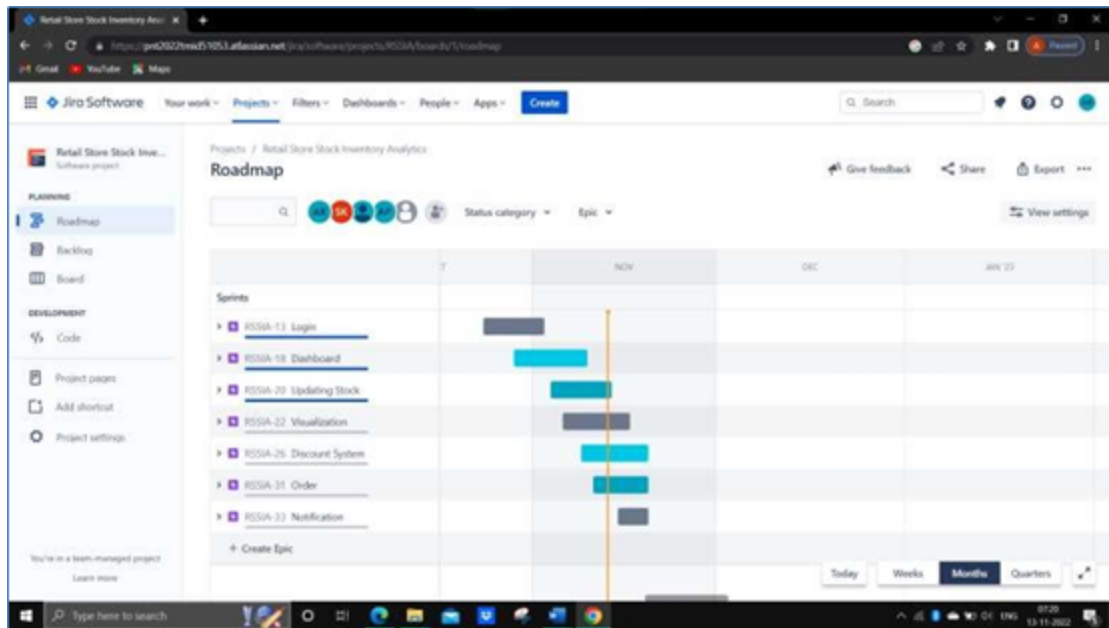
S. No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Open-source frameworks used	IBM Cognos Analytics, Python
2.	Security Implementations	Request authentication using Encryptions	Encryptions
3.	Scalable Architecture	Scalability consists of 3-tiers	Web Server – HTML, CSS, JavaScript Application Server – Python Database Server – IBM Cloud
4.	Availability	The application is available for cloud users	IBM Cloud Hosting
5.	Performance	The user can know how to maintain the inventory to increase profits.	ML algorithms

5.3 USER STORIES

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account /dashboard	High	Sprint 1
		USN-2	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm	High	Sprint 1
		USN-3	As a user I can register using my google account.	I can register & access the dashboard with Google	Low	Sprint 2
	Login	USN- 4	As a user, I can log into the application by entering email & password		High	Sprint 1

	Dashboard	USN- 5	As a user I can see the items available in the inventory.	I can access it by clicking the Home/Store icon in the dashboard	Low	Sprint 3
		USN- 6	As a user I can see the items which are currently popular and sold in high rates	I can access it in the dashboard	Medium	Sprint 3
	Cart	USN- 7	As a user I can add the items to my cart	I can add them by clicking the add to cart button	Low	Sprint 4
		USN- 8	As a user I can see that the items stock are constantly updated to avoid adding them to cart when they are not available	The application automatically refreshes the application when there is a change in the stock value	Medium	Sprint 4

6.3 REPORTS FROM JIRA



Velocity:

