A STUDY ON INVENTORY MANAGEMENT TECHNIQUES AT AMAZON

PROJECT REPORT

Submitted to Mahatma Gandhi University in partial fulfillment of the requirements for the award of the Degree of

MASTER OF BUSINESS ADMINISTRATION

Submitted by

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CERTIFICATE

*This is to certify that the project report entitled "**A STUDY ON INVENTORY MANAGEMENT TECHNIQUES AT AMAZON**"is a bonafide report of the project work undertaken by* **MR. SHIBIN EASO VARGHESE,** *fourth semester MBA student of our college during a period of 8 weeks commencing from 1st April to 30th May,2021.*

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DECLARATION

I hereby declare that this project report entitled ***"A STUDY ON INVENTORY MANAGEMENT TECHNIQUES AT AMAZON****" is a bonafide report of the study undertaken by me, under the guidance of* ***Mr. JeevanKumar J*** *Department of Management Studies, MACFAST, Tiruvalla.*

I also declare that this project report has not been submitted to any other University or Institute for the award of any degree or diploma.

Place : Tiruvalla
Date : 30-05-2021

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ABBREVIATIONS

EOQ – Economic order quantity

FBA – fulfillment by Amazon

FBM – fulfillment by merchant

FSN – fast, slow and non-moving

GDP – gross domestic product

GST – goods and service tax

IPO – initial public offering

JIT – just in time

MRP – materials requirements planning

RMA – return material authorization

VAT – value added tax

VED – vital, essential, desirable

VMI – vendor managed inventory

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CHAPTER 1 INTRODUCTION

1.1 BACKGROUND OF INFORMATION

Project is a series of tasks that need to be completed in order to reach a specific outcome. A project can also be defined as a set of inputs and outputs required to achieve a particular goal. Projects can range from simple to complex and can be managed by one person or a hundred. A project is an activity to meet the creation of a unique product or service and thus activities that are undertaken to accomplish routine activities cannot be considered projects

Inventory management is important to small businesses because it helps them prevent stockouts, manage multiple locations, and ensure accurate recordkeeping. An inventory solution makes these processes easier than trying to do them all manually. A good inventory system will provide high visibility of all items right down to the shelf and bin in multiple locations, if necessary. It will prevent stockouts, allow for ample lead-time to replenish stock, and give you an idea of the value tied up in your stock at any given time. For many businesses, physical inventory is their biggest expense. Properly managing this expense could mean the difference between success and failure. Ask yourself if transfers of inventory between locations are quickly, easily, and accurately recorded. Your answer will reveal a lot about how well your system is actually working.

Inventory management or control is crucial to a successful brand and business. Simplify your inventory management with the help of an experienced fulfillment and logistics company. An industry leader in strategic eCommerce fulfillment and logistics solutions, Dotcom Distribution improves inventory management processes for a variety of online retail brands.

A good inventory management system will allow up-to-date stock levels to be available to staff, preferably in real-time. When your staff know exactly how much of an item is in stock, where it is, and consequently how fast it can get to the customer, they will be in a much stronger position to make a sale. This will lead to better customer retention, which is critical in the modern marketplace where consumers have more and more options.

Another benefit of having a superior inventory management system is saving on inventory holding cost. These costs can be extensive, and can severely undermine your bottom line when not kept under control. They include financing

costs, warehouse rent, warehouse staff wages, lighting, heating and security.

The key to minimizing these costs is to only have as much inventory as is needed. With an inventory management program that assists you to make good forecasts, you can avoid overstocking, and thus overpaying on holding costs. In addition, having confidence in your forecasts will mean you don't have to hold as much safety stock (since this is essentially stock that you hold in case your under-forecast demand). Once again, this will mean less inventory held and less holding costs to pay.

INVENTORY MANAGEMENT

With the development of technology and availability of process driven software applications, inventory management has undergone revolutionary changes. In any business or organization, all functions are interlinked and connected to each other and are often overlapping. Some key aspects like supply chain management, logistics Inventory management and supply chain management are the backbone of any business operations. and inventory form the backbone of the business delivery function. Therefore, these functions are extremely important to marketing managers as well as finance controllers.

Inventory management is a very important function that determines the health of the supply chain as well as the impacts the financial health of the balance sheet. Every organization constantly strives to maintain optimum inventory to be able to meet its requirements and avoid over or under inventory that can impact the financial figures.

Inventory is always dynamic. Inventory management requires constant and careful evaluation of external and internal factors and control through planning and review. Most of the organizations have a separate department or job function called inventory planners who continuously monitor, control and review inventory and interface with production, procurement and finance departments.

TYPES OF INVENTORIES

Inventories play a major role in a business or depending on nature of the businesses. The inventories may be classified as under.

(1) Raw Materials

Materials and components scheduled for use in making a product. These are the basic inputs, which are converted into finished products through manufacturing process. Raw material inventories are those units, which have been purchased and stored for future production.

(2) Work in process / Progress

Materials and components that have begun their transformation to finished goods. Materials issued to the stop floor, which have not yet become finished products they are value added materials to the extent of labor cost incurred.

(3) Finished Goods

A finished goods is a completed part that is ready for a customer order. These goods have been inspected and have passed final inspection requirements so that they can be transferred out of work-in-process and into finished goods inventory. From this point, finished goods can be sold directly to their final user, sold to retailers, sold to wholesalers, sent to distribution centers, or held in anticipation of a customer order.

i. STORES & SPARES

The level of four kind of inventory depends upon the nature of the business. Supplies include office and cleaning materials like soap, brooms, oil, light, blubs etc. These materials do not directly enter production, but are necessary for production process.

TYPES OF INVENTORY MANAGEMENT TECHNIQUES

1. ***ABC ANALYSIS***

ABC analysis may be seen to share similar ideas as the Pareto principle, which states that 80% of overall consumption value comes from only 20% of items. Plainly, it means that 20% of your products will bring in 80% of your revenues.

ABC analysis works by breaking it down in the following ways:

A-items: 20% of all goods contribute to 70-80% of the annual consumption value of the items B-items: 30% of all goods contribute to 15-25% of the annual consumption value of the items C-items: 50% of all goods contribute only 5% of the annual consumption value of the items

In order to calculate the annual consumption value of any item or items:

Annual consumption value = annual demand x item cost per unit

That way, the manager can determine which goods bring in the most value and separate those from the numerous goods that provide little profit.

2. ***JUST IN TIME (JIT) METHOD***

The "just-in-time method" is an inventory strategy where materials are only ordered and received as they are needed in the production process. The goal of this method is to reduce costs by saving money on overhead inventory expenses. The company must be able to accurately forecast demand for goods and services for the just-in-time method to be effective.

The just-in-time inventory method is considered a "pull" approach in manufacturing. When sales activities warrant more production, inventory is "pulled" and more manufacturing supplies are ordered. The result is a smooth flow of production and reduced inventory costs. This method relies on signals given at different points in the production process that tell the manufacturer

when to make the next part. Stock depletion signals the ordering of new parts. The just-in-time method is used by major auto manufacturers, such as Toyota, who take advantage of synchronized assembly line systems.

3. MATERIALS REQUIREMENTS PLANNING (MRP) METHOD

Material requirements planning (MRP) is a computer-based inventory management
system designed to improve productivity for businesses. Companies use material requirements planning systems to estimate quantities of raw materials and schedule their deliveries.

MRP is designed to answer three questions: What is needed? How much is needed? When is it needed?"

MRP works backward from a production plan for finished goods, which is converted into a list of requirements for the subassemblies, component parts, and raw materials that are needed to produce the final product within the established schedule.

By parsing raw data—like bills of lading and shelf life of stored materials—this technology provides meaningful information to managers about their need for labor and supplies, which can help companies improve their production efficiency.

4. ECONOMIC ORDERING QUANTITY (EOQ) MODEL

Economic order quantity (EOQ) is the ideal order quantity a company should purchase to minimize inventory costs such as holding costs, shortage costs, and order costs. This production-scheduling model was developed in 1913 by Ford W. Harris and has been refined over time. The formula assumes that demand, ordering, and holding costs all remain constant.

Formula and Calculation of Economic Order Quantity (EOQ)

The formula for EOQ is:

$Q=\sqrt{2DS/H}$ *where:*

Q=EOQ units

D=Demand in units (typically on an annual basis)

S=Order cost (per purchase order)

H=Holding costs (per unit, per year)

5. MINIMUM SAFETY STOCKS

Safety stock is a term used by logisticians to describe a level of extra stock that is maintained to mitigate risk of stockouts (shortfall in raw material or packaging) caused

by uncertainties in supply and demand. Adequate safety stock levels permit business operations to proceed according to their plans. Safety stock is held when uncertainty exists in demand, supply, or manufacturing yield, and serves as an insurance against stockouts.

Safety stock is an additional quantity of an item held in the inventory to reduce the risk that the item will be out of stock. It acts as a buffer stock in case sales are greater than planned and/or the supplier is unable to deliver the additional units at the expected time.

With a new product, safety stock can be used as a strategic tool until the company can judge how accurate its forecast is after the first few years, especially when it is used with a material requirements planning (MRP) worksheet. The less accurate the forecast, the more safety stock is required to ensure a given level of service. With an MRP worksheet, a company can judge how much it must produce to meet its forecasted sales demand without relying on safety stock. However, a common strategy is to try to reduce the level of safety stock to help keep inventory costs low once the product demand becomes more predictable. That can be extremely important for companies with a smaller financial cushion or those trying to run on lean manufacturing, which is

aimed towards eliminating waste throughout the production process.

The amount of safety stock that an organization chooses to keep on hand can dramatically affect its business. Too much safety stock can result in high holding costs of inventory. In addition, products that are stored for too long a time can spoil, expire, or break during the warehousing process. Too little safety stock can result in lost sales and, in the thus a higher rate of customer turnover. As a result, finding the right balance between too much and too little safety stock is essential.

6. VITAL, ESSENTIAL & DESIRABLE (VED) ANALYSIS

It attempts to classify the items used into three broad categories, namely Vital, Essential, and Desirable. The analysis classifies items on the basis of their criticality for the industry or company.

Vital: Vital category items are those items without which the production activities or any other activity of the company, would come to a halt, or at least be drastically affected.

Essential: Essential items are those items whose stock – out cost is very high for the company.

Desirable: Desirable items are those items whose stock-out or shortage causes only a minor disruption for a short duration in the production schedule. The cost incurred is very nominal.

VED Analysis is very useful to categorize items of spare parts and components.

7. FAST, SLOW & NON-MOVING (FSN) METHOD

FSN analysis is yet another acronym used in inventory management, however, rather than just being a buzzword, it really does hold a lot of merit to the stock manager. It is one of several useful analyses of inventory that facilitate accurate control and should be considered by anyone wanting to better understand the delicate nature of their products and sales and how to optimize them to reduce

inventory overheads and increase the bottom line.