Imagine we have a 10- day sprint duration, and the velocity of the team is 20 (point per sprint). Let's calculate the team's average velocity (AV) per iteration unit (story points per day)

$$AV = \frac{\text{sprint duration}}{\text{velocity}} = \frac{20}{10} = 2$$

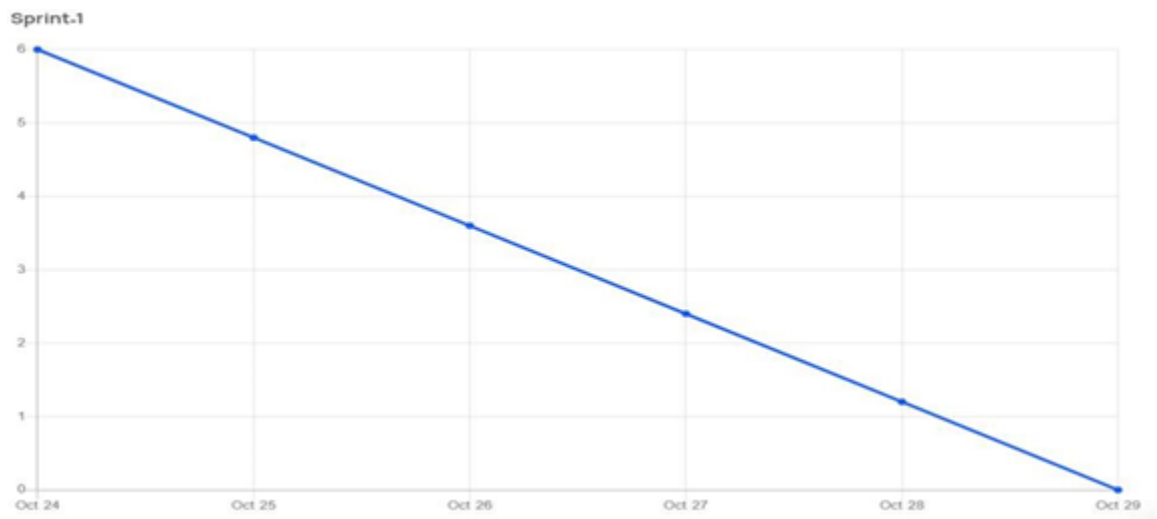
Burn down Chart:

Sprint	Total Story Points	Duration	Average Velocity
Sprint 1	6	6 days	6/6 = 1
Sprint 2	16	6 days	16/6 = 2.67
Sprint 3	10	6 days	10/6 = 1.67
Sprint 4	14	6 days	14/6 = 2.33
Total	46	24 days	46/24 = 1.91

A burn down chart is a graphical representation of work left to do versus time. It is often used in agile software development methodologies such as Scrum. However, burn down charts can be applied to any project containing measurable progress over time.

Estimated Effort:

Sprint 1:



Sprint 2:



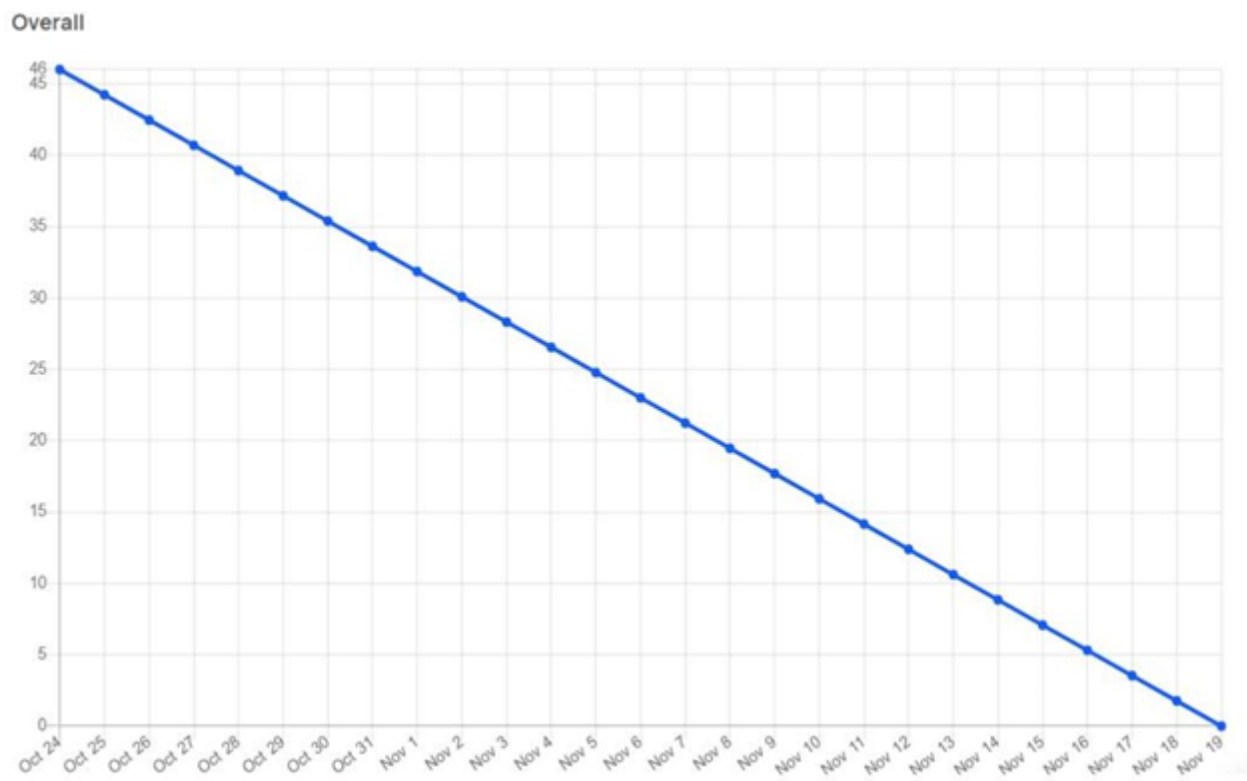
Sprint 3:



Sprint 4:



Overall burn down charts:



CHAPTER 7

CODING AND SOLUTIONING

7.1 FEATURE 1

Centralized inventory management

One of the most important functions of the inventory management system is that it tracks all of the information about the inventory. An inventory management system effectively keeps a good track of the stock levels, history of the product as well as many other product specifications. One of the greatest features of the inventory management system software is that it syncs with other modules of the inventory system. This assists in the operation of the inventory system accurately.

Tagging and Barcoding

Another great feature of the inventory management system is the elimination of standard human errors. Manual data functioning can cause errors, but scanning the barcode saves ample time for workers. The barcoding feature reduces employee training sessions and budget value. Traditionally, recording the data of the products requires so much effort. The inventory management system has made it easier by offering barcoding and tagging features.

Reporting of the Business activities

One of the most advantageous tools of an inventory management system is the reporting of various business activities. Management of an inventory business demands people in charge to remain updated regarding various business activities such as the driver's location, the status of the product, information regarding the shipment of the order, etc. You can integrate many tools in the inventory management app for carrying out the reporting of tasks efficiently.

Forecasting of the Inventory

It's a quite discomfoting situation when company products go out of stock. An inventory management system allows you to check what products get out of stock, and what products are abundantly available in the stock of the company. This is a uniquely beneficial way of maintenance of a good user experience as well as spending resources wisely. Consequently, business owners purchase the business inventory smartly and intelligently. This feature of the inventory management system helps managers in meeting customer expectations and reduction of stock out risks.

7.2 FEATURE 2

Alerts regarding the Inventory Details

The manual work inventory supervision days are bygone. Now, managers do not have to spend a good amount of time and energy on the management of the stock data. A great inventory management system is one with a stock-out alert feature. In the alerts, the software describes various consequential issues that may occur due to reduced stock of a particular item.

Backup and Security of the Inventory

No matter the type of your business, proper backup, and security of the inventory is critical for the functioning of the inventory. Inventory management systems software has good security layers that make hacking impossible. In case inventory software gets hacked, the data has a backup that business operators can access and use. So, backup and security of the inventory prevent any hiccups.

Internet of Things (IoT) and Cloud data software

Inventory management system is cloud-based software, which can be accessed from all types of devices. Also, inventory management system software is IoT - driven, which makes it easier to record all the details of the inventory intelligently and smartly. IoT keeps the inventory optimized and organized efficiently. All of the employees of the company can get real-time updates.

Integration of Inventory Management Software with other System

Nowadays, companies have installed an ERP system that has increased the productiveness of the companies to a greater extent. If inventory management systems software can be integrated with ERP, the company can benefit a lot from the integration. Data can be relentlessly from the system.

Optimized Inventory


Another great feature of the inventory management software system is that it optimizes and organizes the inventory of companies. It became easier for the managers to function and meet deadlines with optimized inventory.



CHAPTER 8

TESTING

8.1 TEST CASES

8.1.1 MODEL PERFORMANCE TESTING

S.NO	PARAMETER	SCREENSHOTS/VALUE
1	Dashboard design	<p>The dashboard is created with three categories i.e. Overview, Sales, Price</p> 
2	Data Responsive	<p>The data is downloaded from an external API and uploaded in the IBM cognos analytics with watson and a data module is created</p>
3	Amount Data to Rendered (DB2 Metrics)	<p>The dataset which is downloaded from the external API and uploaded is rendered from DB2</p>
4	Utilization of Data Filter	<p>The data filters are used for pre-processing the data i.e. cleaning of data, removing of null value. The unwanted columns are removed from the dataset and the additional data</p>

		which are required are added to the dataset
5	Effective User Story	<p>The story is created with two scenes i.e. Introduction, Price by Year and Stock</p> 
6	Descriptive Reports	<p>The report is created with two visualizations i.e. Top10 Sales and Monthly Revenue</p> 

8.2 USER ACCEPTANCE TESTING

8.2.1 PURPOSE OF THE DOCUMENT

The purpose of the document is to give a clear view on what needs to be done i.e. the target and what is done and what are the things required to achieve the goal. The functional and User Application Interface is given under the feature type. The objective is given under the components column. The steps which need to be performed to achieve the goal is given under the Steps to execute column. The data which need to be tested is given under the test data column. The result or final objective which need to be achieved or attained are given under the expected result. The outcome which is actually attained is given under the actual result column. The status column contains whether the test is passed or fail. If in case the test failed the details of it has to be

filled in the comments column. The automation of the test case has to be filled in the TC for automation which is denoted by “yes” or “no”. If in case the test failed the bug which occurred has to be given with its ID in the bug ID column. The person who performed the respective action is given under the executed by column.

8.2.3 Defect Analysis

The defect analysis shows the clear view of a bug, how it has occurred, how it is resolved and overcame from that. But in our test scenario no bug has occurred and been detected at any stage of our implementation.

8.2.4 Test Case Analysis

Section	Test Cases	Not Tested	Fail	Pass
Dataset	5	0	0	5
Dashboard	8	0	0	8
Report	2	0	0	2
Story	5	0	0	5
Embed dashboard, report and story in simple.html file	15	0	0	15

CHAPTER 9

RESULTS

9.1 PERFORMANCE METRICES

9.1.1 Demand Forecast Accuracy

An excellent inventory management metric for determining how strong collaboration is in a manufacturing operation, demand forecasting reflects the variation in real or actual demand and what is estimated at the factory level. Inventory metrics for manufacturing can make operations more effective by closing the gaps between forecasted demand and actual demand.

This inventory metric also contributes directly to reducing inventory carrying costs, a key indicator of inventory management effectiveness. With demand forecasts on hand, you're less likely to order inventory beyond market demand. Further, demand forecasts can also clue you in on when to order more stock than normal, so you never miss a chance for growth.