This acronym stands for Fast-moving, Slow-moving and Non-moving inventory items. The purpose of FSN analysis is to consider quantity, the rate of consumption of products and how often they are issued or used and to use this information to guide decisions about placement in the warehouse (considering picking and packing to reduce time and labour), frequency of reordering or even phasing out of certain items.

1.2 THE STATEMENT OF PROBLEM

Inventory management refers to the process of ordering, storing, and using a company's inventory. These include the management of raw materials, components, and finished products, as well as warehousing and processing such items and inventory management techniques are methods of keeping the right items in stock. This study is based on the different inventory management techniques that are used to improve the organizations efficiency.

1.3 RELEVANCE AND SCOPE OF THE STUDY

The study seeks to clarify the concept of inventory management and various inventory management techniques that are used by E-commerce companies. The study describes the theory and techniques of inventory management and how the companies can use these techniques to improve their organizational efficiency.

The study has been conducted to find out the different inventory management techniques that are used by the AMAZON, Inc. To improve their organizational efficiency and profitability.

1.4 OBJECTIVES OF THE STUDY

1) *To Study the Inventory Management Techniques.*
2) *To Study the Different types of Inventory Control techniques.*
3) *To find the inventory control methods that are used by the company.*
4) *To study the process improvement for the inventory management in the company.*

CHAPTER 2

INDUSTRY PROFILE

Ecommerce, or electronic commerce, refers to transactions conducted via the internet. Every time individuals and companies are buying or selling products and services online, they're engaging in ecommerce. The term ecommerce also encompasses other activities including online auctions, internet banking, payment gateways, and online ticketing.

The first ecommerce transaction was made in 1994. A guy named Phil Branden Berger used his Mastercard to buy Sting's Ten Summoners' Tales via the internet for $12.48. This particular transaction made history and signaled to the world that the "internet is open" for ecommerce transactions. Why? Because it was the first time that encryption technology was used to enable an internet purchase.

Needless to say, e-commerce has grown by leaps and bounds ever since. The rise of ecommerce giants like Amazon and Alibaba in the mid -1990s changed the face of the retail industry. They largely capitalized on the global internet penetration and digitalization of the financial system which contributed to the decline in sales for many brick-and-mortar businesses.

The growth of ecommerce has also shifted the retail workforce. The U.S Bureau of Labour Statistics (BLS) has revealed that from 1997 to 2016, employment in the ecommerce sector increased by 80%. BLS is also predicting that the number of ecommerce jobs will keep on growing and reach 450,000 in the US by 2026.

2.1 BUSINESS PROCESS OF THE INDUSTRY

An eCommerce process flow can often be an area of online retail that is overlooked. In order to maximize sales opportunities and stay cost competitive, mapping out your eCommerce processes can help your business highlight key areas that may require automation or modification, and ultimately, improve performance.

Key areas of a typical eCommerce process flow include:

- *Receiving orders from your eCommerce system*
- *Processing order information*
- *Shipping*

Top-Level e-Commerce Process Flow

Unless you are already automating your e-Commerce processes, managing e-Commerce orders is a manual process. Employees have to log in and out of different business systems and databases, which is both time-consuming and prone to errors.

Each top-level process highlighted below holds several additional sub processes (+). For example, when a sales order hits your back-office operations employees must manually process the information into your business software. This can result in administration errors and create process bottlenecks further down the line. In an automated process employee intensive administration tasks are removed.

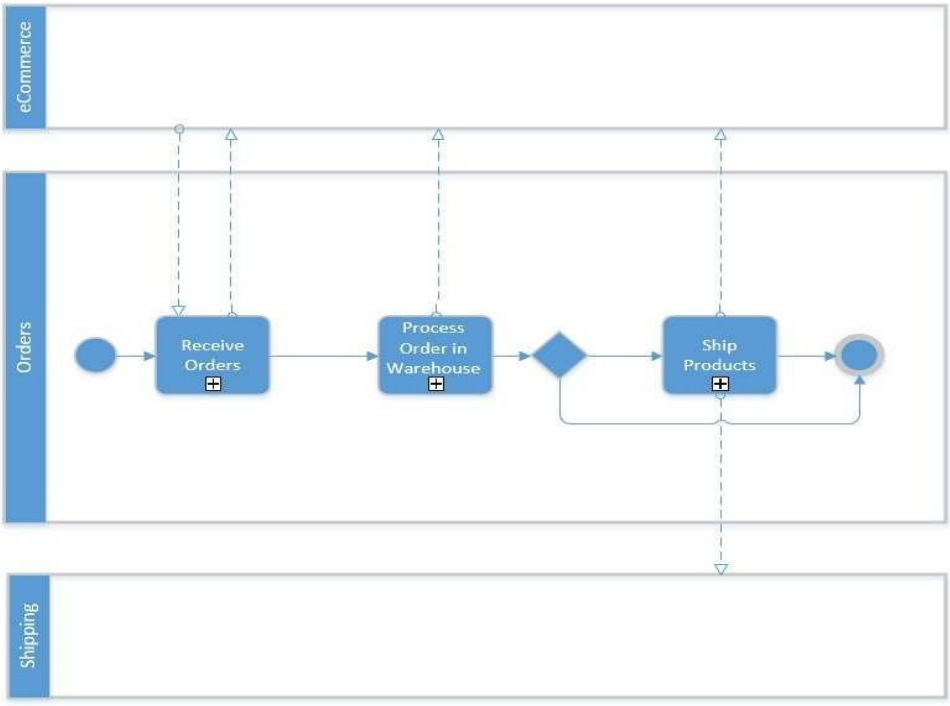

Fig. 2. 1.1 Overview of a typical e-Commerce process flow

At the top level of an e-Commerce process flow, the following can be easily identified:

- *Customer places an order in your e-Commerce system*
- *Order details are extracted from your e-Commerce system and entered into your business software*
- *Order is passed to the warehouse to be processed*

- *Order is placed for fulfilment*

SUB PROCESS:

1. ***Receiving Orders***

When a customer places an order within your e-Commerce system the order details need to be extracted and placed into your business software. Manually dealing with information held within a sales order can detract from the businesses planned objectives. Data entry errors can surface, employee efficiency is reduced and order processing costs increase.

The process of receiving the order is mapped below.

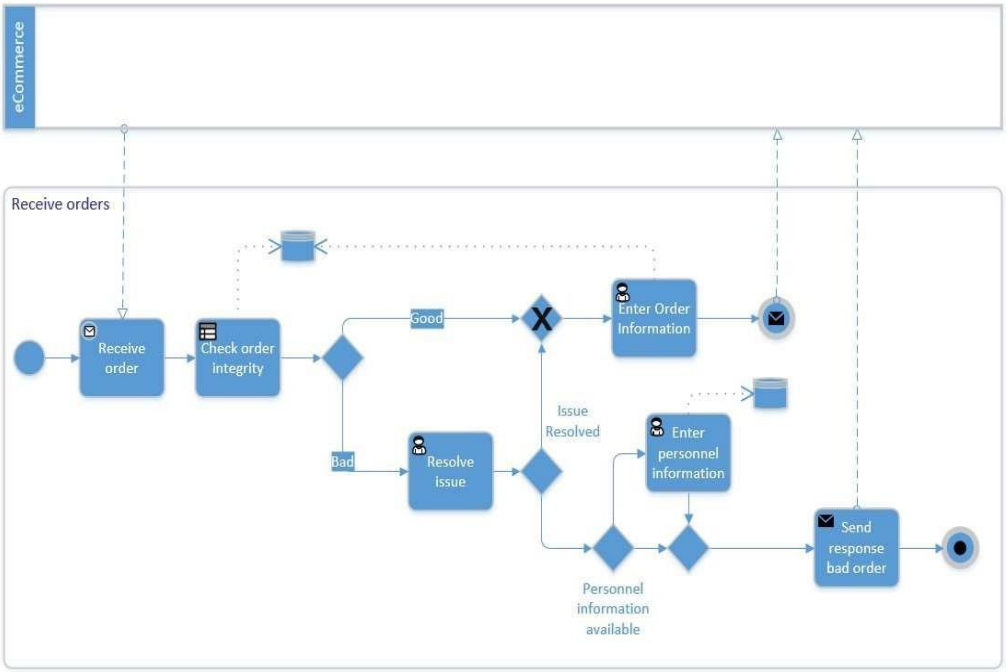

Fig 2. 1.2 Receiving orders from an e-Commerce system and placing into business software

- *Sales order details are manually extracted from your e-Commerce system. Information includes customer information, description and ID of product ordered, payment details and transaction ID*
- *Employee manually checks sales order data for a correlation with your business rules*

  e.g. full address, contact details, products ordered
- *Employee manually enters order and customer details into your business software*
- *Employee manually creates and sends an order received notification to the customer*
- *If an employee identifies any anomalies, they will need to contact the customer to resolve the issue*
- *If an issue cannot be resolved the employee may have to manually cancel the order*
- *Order is passed to warehouse for processing*

How automation can help this process:

By automating this process, the employee is removed from the scenario. If required, orders can be pulled on a timed or scheduled basis e.g. every 15 minutes. Orders are automatically entered into your business software and the customer receives and automated order confirmation notification.

1. ***Processing an Order in the Warehouse***

Once an order has been checked and processed in your business software, the order is passed onto the warehouse for processing. Here, employees will have to manually check the order against your pick list business rules (stock availability, item location etc.) and create and print a pick list.

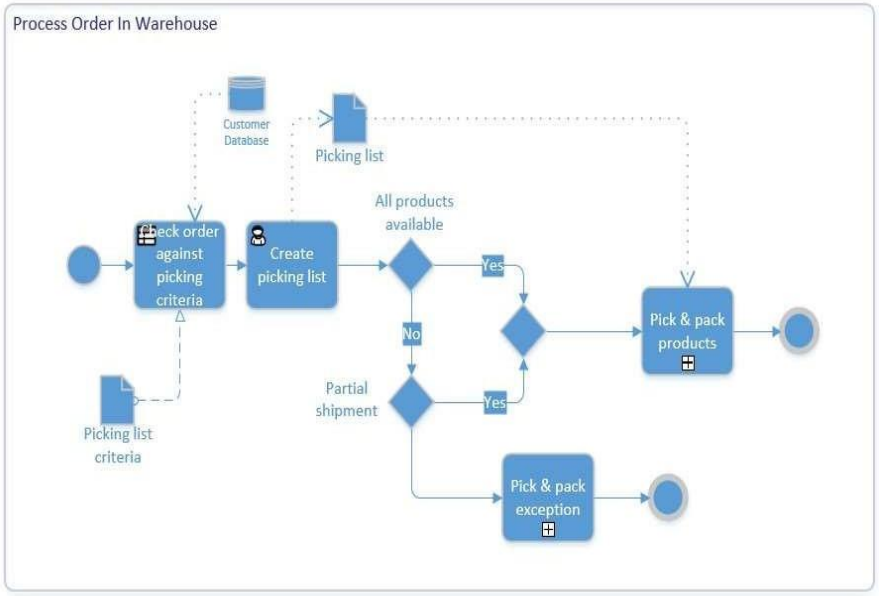

Fig 2.1.3 Processing orders in the warehouse

- *Employee notifies warehouse of an order that needs to be processed*
- *Employee manually checks the order against pick list criteria e.g. stock availability, item location in warehouse etc.*
- *Employee creates and prints pick list*
- *If products are in stock and available, the order is picked and packed*
- *Order is now ready for the shipping process*

How automation can help this process:

An automated process will reduce employee time in cross-referencing your business software for stock availability and product location. It will dynamically automate the creation and printing of your pick lists.