9.1.2 Customer Satisfaction Levels

Often measured in net promoter scores (NPS), customer satisfaction levels need to be evaluated across all distribution and selling channels. Best-in-class manufacturers measure selling and distribution separately, determining an NPS for each channel. This is to index your customers' order-to-delivery times and check to see if they're consistent with what you originally expected.

9.1.3 Perfect Order Performance

Perfect order performance quantifies how effectively an organization delivers complete, accurate and damage-free orders to customers on time. The equation that defines the perfect order index (POI) or perfect order performance is: (percent of orders delivered on time) * (percent of orders complete) * (percent of orders damage free) * (percent of orders with accurate documentation) * 100.

DIFOT, or delivered in full and on time, is a critical KPI for purchase orders. But it can be a bit misleading if manufacturers assess it individually instead of using it in the POI formula

above. The more configurable products are, the more difficult perfect order performance is to attain. However, the rapid growth of manufacturing intelligence is making perfect order performance more attainable than ever across the spectrum of production strategies.

9.1.4 Fill Rate Effectiveness as a Percentage of All Orders

Measuring supply chain collaboration needs to be a priority when selecting inventory metrics and KPIs to manage your operation. Tracking fill rate effectiveness as a percentage of all orders directly reflects how many orders or requests for material from production centers are fulfilled. Taking this metric, a step further provides insights into how well production centers are managing inbound inventories to meet customer delivery dates.

9.1.4 Gross Contribution Margins by Product, Production Facility and Business Unit

Best-in-class inventory management solutions provide gross contribution margin (GCM) performance levels across several different dimensions of business. GCM is one of the most effective metrics a business can use to evaluate how well collaboration is happening across business units you know the GCM attributable to a given production center, you can track performance and effectiveness levels by location.

CHAPTER 10

ADVANTAGES AND DISADVANTAGES

10.1 ADVANTAGES

- An advantage of the retail inventory method is that it does not require a physical inventory. The retail inventory method only requires an organization to record the retail prices of inventory items.
- If an organization has multiple locations in different cities and states, performing a physical inventory can become a costly and time-consuming undertaking. By using retail inventory, an organization can prepare an inventory for a centralized location.
- The retail inventory method also allows the organization to create an inventory value report for budgeting or the preparation of financial statements.

10.2 DISADVANTAGES

- On the other hand, the retail inventory method is only accurate if all pricing across the board is the same and all pricing changes occur at the same rate. In most cases this is not realistic in retail because of the many variations that exist in merchandise pricing.
- For example, depreciation, markdowns, product damage and theft can affect the price of the retail inventory.
- For this reason, any calculations made using the retail inventory method should serve only as an estimate.

CHAPTER 11

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.

Retail companies have acquired significant importance within several countries due to their high economic contribution. Therefore, the need to analyze their KPIs becomes highly significant, as well as their different systems, methodologies, and tools used within inventory management and optimization. From the aspects mentioned above, the main trends in inventory management within companies were defined.

CHAPTER 12

FUTURE SCOPE

New inventory management skills

As stock control advances, inventory managers need new skills to match them. Besides organizational skills and general computational skills in math, data analytic, and forecasting, inventory managers in 2019 will need to learn bits and pieces of topics like:

- Coding and algorithms.
- Application programming interfaces.
- Enterprise resource planning).
- New reporting technologies.

As an inventory manager or store operator or owner, you may not need to know these skills too in-depth, but a basic knowledge of them is necessary.

Inventories that power experiential retail

- Experiential retail is a trend that's catching fire especially in the past few months.
- In fact, they keep popping up in the news section of Google search results:
- The concept of consumers being in an exciting and relaxed place because a brand is becoming one of the strongest arms of retailing today. But as experiential retail grows in prominence and usefulness, the inventories that power them grow as well.

- For example, Nordstrom launched "Nordstrom Local" — a new line of smaller stores, with its first in West Hollywood, California. They didn't design the store to sell anything; it's simply an inventory that powers experiential retail for Nordstrom.

- According to CNBC, "Nordstrom Local will have eight dressing rooms where shoppers may try on clothes, but stores won't actually keep inventory for purchase in stock."

- The stores also have bars where shoppers can order drinks.

- "Shopping today may not always mean going to a store and looking at a vast amount of inventory," Shea Jensen, Nordstrom's senior vice president of customer experience, explains. "It can mean trusting an expert to pick out a selection of items."

- From brands like Amazon and Apple to backyard restaurants, every store is launching its own experiential retail initiatives in whatever way possible.

CHAPTER 13

APPENDIX

Source Code

index.html

```
<!DOCTYPE html>
<html lang="en">

<head>
  <meta charset="utf-8">
  <meta content="width=device-width, initial-scale=1.0" name="viewport">
  <title>Retail Store Stock Inventory Analytics - Index</title>
  <meta content="" name="description">
  <meta content="" name="keywords">
  <link href="assets/img/favicon.png" rel="icon">
  <link href="assets/img/apple-touch-icon.png" rel="apple-touch-icon">

  <!-- Google Fonts -->
  <link href =
"https://fonts.googleapis.com/css?family=Open+Sans:300,300i,400,400i,600,600i,700,700i|Jost:
300,300i,400,400i,500,500i,600,600i,700,700i|Poppins:300,300i,400,400i,500,500i,600,600i,700
,700i" rel="stylesheet">

  <!-- Vendor CSS Files -->
  <link href="assets/vendor/aos/aos.css" rel="stylesheet">
  <link href="assets/vendor/bootstrap/css/bootstrap.min.css" rel="stylesheet">
  <link href="assets/vendor/bootstrap-icons/bootstrap-icons.css" rel="stylesheet">
  <link href="assets/vendor/boxicons/css/boxicons.min.css" rel="stylesheet">
  <link href="assets/vendor/glightbox/css/glightbox.min.css" rel="stylesheet">
  <link href="assets/vendor/remixicon/remixicon.css" rel="stylesheet">
  <link href="assets/vendor/swiper/swiper-bundle.min.css" rel="stylesheet">
```

```

<!-- Template Main CSS File -->
<link href="assets/css/style.css" rel="stylesheet">
</head>

<body>
  <!-- ===== Header ===== -->
  <header id="header" class="fixed-top ">
    <div class="container d-flex align-items-centre">

      <h1 class="logo me-auto"><a href="index.html">Retail Store Stock Inventory
Analytics</a></h1>
      <!-- Uncomment below if you prefer to use an image logo -->
      <!-- <a href="index.html" class="logo me-auto"></a>-->
      <nav id="navbar" class="navbar">
        <ul>
          <li><a class="nav-link scrollto active" href="#hero">Home</a></li>
          <li><a class="nav-link scrollto" href="#about">About</a></li>
          <li><a class="nav-link scrollto" href="#services">Dashboard</a></li>
          <li><a class="nav-link scrollto" href="#portfolio">Report</a></li>
          <li><a class="nav-link scrollto" href="#team">Story</a></li>
          <li><a class="nav-link scrollto" href="#contact">Contact</a></li>
          <li><a class="nav-link scrollto" href="#contact">Contact</a></li>
          <li><a class="getstarted scrollto" href="#about">Get Started</a></li>
        </ul>
        <i class="bi bi-list mobile-nav-toggle"></i>
      </nav><!-- . navbar -->
    </div>
  </header><!-- End Header -->

  <!-- ===== Hero Section ===== -->
  <section id="hero" class="d-flex align-items-center">
    <div class="container">
      <div class="row">
        <div class="col-lg-6 d-flex flex-column justify-content-center pt-4 pt-lg-0 order-2 order-lg-
1" data-aos="fade-up" data-aos-delay="200">

```

```

    <h1>Better Analytics of your Retail Inventory</h1>
    <h2>Overview of your Stock</h2>
    <div class="d-flex justify-content-center justify-content-lg-start">
      <a href="#about" class="btn-get-started scrollto">Get Started</a>
    </div>
  </div>
  <div class="col-lg-6 order-1 order-lg-2 hero-img" data-aos="zoom-in" data-aos-
delay="200">
    
  </div>
</div>