1. ***Processing an Order for Shipping***

Once an order has been processed in the warehouse it is now ready to be passed to shipping for fulfilment with a courier. Here, your business rules will determine which shipping route the employee chooses. Package data, such as weight, size, destination and costs, needs to be obtained. An employee will also need to manually print the shipping labels and contact the courier for fulfilment.

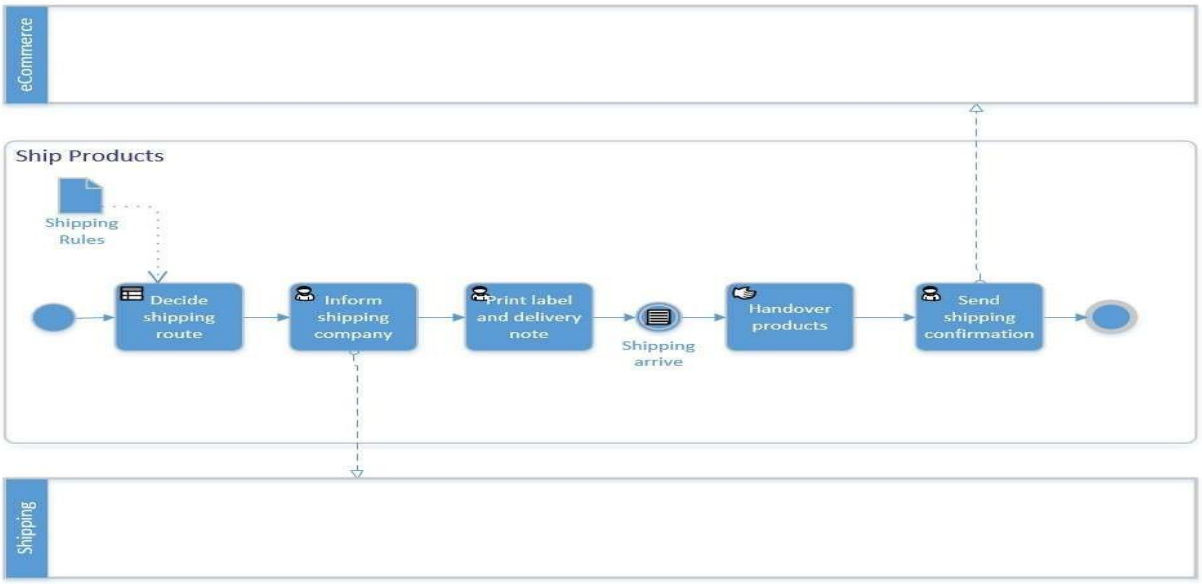

Fig 2.1.4 Shipping products for fulfilment

- *Employee enters package data, such as weight, size and destination into your courier provider system*
- *Employee prints shipping labels and delivery notes*
- *Shipping confirmation sent to customer*
- *Employee may or may not update your business software with tracking numbers*
- *Order handed over to courier for fulfilment*

How automation can help this process:

An automated fulfilment process will remove the manual administration in this process as all package data and courier details will be in your business software. Your business systems will be integrated with your courier service providers solution, enabling them to 'talk to each other'. An automated process will also provide you with the ability to automatically print shipping labels. The customer will receive an automated 'dispatched' notification and tracking details will automatically synchronize with your business software.

2.1 MARKET DEMAND AND SUPPLY- CONTRIBUTION TO GDP – REVENUE GENERATION

Market demand and supply

Market demand describes the demand for a given product and who wants to purchase it. With the rise of online businesses and purchasing, more businesses are opting for e-stores for their customers compared to a physical store. Similarly, people are also moving from brick and mortar stores to e-stores to get the products and services. Now about 60% of shoppers in the developed countries shop on the internet.

People find online shopping comfortable and very convenient as people can shop from the comfort of their homes and the things, they need are delivered right to their doorstep. Ecommerce is expanding tremendously now due to the variety of benefits it offers. Consumers worldwide will spend nearly $3.46 trillion online in 2019, up from $2.93 trillion in 2018, according to the forecast from Internet Retailer, a Digital Commerce 360 brand. The expected 17.9% year-over-year growth in global web sales would be a slowdown from the 20.7% jump last year. However, global web sales are still growing faster than the more saturated U.S. ecommerce market, which Internet Retailer projects will increase 14.0% in 2019.

Global retail sales through all channels are likely to hit $21.00 trillion by the end of the year, a 3.4% uptick from $20.31 trillion in 2018, according to Internet Retailer estimates. This would increase online's share of total retail sales to 16.4%, and ecommerce would account for more than three-quarters of overall retail gains.

As online revenue continues to grow each year, larger gains are necessary to achieve the same level of growth, so some deceleration makes sense. Ecommerce penetration has steadily been on the rise—with online's share of retail spend registering 10.5% in 2016, rising to 12.3% in 2017 and closing out 2018 at 14.4%, Internet Retailer estimates. The momentum will continue into 2019, with penetration north of 16.0%, according to Internet Retailer's analysis.

The largest online retailers are powering this growth. In 2018, three of the top 10 global online retailers ranked by 2018 ecommerce sales (excluding sites

operating exclusively as marketplace platforms) were web-only merchants. Their online revenue also significantly

contributed to bumping up 2018's ecommerce penetration. As web sales rise without an accompanying uptick in offline sales, online's share of total retail sales grows.

As a whole, the top 10 hits $427.28 billion in ecommerce sales in 2018, up 22.5% from $348.91 billion in 2017. These retailers accounted for 14.6% of all global ecommerce sales in 2018.

Fig 2.2.1 estimated e-commerce sales

2.2 CONTRIBUTION TO GDP AND REVENUE GENERATION

The e-commerce has transformed the way business is done in India. The Indian e-commerce market is expected to grow to US$ 200 billion by 2026 from US$ 38.5 billion as of 2017. Much growth of the industry has been triggered by increasing internet and smartphone penetration. The ongoing digital transformation in the country is expected to increase India's total internet user base to 829 million by 2021 from 636.73 million in FY19. India's internet economy is expected to double from US$ 125 billion as of April 2017 to US$ 250 billion by 2020, majorly backed by ecommerce. India's E-commerce revenue is expected to jump from US$ 39 billion in 2017 to US$ 120 billion in 2020, growing at an annual rate of 51 per cent, the highest in the world.

Propelled by rising smartphone penetration, the launch of 4G networks and increasing consumer wealth, the Indian e-commerce market is expected to grow to US$ 200 billion by 2026 from US$ 38.5 billion in 2017. Online retail sales in India are expected to grow by 31 per cent to touch US$ 32.70 billion in 2018, led by Flipkart, Amazon India and Paytm Mall.

Smartphone shipments in India increased eight per cent year-on-year to reach 152.5 million units in 2019, thereby making it the fastest growing market of the top 20 smartphone markets in the world. During 2018, electronics is currently the biggest contributor to online retail sales in India with a share of 48 per cent, followed closely by apparel at 29 per cent.

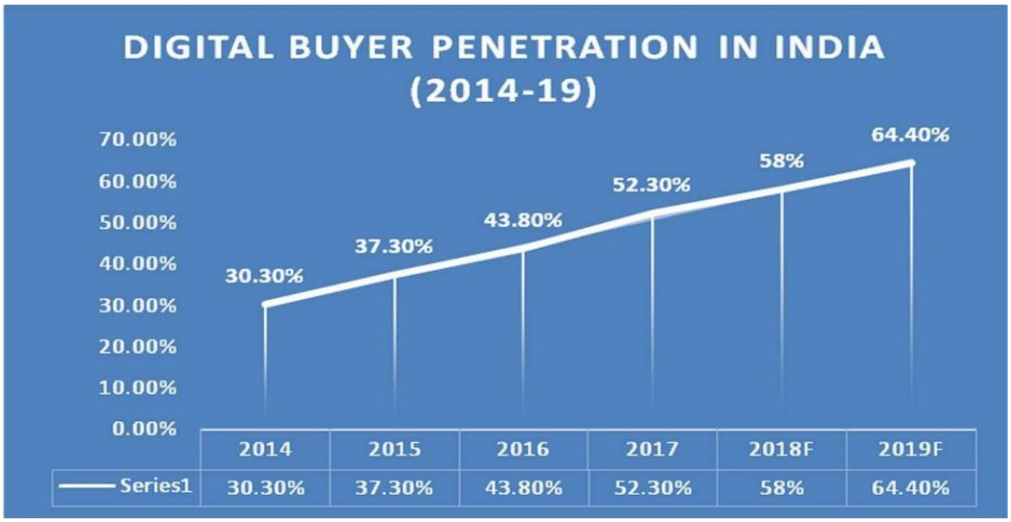

Fig 2.2.2 advantages of ecommerce in Indian economy

Digital penetration in Indian economy

In India smartphone penetration rate are increasing over years , with the increasing role of and importance of internet and digitalization , it is thus very much needed to have an active smartphone with proper internet connection ,, With the increase of role of e-commerce in India and its high contribution and increasing of e-commerce share in total retail sale .As of 2015 , 18.21% of India's overall population owned a smartphone that is around to be at 39% by 2019 (Source – stastia.com)This increase in smartphone penetration in India is done

by the point that India's share of the global smartphone market is forecast to more than triple between 2013-17 to reach .

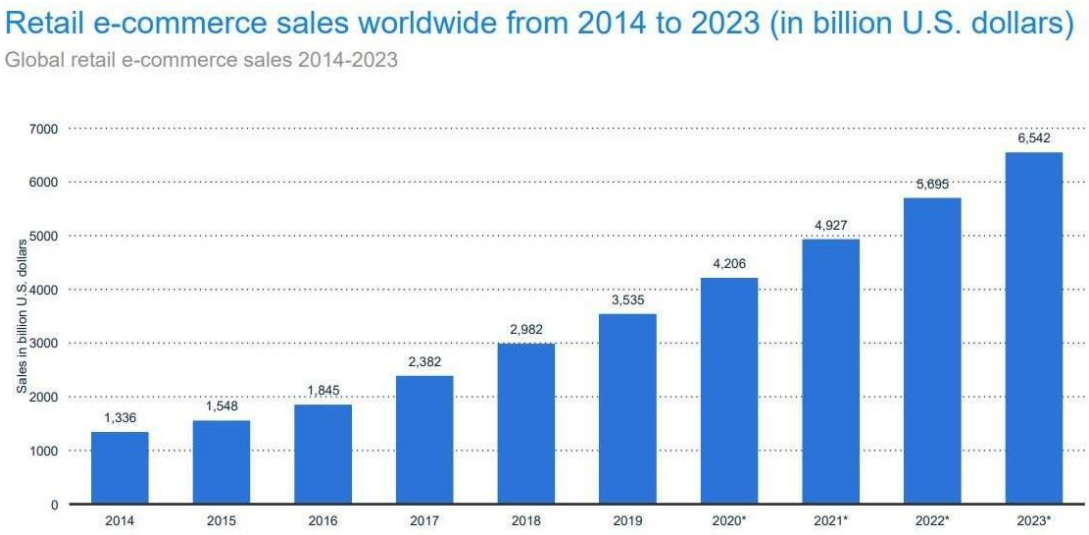

Fig 2.2.3 digital buyer penetration in India

With the increase in number of smartphone and good connectivity of internet it is thus much needed factor to increase e-commerce influence in the Indian economy. The above graph depicts increase in digital penetration in India, from 30% in 2014 to be expected 64% by 2019. Availability of large number of electrical appliances and its positive influences has guided towards such an increasing trend .With the increase in digital penetration, it thus according to(stastia.com) that we should know where did the population , what they did with the increase of digital penetration increments . Thus, according to stastia.com reports, Indian digital people in jan2017, different classified people came under different subsection which overall had an impact on ecommerce in India.

2.3 LEVELS AND TYPE OF COMPETITOPN – FIRMS OPERATING IN THE INDUSTRY

Online marketplaces are changing the way consumers search and shop for products online. With websites such as Amazon, eBay and Etsy continuing to grow in both size and popularity, ecommerce competition is more complex than ever before. Not only are brands competing directly with other brands, they are now battling marketplaces that are populated by thousands of competitive sellers.

Price is a central factor in competitive analysis and can be used as a lever to improve the competitive advantage of any online store and increase store conversions. It could be said that 60% of users who buy online base their purchasing decisions on price. This is why it

is so important to monitor the activity of rival stores to detect changes and patterns in their pricing. This type of price control has a very positive impact on the ability of any online store to react to price fluctuations and allows them to adapt to the state of the market and competition.

Similarly, this price tracking can be used as a lever to improve conversion results in platforms such as Shopping, while helping to optimize the perception of competitiveness that potential customers have on a specific online store.

Some of the firms operating in the industry are:

1. ***AMAZON***

Amazon.com, Inc,. is an American multinational conglomerate technology company based in Seattle, with 750,000 employees. It focuses on e-commerce, cloud computing, digital streaming, and artificial intelligence. It is considered one of the Big Four technology companies, along with Google, Apple, and Facebook. It has been referred to as "one of the most influential economic and cultural forces in the world."

Amazon is known for its disruption of well-established industries through technological innovation and mass scale. It is the world's largest online marketplace, AI assistant provider, and cloud computing platform as measured by revenue and market capitalization. Amazon is the largest Internet company by revenue in the world. It is the second largest private employer in the United States and one of the world's most valuable companies

Fig 2.3.1 Logo of amazon

2. FLIPKART

Flipkart Private Limited, d/b/a Flipkart is an Indian e-commerce company based in Bengaluru, India. It was founded by Sachin Bansal and Binny Bansal in 2007. The company initially focused on book sales, before expanding into other product categories such as consumer electronics, fashion, home essentials & groceries, and lifestyle products.

The service competes primarily with Amazon's Indian subsidiary, and the domestic rival Snapdeal. As of March 2017, Flipkart held a 39.5% market share of India's e-commerce industry. Flipkart is significantly dominant in the sale of apparel (a position that was bolstered by its acquisitions of Myntra and Jabong.com), and was described as being "neck and neck" with Amazon in the sale of electronics and mobile phones. Flipkart also owns PhonePe, a mobile payments service based on the Unified Payments Interface (UPI). In August 2018, U.S.-based retail chain Walmart acquired a 77% controlling stake in Flipkart for US$16 billion, valuing it at $20 billion

Fig 2.3.2 logo of flipkart

3. ALIBABA

Alibaba Group Holding Limited (also known as Alibaba Group and as Alibaba) is a Chinese multinational technology company specializing in e-commerce, retail, Internet, and technology. Founded on 4 April 1999 in Hangzhou, Zhejiang, the

company provides consumer-to-consumer (C2C), business-to-consumer (B2C), and business-tobusiness (B2B) sales services via web portals, as well as electronic payment services, shopping search engines and cloud computing services. It owns and operates a diverse array of businesses around the world in numerous sectors.

At closing time on the date of its initial public offering (IPO) – US$25 billion, the world's highest in history – 19 September 2014, Alibaba's market value was US$231 billion. It is one of the top 10 most valuable and is the 59th biggest public company in the world by Global 2000 list. In January 2018, Alibaba became the second Asian company to break the US$500 billion valuation mark, after its competitor Tencent. As of 2018, Alibaba has the 9th highest global brand valuation.

Fig 2.3.3 logo of Alibaba.com

4. eBay

eBay inc., is an American multinational e-commerce corporation based in San Jose, California, that facilitates consumer-to-consumer and business-to-consumer sales through its website. eBay was founded by Pierre Omidyar in the fall of 1995, and became a notable success story of the dot-com bubble. eBay is a multibillion-dollar business with operations in about 33 countries, as of 2018.

The company manages the eBay website, an online auction and shopping website in which people and businesses buy and sell a wide variety of goods and services worldwide. The website is free to use for buyers, but sellers are charged fees for listing items after a limited number of free listings, and again when those items are sold.

Fig 2.3.4 logo of e bay

2.4 PRICING STRATEGIES IN THE INDUSTRY

A business can use a variety of pricing strategies when selling a product or service. The price can be set to maximize profitability for each unit sold or from the market overall. It can be used to defend an existing market from new entrants, to increase market share within a market or to enter a new market.

Pricing products online is one of the most exciting and complex exercises you will take as a business general manager. Utilizing an effective online pricing strategy requires both a test-and-learn mentality paired with an intuitive feel for how you would like your brand and products to be perceived. An online pricing strategy can pave the way to omni-channel selling success. In an online marketplace, the price of a product can captivate the interest of a customer or make them exit to another website. Whether it is a B2B e-commerce site or a B2C online store, a pricing strategy is an effective driver of growing profits and influencing inventory turnover.

Different pricing strategies that are used by ecommerce industries are:

1. ***Cost-based Pricing:***

Cost-based pricing refers to a pricing method in which some percentage of

desired profit margins is added to the cost of the product to obtain the final price. In other words, cost-based pricing can be defined as a pricing method in which a certain percentage of the total cost of production is added to the cost of the product to determine its selling price. Cost-based pricing can be of two types, namely, cost-plus pricing and markup pricing.

2. ***Market based pricing:***

Market-based pricing is the act of setting prices that are closely aligned with the current market prices of similar products. If a business creates products that are differentiated from those of the competition, then there may be room to set prices somewhat higher than market rates, depending on how customers perceive the value of the incremental differences offered by the company. Conversely, if a company's products have a low-quality or commoditized reputation with customers, then it may be necessary to set price points somewhat lower than the market rate in order to sell a reasonable quantity of goods. A smart product design will specifically include high-value features, in order to maximize the price that can be charged

The market may be willing to pay a higher price when goods are first introduced, and a lower price later, when competing goods reach the market or the product is considered to be late in its life cycle. If this is the case, a business could set its prices higher at the introduction of the product, and eventually drop its price points or offer discounts later, as market interest declines.

3. ***Dynamic pricing:***

Dynamic pricing, also referred to as surge pricing, demand pricing, or time-based pricing is a pricing strategy in which businesses set flexible prices for products or services based on current market demands. Businesses are able to change prices based on algorithms that take into account competitor pricing, supply and demand, and other external factors in the market. Dynamic pricing is a common practice in several industries such as hospitality, tourism, entertainment, retail, electricity, and public transport. Each industry takes a slightly different approach to dynamic pricing based on its individual needs and the demand for the product. Dynamic pricing is unpopular with some consumers as it favours the wealthy, who are less likely to be priced out of a market when there is high demand, such

as the electricity market during a heat wave or the food industry during a famine.

4. ***Consumer based pricing:***

Consumer-Based Pricing. Consumer-based pricing is the third common approach firms use to set their prices. In this case, the firm first sizes up its customers to determine how much each customer is willing to pay for its product or service and then charges the price each customer is willing to bear.

5. ***Penetration pricing:***

Penetration pricing is a pricing strategy where the price of a product is initially set low to rapidly reach a wide fraction of the market and initiate word of mouth. The strategy works on the expectation that customers will switch to the new brand because of the lower price. Penetration pricing is most commonly associated with marketing objectives of enlarging market share and exploiting economies of scale or experience.

These are advantages of penetration pricing to the firm:

- *It can result in fast diffusion and adoption, which can achieve high market penetration rates quickly and take the competitors by surprise, not giving them time to react.*
- *It can create goodwill among the early adopters segment and can create more trade through word of mouth.*
- *It creates cost control and cost reduction pressures from the start, leading to*

greater efficiency.

- *It discourages the entry of competitors. Low prices act as a barrier to entry.*
- *It can create high stock turnover throughout the distribution channel, which can create critically important enthusiasm and support in the channel.*
- *It can be based on marginal cost pricing, which is economically efficient.*

6. Bundle pricing:

The willingness of consumers to pay can, at times, be quite volatile. With bundle pricing, the seller lowers the variance on this willingness to pay and increases its profit by selling bundles of products instead of selling all products separately. Moreover, the seller makes bundles in order to fulfill a specific need of its customers: the bundle fits a unit of need and therefore it becomes more pertinent for the consumer to purchase it.