```

```

</section><!-- End Hero -->

```

```

<main id="main">

```

```

  <!-- ===== Clients Section ===== -->
  <section id="clients" class="clients section-bg">
    <div class="container"
    </div>
  </section><!-- End Cliens Section -->

```

```

  <!-- ===== About Us Section ===== -->
  <section id="about" class="about">
    <div class="container" data-aos="fade-up">
      <div class="section-title">
        <h2>About Us</h2>
      </div>
      <div class="row content">
        <div class="col-lg-6">
          <h4>Centralized record keeping</h4>
          <p>

```

Entering item and customer information repeatedly while creating a sales order or invoice is always frustrating. Our inventory captures all of the sales information at once and enabling comprehensive reporting.

Here you can explore the details of the sales, stock, year wise sales by,

```

    </p>
    <ul>
      <li><i class="ri-check-double-line"></i>Dashboard – overview of the inventory
statistics.</li>
      <li><i class="ri-check-double-line"></i>Report – Show the result of the sales.</li>
      <li><i class="ri-check-double-line"></i>Story – Provide the best visualization of the
sales.</li>
    </ul>
  </div>
  <div class="col-lg-6 pt-4 pt-lg-0">
    <p>
      Dashboard which shows the overview, sales and the price. </br></br> Report which
shows the sales result and the sales greater than 350. </br></br>
      Story shows the overview and the Sales are shown below
    </p>
  </div>
</div>
</section><!-- End About Us Section -->
<!-- ===== Dashboard Section ===== -->
<section id="services" class="services section-bg">
  <div class="container" data-aos="fade-up">
    <div class="section-title">
      <h2>Dashboard</h2>
    </div>
    <center>
      <iframe
src="https://us1.ca.analytics.ibm.com/bi/?perspective=dashboard&pathRef=.my_folders%2
FSprint%2B2%2FDashboard%2B4&closeWindowOnLastView=true&
ui_appbar=false&ui_navbar=false&shareMode=embedded&action=view&m
ode=dashboard&subView=model000001847459c892_00000000"
width="1400"
height="1000"
frameborder="0"
gesture="media"
allow="encrypted-media"
allowfullscreen="">

```



```

        </iframe>
    </center>
</div>
</section><!-- End Dashboard Section -->

<!-- ===== Team Members Section ===== -->
<section id="cta" class="cta">
    <div class="container" data-aos="zoom-in">
        <div class="row">
            <div class="col-lg-9 text-center text-lg-start">
                <h3>Team Members
                <ul>
                    <li>Ajitha R</li>
                    <li>Annlyn Sarah J P</li>
                    <li>Sakthiswathi A</li>
                    <li>Sophiasree K</li>
                </ul>
            </h3>
        </div>
    </div>
</section><!-- Team Members Section -->

<!-- ===== Report Section ===== -->
<section id="portfolio" class="portfolio">
    <div class="container" data-aos="fade-up">
        <div class="section-title">
            <h2>Report</h2>
        </div>
        <center>
            <iframe
src="https://us1.ca.analytics.ibm.com/bi/?pathRef=.my_folders%2FSprint%2B4%2FReport&act
ion=run&format=HTML&prompt=false"
                width="1400"
                height="1000"
                frameborder="0"
                gesture="media"