Therefore we can define two types of bundling:

- *The "unit of need" bundling which aims to fulfill a specific and complete customer need.*
- *The "naked" bundling which aims to maximize profits with non-perfectly complementary products.*

2.5 PROSPECTS AND CHALLENGES OF THE INDUSTRY

PROSPECTS

The current business environment in India has the potential to enhance the growth of the online retail in India. Some of the key factors that can contribute to the growth of online retail in India include

a) Increase in the number of Internet users and online buyers

According to Google, India now have around 200 million internet users which is expected to reach 500 million by 2018. Every year there is an estimated increase of 5 million internet users every month. One of the key factors contributed to the increase in internet users is the spread of broad band connectivity across the country. In 2013, the broad band connectivity is around 15.13 million. Government is talking initiatives to increase it by 214 million broad band connections by 2014. This will enhance the accessibility of internet for common people. Forrester's Asia pacific retail forecast predicts that online buyer population will reach 39 million by 2014 and 128 million by 2018 which can stimulate the

growth of online retailing in India.

b) Smart phone revolution and Mobile Internet

India is one of the markets which is witnessing growth in smart phone customers. In 2013, there were 51 million smart phone users in India which is expected to reach 104 million by 2014. But this forms about 10 per cent of the total mobile users currently. The availability of cheap smart phone can enhance the growth rate in future. Access to 3G and 2G mobile data networks and availability of cheap smart phones can enhance the customer transaction using mobiles. Most of the online retailers are developing their mobile applications to enhance the shopping experience. Amazon came up with their own 3D smart phone- "Fire phone" to enhance the mobile shopping experience of their customers. If we compare the mobile internet users, we can observe increasing trend with respect to mobile internet users. According to 2015 projection, out of 300 million internet users 200 million users will be accessing internet using mobile phones which can enhance e-retailing opportunities in India.

c) Increase in transaction by Debit cards, Credit cards, Net and mobile banking

Retail electronic payments was around INR 33.8 lakh crore in 2013 compared with INR 50,000 crore in 2004. Credit card payments has grown seven times during this period and reached INR 1.2 lakh crore in 2013. In the case of Debit card transaction there was an increase in 15 times which is valued around INR 74,300 crore in 2013. If we analyse the trend electronic transaction has increased during 2013 which forms 57 % of banking transaction compared with 43% of paper transaction. There was an increase in registered internet banking users in India during 2013 which was around 35 % for public sector banks 25 % for private sector banks and 5% for foreign banks compared with 2012. But still Internet banking transaction forms 2-8% of total banking transactions for all Indian banks. Mobile banking is emerging in India which witnessed a growth with 30 million users in 2013 compared 22.51 million users in 2012. From these trends we can conclude that Indian customers are gradually changing with respect to the way they do financial transactions. Credit, Debit cards and Net banking can facilitate quick and convenient transaction for customers which can augment the growth of e-retailing in India. With the emergence of secure

transaction methods like two factor authentications, One Time Passwords (OTP) and

payment gateways, consumer's preference to shop and do financial transactions online has increased. This can enhance online retailing because of enhanced security and easiness in doing the transaction. Some of the retailers are providing the facility of cash on delivery options (COD) to customers those who are sceptical about the secure transactions in online platforms. This forms more than 60% of the total ecommerce transaction in India. Banks and ecommerce sites are taking proactive steps in enhancing on-line transactions by addressing security and other issues with respect to online transactions.

d) Rising disposable Income and Rapid urbanization.

Annual disposable income in India is expected to increase at CAGR of 5.1% and expected to be USD 3823 by 2015.According to 2011 Census, the urbanization showed an exponential growth rate of 2.76%. We have around 337 million people who live in urban areas in 2011. The census data shows that the no of statutory towns increased at the rate of 6.37% during 2001- 2011. There is steady increase of urban agglomerations at the rate of 23.7% during this period. These trends can enhance the prospects of online retailers.

CHALLENGES

Even though India online retailing has growth prospects, there are multiple challenges for e-retailers in India market. It includes

a) Logistics

Effective logistics play a key role in determining the operational success of e-retailers. If we look at the India our country is large and fragmented with poor infrastructure facilities. So timely delivery and other priority services are the biggest challenges for online retailers in our country. Moreover, cost of logistics in India is high due to lack of adequate infrastructure. This has forced some of the retail players like Flipkart and Amazon to build their own logistics arms. Flipkart has e-kart logistics which takes care for their delivery process. Some of the online retailers are tied up with logistics companies for fulfilling customer orders. One of the biggest

problems faced by logistic companies is the limited airline feet size of logistic companies. We look at the Indian scenario we have limited fleet of freight carriers which can hinder the priority services like same day delivery for customers.

b) Poor Internet speed

One of the biggest problems India facing is the slow speed internet connection which can

affect the prospects of online retail in long run. The average internet speed is less than 1 mbps which makes it one of the low ranked nations in global scenario with respect to internet speed. This can affect the accessibility to shopping sites and online transactions which will in turn reduce the customer buying through online portals.

c) Customer Trust and Loyalty

Some of Indian online retailers lack trust among the customers. Even though we have trusted players like Flipkart, Myntra and Jabbing, other retailers were not up to the mark compared with other players. The entry of foreign online retailers like Amazon has forced Indian players to enhance customer loyalty. Flipkart has started an initiative called Flipkart first which provides same day delivery, priority customer services, free shipments and exclusive offers.

d) Overcoming touch and feel mental barrier of Indian customers

Indian customers prefer to touch and feel products before they purchase. The biggest challenges faced by online retailers to overcome this barrier. Online retailers are trying to overcome this barrier by adding more specifications and information about products. They also share customer feedbacks to enhance the confidence of customers.

e) COD and Returns management

Cash on delivery has emerged as the preferred mode of payment by online customers. This has created certain critical issues for online retailers. Some of the logistics providers levy extra charges from the customers which can affect

the retail business in long run. Delay in remittances of the Cash collected by logistics providers from customers can reduce the working capital for online retailers.

Another important issue faced by online retailers is the customer returns and how to handle it. Some of the logistics players don't have the capacity to handle the returns. More over this can create an additional cost for the retailers which is an important issue faced by online retailers. This has forced some of the retailers to start their own logistic arm to address these issues in a better manner which can enhance customer trust and convenience. Moreover, this can provide the cost advantage for online retailers in long run.

f) Complex tax regime

One of the major constraints faced by e-retailers is the complex tax regime in India. Non uniform VAT (Value added tax) are levied by different states. In some case state governments charge VAT for products sold with in a state in which warehouses are located. This has affected the cost for sourcing and delivering for products and services for online retailers. Multiple point taxation, Octroi and entry taxes are other major drawbacks in India which can affect the prospects of online retailing in India. It also forced some of the retailers to open warehouses in different states to reduce the entry and other taxes. Online retailers looking at implementation of uniform Goods and Services tax (GST) which can add operational convenience to online retailers.

g) FDI policy in B2C ecommerce

India's FDI policy restricts 100 % FDI in Multi brand retail which is applicable to e -commerce activities also. In online B2B e-commerce 100% FDI is allowed but this is not applicable to B2C ecommerce activities. Government allowed 51 % FDI in B2C e-commerce for retailers with brick and mortar operations. Currently most retailers are following a market place model in which online retailer provides a platform for potential buyer and sellers. This can result in limited margins, restricted control over product, service and speed of delivery. The restriction with

respect to FDI is affecting the growth and expansion plans of online retailers.

2.6 KEY DRIVERS OF THE INDUSTRY

E-commerce is growing fast; it has been going up each year. online retail sales are expected to reach 8.8 percent of the total spends by 2018 from 8.2 percent in 2017. This is about $2,197 trillion in 2017 and $2,489 trillion in 2018. However, there is still lots of potential and new opportunities for the businesses to grow their revenue base. There are several challenges too that are affecting the movement of goods and expansion to new markets. However, there are also trends and events that are the driving force of the e-commerce. Here are some emerging drivers of e-commerce growth.

1. ***Third-party logistics***

Logistics plays a pivotal role in the creation of visibility in the e-commerce supply chain and

determines the overall satisfaction of the customers, efficiency and service delivery. Unfortunately, logistics are very complex and very exhaustive. It also requires lots of expertise and a complex network of several small systems.
These challenges or trends have led to the growth of supply chain within the industry. Thirdparty logistics is now emerging as a key driver in the e-commerce in the country. Most online retailers are finding it financially feasible to outsource the logistics component of the supply chain given its complex and capital-intensive nature. The 3PL service providers are helping these retailers to become efficient through superior service delivery.

There are a number of e-commerce companies with their eyes on e-commerce shipments with tools to cater for the e-commerce industry. The companies offer storage maintenance, storage and delivery reducing the requirement of maintaining warehouses and means of transport. They also reduce the risk of damage when the goods are in transit.

2. ***Explosion in the mobile internet penetration***

The adoption of the latest mobile technologies is playing a big role in the growth

of ecommerce. The need for ease when doing shopping on the go led to the growth of mobile shopping.

Growth in mobile online shopping has grown tenfold since 2014. In fact, the global smartphone sales are growing each day against the fall in the unit prices. This has made the smartphones affordable even to the low-income populations of the world. According to Hootsuite, by April 2017, the mobile internet penetration had grown by 66 percent bringing the number of unique mobile internet users to 4.960 billion against a world population of 7.497 billion. The highest growth in mobile internet usage has been witnessed in second and third world economies.

Mobile internet penetration combined with increasing disposable income is driving more customers to online mobile shopping. Moreover, customers are getting sharper and more informed about their needs and available solutions than never before and trusting the online retail networks with their cash.

3. ***Increased range of payments for underbanked shoppers***

   Unlike the first world, there is a huge population in the second and third world that

are underbanked. In a country like Brazil about a third of the adult population does not maintain a bank account. The number is higher in many countries across Africa.

Large online payments platforms such as PayPal and Payoneer have expanded across the world. However, there is still a gap as the services are not available across all the countries. This gap is filled by local online payment processing platforms and mobile phone money transfer platforms such as Mpesa in Kenya. China has stand-alone street terminals for use in making purchases.
There has also been a high growth of online wallets and cryptocurrencies and other digital currencies that are making it possible to trade without worrying about exchange rates and country-specific financial issues. The wide spectrum of options has made it easier for many people to buy online.

4. ***Increased political willingness and promotion of online trade***

While the first world has been upbeat about online trade, there has been some bit of resistance and controls in the most emerging market with governments keen at keeping the online trade under their control. In addition, there have been several logistical challenges as often unnecessary inspection and clearance procedures have been put at the point of entry into these markets.

However, by 2016, most governments in second and third-world countries have realized the benefits that come with increased border trade thereby allowing and even promoting it. We have witnessed lowering of customs, clearance procedures and other lengthy procedures that increased the delivery time in many emerging markets. This has also been promoted by the increased use of technology at the point of entry. Therefore, more online retailers can ship to many parts of the world with ease.

5. ***Growth of Big Data***

It has often been said that quality service comes from good analysis of customer needs and delivering customer experience in your solutions. This cannot be far from the truth when it comes to e-commerce. The delivery of quality solutions lies in analyzing the target market and delivering solutions that exceed customer expectations. The challenge has always been that the customer is not physically present and there is little chance to have a one-on-one

with the customers.

Fortunately, the problem has been solved by the use of big data and AI. These tools have been a lot useful in subscription online retail marketing where customers subscribe to items to be delivered at given intervals. AI helps track the customer behavior online and lets the business determine the needs, tastes and preferences of the customer. With the information, the ecommerce sites can tune their offerings to match the exact needs and preferences of each customer.

CHAPTER 3

REVIEW OF LITERATURE

3.1BRIEF THEORETICAL CONSTRUCT RELATED TO THE PROBLEM

Inventory management is the supervision of non-capitalized assets, or inventory, and stock items. As a component of supply chain management, inventory management supervises the flow of goods from manufacturers to warehouses and from these facilities to point of sale. A key function of inventory management is to keep a detailed record of each new or returned product as it enters or leaves a warehouse or point of sale.

Organizations from small to large businesses can make use of inventory management to manage their flow of goods. There are numerous inventory management techniques, and using the correct one can lead to providing the correct goods, at the correct amount, place and time.

Inventory control is a separate area of inventory management that is concerned with minimizing the total cost of inventory while maximizing the ability to provide customers with products in a timely manner.

The inventory management process

Inventory management is a complex process, particularly for larger organizations, but the basics are essentially the same regardless of the organization's size or type. In inventory management, goods are delivered in the receiving area of a warehouse – typically in the form of raw materials or components -- and are put into stock areas or shelves.

Compared to larger organizations with more physical space, in smaller companies, the goods may go directly to the stock area instead of a receiving location. If the business is a wholesale distributor, the goods may be finished products rather than raw materials or components. Unfinished goods are then pulled from the stock areas and moved to production facilities where they are

made into finished goods. The finished goods may be returned to stock areas where they are held prior to shipment, or they may be shipped directly to customers.

Inventory management uses a variety of data to keep track of the goods as they move through the process, including lot numbers, serial numbers, cost of goods, quantity of goods and the dates when they move through the process.

Inventory management software systems

Inventory management software systems generally began as simple spreadsheets that track the quantities of goods in a warehouse but have become more complex since. Inventory management software can now go several layers deep and integrate with accounting and ERP systems. The systems keep track of goods in inventory, sometimes across several warehouse locations. Inventory management software can also be used to calculate costs -- often in multiple currencies -- so that accounting systems always have an accurate assessment of the value of the goods.

Some inventory management software systems are designed for large enterprises and can be heavily customized for the particular requirements of an organization. Large systems were traditionally run on premises, but are now also deployed in public cloud, private cloud and hybrid cloud environments. Small and midsize companies typically don't need such complex and costly systems, and they often rely on stand-alone inventory management products, generally through SaaS applications.

INVENTORY MANAGEMENT AT AMAZON

Hen Bezos started his venture, he aimed at hassle free operations. He wanted to offer his customers a wide selection of books, but did not want to spend time and money on opening stores and warehouses and in dealing with the inventory. He however realized that the only way to satisfy customers and at the same time make sure that amazon enjoyed the benefits of time and cost efficiency was to maintain its own warehouse. Building warehouses and operating them was a very tough decision for Bezos. Each warehouse cost him around $ 50 million and

in order to get the money, Amazon issued $ 2 billion as bonds.

In 1999, Amazon added six warehouses in Fernley, Nevada, Coffeyville, Kansas, Campbellsville/ Kentucky, Lexington, McDonough, Georgia and Grand Forks, North Dakota. On the whole Amazon had ten warehouses. In the same year Amazon increased its worldwide warehousing capacity from 300000 square feet to over five million square feet.

Since amazon ordered books and other products from warehouses only after the customers had agreed to buy them the return rate of 30 percent in many segments of the online retail industry. Amazons warehouse which was a quarter-mile long yards wide stored millions of books, CDs, toys and hardware. They were very well maintained and completely computerized. In fact the number of lines of code used by amazons warehouse was the same as the number used by its website. Whenever a customer placed an order a series of automated events followed which made inventory management easier.

When a customer ordered a book from amazon his invoice mentioned the title of the book followed by a barcode. This was a code of numbers such as 6-5-4 which indicated the books location of the warehouse. Computers sent signals to the worker's wireless receivers telling those items had to be picked off the shelves. The workers decided the order in which the items had to be picked and then verified the weight of each product. These products were kept in green crate which contained orders of different customers, when this got filled they were placed on conveyor belt and sent to central point. Here the barcodes were matched with the order numbers to find out who would receive each item. Then they were packed and parceled. Most of the orders were shipped either through the united states postal service or united states parcel service whichever is located nearer.

In the holiday season of 1999, amazon was determined not to disappoint any customer who visited its site for holiday shopping. Accordingly, Bezos decided to stock the stores with every possible item that customers were likely to buy. Although this strategy was appreciated but Bezos faced a lot of problems.

It was then Bezos realized the importance of inventory management and decided to reduce the size of inventories, this was made possible by managing the warehouse efficiently. Amazon made careful decisions about which products to buy from where. Then the company decided to manage distributing channels. An important decision was taken was buying of books, CDs, videos etc. directly from publishers rather than from distributors. They upgraded the software and also tried split shipments.

Amazon also tried to cut down its expenses. It decided to outsource some of its routine activities so that it could concentrate better on its core activities. It partnered with other companies for shipping the inventory. So, while the partners shipped the items, amazon leveraged on its ecommerce expertise. It revamped the layout of its warehouses making it easier for the company to locate and sort customers. By doing this it managed to save all the expenses related to filling and shipping orders. Improved inventory management helped amazon to get net profit competencies of a particular business, or to make more efficient use of land, labour, capital, (information) technology and resources. Outsourcing became part of the business lexicon during the 1980s. it is essentially a division of labour. Outsourcing in the information technology field has two meanings. One is to commission the development of an application to another organization, usually a company that specializes in the development of this type of application. The other is to hire the services of another company to manage all or parts of the services that otherwise would be rendered by an IT unit of the organization. The latter concept might not include development of new applications.

Advantages of inventory outsourcing

- *Concentrate on main activities*
- *To reduce the inventory holding costs.*
- *To earn more profits*
- *To free the working capital and increase liquidity*
- *Adoption of Drop-shipment model which increased the overall efficiency and streamline supply chain logistics.*
- *Warehouses could handle thrice the volumes*

- *Reduced the shipping charges*

DROP- SHIPMENT MODEL

Drop shipping is a supply chain management technique in which the retailer does not keep goods in stock, but instead transfers customer orders and shipment details to either the manufacturer or a wholesaler, who then ships the goods directly to the customer. As in all retail businesses, the retailers make their profit on the difference between the wholesale and retail price

In 2001 amazon decided to outsource its inventory through it knew that it was that it was a huge risk, when Amazon managed its own inventory it had earned the reputation of providing superior customer service, which was its biggest strength.

Amazon did not stock every offered on its site. It stocked only those items that were popular and frequently purchased. If a book that is not so popular is ordered Amazon requested that item from its distributor who then shipped it to the company. In the company, the items were unpacked and then shipped to the respective customers. So basically, Amazon acted as a transshipment center and ensured that the entire process of shipping from the distributor to customer was done very efficiently.

The main distributors of Amazon included Ingram micro and cell start handled cell phone sales while Ingram micro, a whole sale distributor, handled computers and books, Amazon entered into contract with Ingram micro Inc. for distribution of desktops, laptops and other computer accessories. Drop shipment model was very successful so Amazon decided to extend this model to all categories too. The major disadvantage of this model was if the customers ordered only a single item at a time the drop shipment model was extremely helpful, but if a single ordered had several items such as a book stocked by Ingram and a game stocked by Amazon, then the following procedure was adopted: Ingram sent book to Amazon, Amazon added the game then forwarded the whole box to the customer. Since almost 35 percent of orders placed at Amazon were of different categories the drop shipment model was not very effective.

In 2001, Bezos came up with the idea of including the products of competing retailers and some used items on their website. Amazon earned almost the same profit selling on commission as it earned on retail. An advantage of this feature was customers could now verify the prices of amazon's products vis a vis those of other retailers. So the company did not need to advertise its low price.

By 2003 Amazon's warehouse could handle thrice the volume they used to handle in 1999, while the cost of operating them decreased from 20 percent of amazon's revenue to less than 10 percent. In 2003 Amazon decided to slash down its shipping charges. Customers who visited the site were greeted with a pop up window announcing the company's decision to provide free shipping for those who bought two or more items in any combination from the sites books, music, or video stores. The company also decided to reduce shipping charges. Though Amazon spent millions of rupees in marketing in order to get new customers it managed to leverage the amount spent because of its lower capital costs.

Generally physical bookstores having a wide range of books needed to stock about 160 days' worth of inventory. The distributors and publishers had to be paid 45-60 days after the books were bought from them, in this way Amazon used to get a months of interest free money.

Fig 3.1 Drop- Shipment model

AMAZON'S MULTI-TIER INVENTORY MODEL

Amazons Tier 1: Warehousing

Location

As the first tier of the Amazon supply chain, the multi-tier inventory system rests on aggregating stock in well-placed distribution centers. Located mostly near large metropolitan areas and other population centers, inventory is calculatedly spread among them to ensure that supply can always meet demand. To fill in the gaps between these hubs, smaller warehouses are also erected to make sure that orders are delivered fast, regardless of the item purchased.

As of this writing, Amazon has a network of 493 warehouses worldwide standing on approximately 180 square million feet. This is all in line with the push marketing strategy that the company applies to held inventory. The more Amazon can promote items in their warehouses, the more they can sell, and so they need a wide network to get these items to customers faster.

This expert warehousing strategy puts distribution control in Amazon's hands so they can get orders to customers anywhere in the world faster with less expense.

Organization

Efficiency is key, and Amazon's warehouses are optimized to make operations as fast and reliable as possible. Every warehouse has five unique storage areas that enable workers and pick-and-pack robots to locate and move products almost instantly.

Amazon also calculatedly distributes different types of inventory to remain

efficient. Its own warehouses hold frequently purchased items with shorter delivery windows to better serve customers, for instance. The storage and distribution of less popular products, on the other hand, is outsourced. Amazon also outsources the storage of products with storage costs that exceed marginal returns on sales.

Amazons Tier 2: Delivery

Distribution

This second tier in the Amazon supply chain is founded on the pull marketing strategy. Amazon has worked hard to build supreme customer loyalty, of which timely delivery is a major component.

In addition to its own warehouses, Amazon maintains a network of partner distribution centers and wholesalers. This way, whenever an order cannot be fulfilled from its own distribution centers, Amazon can easily depend on them to supply the required products.

Fulfillment

Adding to its own sales, Amazon has amassed a large segment composed of third party sellers, publishers, vendors, and manufacturers. Amazon attracts them with its superior supply chain system, securing their business as it provides reliable, reasonably priced full-service fulfillment for customer orders.

Options

One unique component that works to further strengthen the Amazon supply chain is all the available delivery options. It all stems from customers having the ability to choose faster delivery times.

Amazon has tested and applied several delivery methods all in the effort to get products to customers' doorsteps faster. This includes the company's partnered carriers, the Delivery Service Partners Program, bike delivery, and drones. This system optimizes delivery by taking into account the fastest option as well as extending options to areas not covered by traditional delivery services.

Amazons Tier 3: Third party interaction

The tire 3 level is dealing with customers, sellers or vendors directly through phone, chas or Emails, it is a major part of their business.

Amazon Supply Chain Secret #1: Technology

Amazon has always embraced technology to make everything it does more efficient. The company has never shied away from investing in any automation that would make its supply chain work better and faster, and cut down on costs over the long term.

Inventory

Amazon employs automation and robotic solutions for inventory storage and pick and pack operations. They believe so fully in this strategy that they established Amazon Robotics out of their 2012 Kiva Robots $775 million acquisition. Amazon now uses an estimated 100,000 robots in different facilities around the world. The increased productivity enjoyed has made the investment more than worthwhile.