```

```

        allow="encrypted-media"
        allowfullscreen="">
    </iframe>
</center>
</div>
</section><!-- End Report Section -->

<!-- ===== Story Section ===== -->
<section id="team" class="team section-bg">
    <div class="container" data-aos="fade-up">
        <div class="section-title">
            <h2>Story</h2>
        </div>
        <center>
            <iframe
src="https://us1.ca.analytics.ibm.com/bi/?perspective=story&pathRef=.my_folders%2FSprint%2B2%2FStory%253A%2BYear%2Bwise%2Bstock&closeWindowOnLastView=true&amp;ui_appbar=false&amp;ui_navbar=false&amp;shareMode=embedded&amp;action=view&amp;sceneId=model000001846c398d1d_00000002&amp;sceneTime=0"
        width="1400"
        height="1000"
        frameborder="0"
        gesture="media"
        allow="encrypted-media"
        allowfullscreen="">
            </iframe>
        </center>
    </div>
</section><!-- End Story Section -->

<!-- ===== Pricing Section ===== -->
<!-- ===== Frequently Asked Questions Section ===== -->
<section id="faq" class="faq section-bg">
    <div class="container" data-aos="fade-up">
        <div class="section-title">
            <h2>Frequently Asked Questions</h2>

```

```

</div>
<div class="faq-list">
  <ul>
    <li data-aos="fade-up" data-aos-delay="100">
      <i class="bx bx-help-circle icon-help"></i> <a data-bs-toggle="collapse"
class="collapse" data-bs-target="#faq-list-1">Is the dashboard only show the sales and price? <i
class="bx bx-chevron-down icon-show"></i><i class="bx bx-chevron-up icon-close"></i></a>
      <div id="faq-list-1" class="collapse show" data-bs-parent=".faq-list">
        <p>
          The Dashboard can the entire detail about the sales and the price
        </p>
      </div>
    </li>
    <li data-aos="fade-up" data-aos-delay="200">
      <i class="bx bx-help-circle icon-help"></i> <a data-bs-toggle="collapse" data-bs-
target="#faq-list-2" class="collapsed">Is the report only display the data? <i class="bx bx-
chevron-down icon-show"></i><i class="bx bx-chevron-up icon-close"></i></a>
      <div id="faq-list-2" class="collapse" data-bs-parent=".faq-list">
        <p>
          The Report gives the entire analytics of the data
        </p>
      </div>
    </li>
    <li data-aos="fade-up" data-aos-delay="300">
      <i class="bx bx-help-circle icon-help"></i> <a data-bs-toggle="collapse" data-bs-
target="#faq-list-3" class="collapsed">Is the Story only just display the content? <i class="bx
bx-chevron-down icon-show"></i><i class="bx bx-chevron-up icon-close"></i></a>
      <div id="faq-list-3" class="collapse" data-bs-parent=".faq-list">
        <p>
          The Story gives the overview of the Inventory
        </p>
      </div>
    </li>
  </ul>
</div>
</div>
</section><!-- End Frequently Asked Questions Section -->

```

```

<! -- ===== Contact Section ===== -->
<section id="contact" class="contact">
  <div class="container" data-aos="fade-up">
    <div class="section-title">
      <h2>Contact Us</h2>
      <a href="https://github.com/IBM-EPBL/IBM-Project-43738-1660719127">Github</a>
    </div>
  </div>
</section><! -- End Contact Section -->
</main><! -- End #main -->

<! -- ===== Footer ===== -->
<div id="preloader"></div>
<a href="#" class="back-to-top d-flex align-items-center justify-content-center"><i class="bi
bi-arrow-up-short"></i></a>
<! -- Vendor JS Files -->
<script src="assets/vendor/aos/aos.js"></script>
<script src="assets/vendor/bootstrap/js/bootstrap.bundle.min.js"></script>
<script src="assets/vendor/glightbox/js/glightbox.min.js"></script>
<script src="assets/vendor/isotope-layout/isotope.pkgd.min.js"></script>
<script src="assets/vendor/swiper/swiper-bundle.min.js"></script>
<script src="assets/vendor/waypoints/noframework.waypoints.js"></script>
<script src="assets/vendor/php-email-form/validate.js"></script>
<! -- Template Main JS File -->
<script src="assets/js/main.js"></script>
</body>
</html>

```

Project Demo Link

https://drive.google.com/file/d/12CmLwelVvOyxztrCYsvRCfMlQfF9n9hR/view?usp=share_link

GitHub Link

<https://github.com/IBM-EPBL/IBM-Project-25959-1659977734>