Automating this huge network is a smart move particularly because it is getting increasingly difficult to find warehouse workers. Ecommerce has pushed the demand up, but fewer people are willing to take such jobs. This also means that a wage increase is imminent.

By investing in robotics early on to automate warehouse operations, Amazon has stayed ahead of the game, and ahead of rising costs.

Delivery

Though the move has raised more than a few eyebrows and earned more than its share of

sniggers, Amazon has been pushing for the use of drones to deliver packages. This Amazon Prime Air program aims to enable 30-minute deliveries in selected population hubs.

Relay

Relay is the Amazon trucking app that was designed to streamline Amazon warehouse deliveries. Drivers enter their cargo information so get a simple QR code that gets them through Amazon's gates faster. It also helps Amazon

streamline by giving them an idea of where all their deliveries are at any given time so they can be perfectly prepared.

Optimization in this area also helps the larger warehousing and delivery systems by providing additional data in a convenient format that the company can use in their calculations.

Relay is not yet very widely used, but may just be one step in a larger move towards a freight matching service to further optimize inventory movements.

Dash

The Dash Button was introduced on the market before the Whole Food acquisition, but fits in very nicely with the retail giant's plans to use technology and it's sophisticated supply chain system to win market share from Walmart.

This small wireless device allows Amazon customers to reorder pre-selected items over Wi-Fi at the click of a button. The vision is to make shopping on Amazon even more convenient, pulling in more customers and sales. A single Dash device is linked to a specific brand, and costs $4.99. After a customer purchases using Dash for the first time, however, they get a $4.99 instant credit, like a refund for the device.

Amazon Supply Chain Secret #2: Manufacturing

Amazon began as a go-between for book sellers and avid readers. It soon started selling its own products, however, and now owns many of its own brands. Third-party sellers are still welcome on the marketplace, but Amazon has been slowly squeezing many sellers out (intentionally or not).

Amazon has been manufacturing and white-labeling many of the more popular products on the marketplace, providing cheaper options to customers while increasing their own profits. This keeps everything in-house, completing the product lifecycle. They get

visibility from procurement to end customer delivery. There's no better way to keep costs down and profits high.

Amazon Supply Chain Secret #3: Pricing

Amazon has efficiently analyzed its customer base and segmented it based on a smart price differentiation strategy. They appeal to different segments by offering different delivery options for a corresponding price. By further categorizing Prime and non-Prime members, they can gather more data to further increase their fulfilment agility. Amazon must maintain their ability to respond to dynamic fluctuations in demand, and this segmentations helps them balance out wider and narrower shipping windows, keeping everything flowing smoothly.

Remaining lean is an essential part of the Amazon supply chain strategy. The company understand that too much inventory raises storage costs and slows fulfillment down. To better control how much stock is sent to fulfillment centers, Amazon charges higher long-term storage fees. This encourages sellers to send in just enough inventory to meet demand and helps Amazon keep costs down.

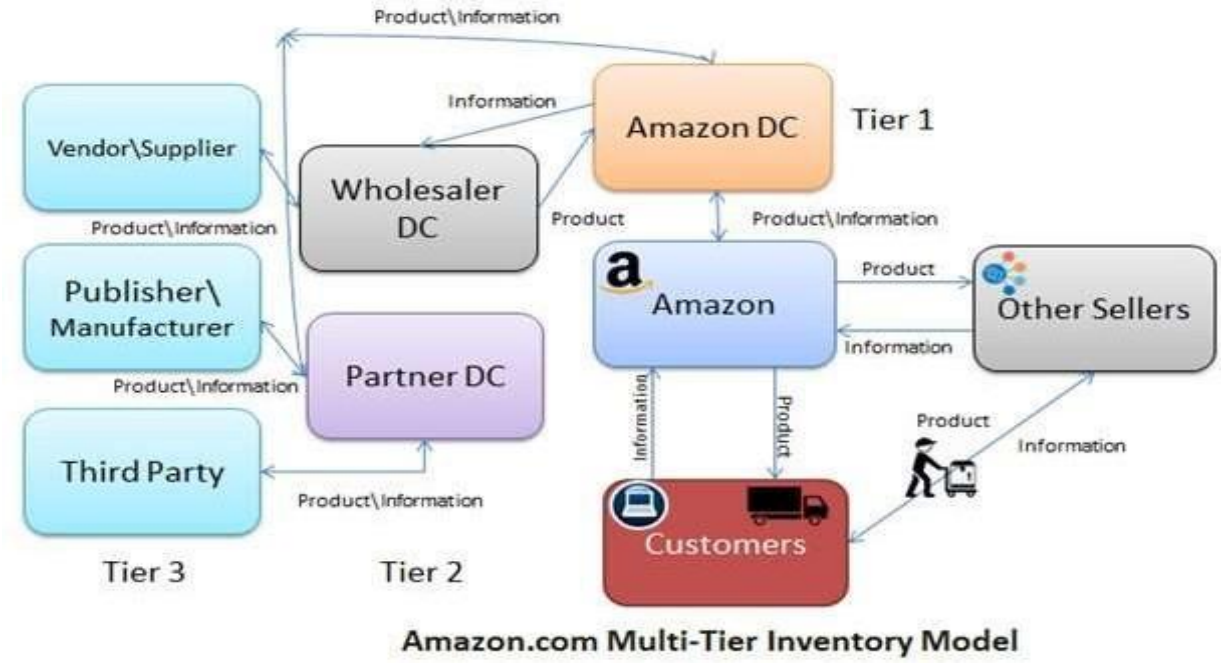

Fig 3.2 multi-tier inventory model

INVENTORY MANAGEMENT TECHNIQUES

When it comes down to it, it's their fulfillment and inventory management strategy that sets them ahead of retail and e-commerce competitors. Not only have they mastered the art of inventory management, but they drive innovative practices to the industry too. From warehouse robotics and drones, to cashier-free shops taking advantage of cameras and sensors, these are the forces that push their growth and competitive edge.

The major inventory management techniques followed by amazon are:

1. ***Lean Inventory Management***

Lean inventory management is the practice of having just enough inventory to keep up with demand, but not so much that it is harmful to your business. But it's not just balancing the level of stock you have, transforming your operations to be more lean requires other changes too.

Following the lean operations model, one of the earliest changes that Amazon made was revamping their warehouses to make it easier for workers to locate, sort, and ship customer orders. They also use inventory management software to estimate customer demand and reduce stock-outs. In addition to improving customer experience, this cut their operating costs by 17% in 2002.Now, they continue to refine their supply chain for ways to reduce costs, boost their bottom line, and maximize efficiency. For instance, they have advanced software to predict demand in different regions. They also optimize their warehouse layout so items that are commonly purchased together are located in proximity. Their largest warehouse facility covers 1,264,200 square feet – so you can imagine the time it would take to pick and pack those orders.

They partner with different companies that handle inventory and shipping as well, and this leads into their next point.

Benefits of lean manufacturing

- *Improved Customer Service; delivering exactly what the customer wants when they want it.*
- *Improved Productivity; Improvements in throughput and value add per person.*
- *Quality; Reductions in defects and rework.*

- *Innovation; staff are fully involved so improved morale and participation in the business*
- *Reduced Waste; Less transport, moving, waiting, space, and physical waste.*
- *Improved Lead Times; Business able to respond quicker, quicker set ups, fewer delays.*
- *Improved Stock Turns; Less work in progress and Inventory, so less capital tied up.*
- *All of the above have financial impacts on your business, as well as helping you become a business that can better react to and meet your customer's needs.*

2. Vendor Managed Inventory

Vendor Managed Inventory (VMI) means exactly as it sounds – suppliers restock items every time a product hits its reorder point. With millions of SKUs to manage, Amazon doesn't need to manually place purchase orders when stock runs low. This method of inventory management allows suppliers to take care of their own products within a retailer or e-tailer's inventory. Over half of the products listed on Amazon are sold by third party sellers. Third party vendors send their inventory to Amazon's warehouses and the company takes care of the rest. From picking and packing, processing customer payments, to sending it off for shipping – this fulfillment strategy has benefits for all parties. Amazon simply provides the channel for vendors to sell their products. So how can adopting VMI help your business increase visibility and improve efficiency? Vendors can track inventory levels using min, max, and reorder points. They can also better understand their performance through real-time reports and analytics. Within a robust inventory management system, you can be equipped with consignment capabilities like order generation, billing, unit of measure conversion, and much more. Vendor Managed Inventory improves delivery times, creates intelligent workflow, and increases demand forecast accuracy.

Benefits of VMI

- ***Increased Customer Service***

Perhaps the most important aspect of VMI is the improved channel communication. Manufacturers, distributors and retailers/wholesalers have to build communication systems utilizing advanced software.This provides both you as the vendor and your customers with information necessary to operate a VMI system. Additional results

from increased communication and cooperation are better customer service, improved quality, reduction of costs and increased sales.You improve your customer service by accurately and swiftly responding to your customers' needs.

- ***Better Planning***

To establish a proper VMI relationship, you must have access to a significant amount of data from your customers, including POS and inventory adjustments. This data provides you the information necessary to create an optimal inventory management plan. Additional uses for this information include order management, income planning, parts and supplies planning, HR and more.

Rather than guessing how much product a customer will need based on intuition or limited information, VMI gives both parties the right information needed to optimize the supply chain.

- ***Strategic Business Alliances***

VMI benefits business relationships between more than just you and your customers. Distributors often take part in a VMI relationship, increasing the accuracy and efficiency of your inventory management while decreasing the costs. Often a distributor will receive the same sales data the vendor does and then optimize the inventory at the customer site to reduce costs to the vendor and to decrease turn-around time when the customer needs new inventory.

Additionally, the same system of communication built with your customers can be used to build relationships with your suppliers to increase your use of JIT inventory in your manufacturing processes. While any business relationship needs to be entered into with caution, the systems that businesses need for VMI

facilitate much stronger business alliances across the entire supply and distribution chain.

- ***JIT Inventory***

JIT stands for Just-In-Time. JIT, focuses on only ever having enough inventory on hand to meet current needs. The amount of inventory needed depends on your product type, how fast it will move off the shelves to consumers and how long it will take to produce more.

Because of the complicated management systems required, JIT inventory management has only recently become affordable options for businesses because of the advances in the cloud, IT speed and storage and business systems.

Your customers want to utilize JIT inventory to get the most out of their physical space and reduce costs to their business. With VMI, you establish JIT inventory levels for your customers and produce according to that need. You see their sales and inventory levels and now have a better insight into their need. This has tremendous advantages for manufacturers and warehouses as well as for their customers. Leading to much better forecasting for the vendor, inventory levels can be really optimized for both parties.

- ***Variation from Franchising***

For many businesses, the advantage of franchising is maintaining control of parts and inventory down the distribution chain. Napa Auto Parts has consistent pricing, inventory and displays for all their manufactured goods, no matter the location. This is just one of the major advantages of franchising. With the increased communication with your customers through VMI, you have the opportunity to build quality control into your relationships with your customers. This means that you can have a hand in marketing your inventory to the end users of your product, not just the other businesses in your distribution chain.

- ***Advanced Forecasting***

Accurate forecasting requires data. The more data you have about sales results, the more information you can infer about customers, about seasonal trends, about the demand curve and your product life cycle. With historical data and an understanding of the causes of trends through common sense and experimentation. A spike in car parts from May-September could be caused by summer travels, for example. With the large amounts of data gained by using a vendor managed inventory system, you can improve accurate forecasts of the most likely scenario for increases and drops in demands. This aids long-term strategic planning and short term order fulfillment.

- ***Reduction of Sales Costs***

Storage adds significantly to the costs of your product. You incur costs to store inventory waiting for an order, your customer also incurs costs storing inventory waiting for a sale,

you have collectively added significant costs to each item sold. Whether this cost is visible or not, it is there.

Warehouse Management and 3PL

When you think Amazon, an image of a massive warehouse probably comes to mind. To manage all that stock, they need to optimize all areas of their warehouse operations. This is where warehouse management and third party logistics (3PL) come in. In terms of the warehouse, Amazon automates many of their processes which leads to task efficiencies at every level. How can you do the same? The features within a warehouse management system allow for paperless picking and packing, shipping integrations, return material authorization (RMA), and more. You can create custom labels and use scanners to turn lengthy manual processes into one-step tasks. This maximizes worker productivity and ensures streamlined operations. Amazon is quickly becoming a 3PL provider itself. They provide a means for vendors to advertise and sell their products to customers, but also stores the items in its fulfillment centers, pick, pack, and ship them, and provide customer service like handling returns. As a business, having a 3PL provider can improve your operations in many ways. You can save time, money, and warehouse space by partnering with a 3PL that has

an existing network and infrastructure. You can read more about how to select the right 3PL partner here.

Benefits of warehouse management

- ***Reduced Operating Expenses***

A well-designed WMS reduces operating expenses in a variety of ways. This type of system determines the most effective use of both labor and space, which reduces waste. WMS software can help you determine where to keep certain materials, products and equipment to optimize the flow of your warehouse. Some advanced systems have warehouse floor simulators, enabling users to create potential floor plans within the system. These simulators let you place pallets, shelves and other equipment you'd need to accommodate for in your warehouse.

Warehouse simulators help identify potential issues and create workflows. Part of the uses of warehouse management systems is common support for both FIFO and LIFO principles, giving warehouse managers flexibility when it comes to how they'd like to run their warehouse. FIFO

ensures expiring and perishable items are picked first. However, LIFO allows shelves to be placed against walls for more space. This versatility allows users to configure their warehouse to run at peak efficiency, saving money and time wherever possible.

- ***Enhanced Inventory Visibility***

Inventory visibility is one of the most important components of warehouse management systems. WMS software provides real-time data on your inventory through barcoding, serial numbers and RFID tagging. All of these methods enable users to document each item as it enters the warehouse, all of its movements on the warehouse floor as well as its movement during transportation from one location to the next.

This type of visibility is necessary to create demand forecasts, which provide insight into which products are most popular with customers during specific

times of the year. These forecasts assist leadership in deciding which products to invest in and which ones may be losing their place in the market. Increased traceability of your inventory as one of many related WMS advantages is also extremely helpful in the event of a recall. Serial numbers placed on the final product enable users to track the item back to its original lot ID which then determines if the product is part of the faulty batch. Traceability ensures you only have to recall damaged goods, rather than any and all goods you suspect are tainted.

- ***Just-in-Time Inventory***

Another benefit of a warehouse management system is Just-in-time (JIT) which refers to an inventory management practice in which stock levels are kept low and product moves quickly through the warehouse. Rather than holding onto inventory for long periods of time, your warehouse receives it "just in time" to fill an order. While this process can be quite complex, achieving a balanced, just-in-time inventory is a breeze with the right warehouse management program.

The first tool needed to maintain a just-in-time system is accurate demand forecasting. A WMS provides forecasts which are used to generate optimal inventory levels to meet demand without underestimating or exceeding it. This greatly reduces safety stock and related carrying costs. If your materials are used in manufacturing, just-in-time

warehousing can also reduce waste and scrap related to perishable items.

- ***Continuous Improvement***

One of the most important warehouse management system benefits is consistent updates. Warehouse management software vendors typically introduce new features regularly to reflect current industry best practices. This makes it easier for organizations to stay on top of the latest developments and allows them to continually improve their processes based on these innovations.

Benefits of 3pl

- ***Drive Cost Savings***

3PL firms specialize in logistics and thus will have a more extensive network than your company's supply chain function. They will likely have exclusive relationships within the logistics sector, greater influence during negotiations, and will also be able to offer greater volume discounts to clients. All of this can minimize overhead costs.

By partnering with a 3PL firm in supply chain management, you can also save on making huge infrastructure investments as it can provide transportation, warehouse space, staff and tracking technology, among other things.

- ***Get Access to Expertise and Experience***

In today's complex global market scenario, it is tough to anticipate and accommodate internal expertise in all the capacities and regions required. A 3PL provider will have knowledge and experience in matters such as transport documentation, import and export, international compliance and economic regulations, for instance. Businesses looking to expand into international markets can benefit from the logistics support and know-how that their partner can provide, thereby reducing costly delays, cutting down the cycle time, and making the entry into a new region smoother.

- ***Focus on Core Competencies***

Outsourcing logistics will give your organization the leeway to focus on its core competencies instead of getting involved in the management of non-core but critical functions. Your business can enjoy the benefits of logistical expertise without deploying internal resources.

- ***Gain Flexibility and Scalability***

The advantage of third-party logistics in supply chain management is that it offers enterprises the flexibility and scalability to utilize supply and distribution resources based on current business needs. Thus, when sales are down, there are no redundant investments and unutilized resources, and when there's a surge in demand, enterprises can upscale.

- ***Enable Business Growth and Market Expansion***

The role of third-party logistics in supply chain management is to enable business growth by giving companies access to markets where they don't have an established presence. Being able to manage inventory in a new market without having to spend money on warehousing, equipment, and labor can save money, as well as the effort of learning the logistical nuances of a new market.

- ***Improve Customer Satisfaction***

All of the aforesaid benefits will lead to improved services and response time, timely deliveries and greater brand reliability. This translates to satisfied customers — the fundamental goal of all businesses.

AMAZONS INVENTORY MANAGEMENT STRATEGIES

1. ***Reworking Warehouse, Distribution and Fulfillment Processes***

Amazon warehouses feature extensive use of barcode scanners, a near-constant cycle of order processing, item picking and shipping. Digitizing these processes allows Amazon to gain greater visibility into asset dispositions and shipping needs at any given time. According to Supply Chain Digital, Amazon is continually working to optimize shipping practices around the markets it serves. For example, in China, the company is partnering with merchants, allowing Amazon to pick up goods directly from those stores and ship to

consumers. The key is that all of these transactions take place using mobile apps, with data integrated across various lines of business.
Amazon is transforming the supply chain by using digital technologies to adapt its operations to the specific needs of employees and partners in every setting. What started as using barcode scanners to track items at all times has evolved

to a fully digital warehouse, distribution and fulfillment network that moves goods between locations with incredible efficiency. Going digital sets a foundation for flexible, fast-moving operations. This has allowed Amazon to make more dramatic strategic changes that are transforming how the supply chain works.

2. Distributing Warehouses to Bring Products Closer to Customers

Marc Wulfraat of consulting firm MWPVL International told Supply Chain Digital that Amazon will likely roll out approximately 7.2 million square feet of warehouse space in the U.S. alone during 2016 and 2017. The company is also pursuing physical retail stores to put goods in closer proximity to customers.

Amazon Lockers let users ship items to Amazon-controlled locations where they can pick the goods up at their convenience. These factors are coming together to change the idea of fulfillment. Instead of having to process the order in a central warehouse and send it over an extended shipping network, the ecommerce giant can pair a warehouse with an order to identify which location makes the most sense and accelerate order delivery accordingly. This type of strategic change is only possible, however because of mobile data collection and real-time integration with the backend system, making it easier to share information across geographically distributed locations.

3. Giving Customers More Power in the Supply Chain

With backend systems providing data integration across order processing, warehouse and distribution workflows, Amazon can take an order and initiate shipments in a matter of minutes. Now, the company is allowing consumers to kick-start that process. Slash Gear reported that Amazon's new Dash Wand uses a barcode scanner to let customers easily scan goods and submit orders via the Amazon Fresh service.

At this point, Amazon's ability to manage its supply chain via digital tools extends all the

way from customers initiating orders out to them receiving goods at market-

leading rates. Businesses that want to keep up may not be able to replicate all of Amazon's progress, but they can transform around digital technologies, such as mobile data collection, to keep pace with shifting consumer expectations.

3.2 AN OVERVIEW OF EARLIER STUDY

- ***Abramovitz and Modigliani (1957)***

They highlighted the relationship between capacity utilization and inventory investment. Existing stock of inventories was expected to adjust to the desired levels. Thus the variable, existing stock of inventories, was essential to be negatively related with the desired stock. The result was that there is positive relation among the ratio of inventory to sales and inventory investment. High ratio of stocks to sales in the past suggests requirement of high levels of inventories in the past and promising high investment in inventories in the current period also.

- ***Randall, Netessine and Rudi (2006)***

They empirically studied the conditions that favor the choice of one supply chain structure over another, and the financial impacts of this choice. The authors concluded that several factors, including gross margin, firm age, product variety, demand variability, number of retailers, and product size all impact the structure choice. Finally, they tested two alternative views of how a company's supply chain structure can impact its economic performance. The first view assumes that one structure is dominant and will lead to better firm performance. The second states that performance is a function of fit between structure choice and the firm's competitive strategy, controlling for other performance-related variables. They found support for basing supply chain structure decisions on strategy.

Prior research has laid the foundation for the study of the relationship between traditional and drop ship inventory models. With more than one third of retailers relying primarily on drop shipping (Randall, Netessine & Rudi 2006), this inventory strategy has become increasingly common in e-commerce. Our simulation model extends the analytical and empirical findings of the previous e-commerce

studies, analyzing the impact of various

factors on firm performance.

- ***Farzaneh (1997)***

Presented a mathematical model, to assist the companies in their decision to switch from EOQ to JIT purchasing policy. He defines JIT as "to produce and deliver finished goods just in time to be sold, sub-assemblies just in time to be assembled in goods and urchased material just in time to be transformed into fabricated parts". He highlights that the EOQ model focuses on minimizing the inventory costs rather than minimizing the inventory. Under the ideal condition where all the conditions meet, it is economically better off to choose the JIT over the EOQ because it results in purchase price, ordering cost.

- ***Rich Lavely (1998)***

Asserts that inventory means "Piles of Money" on the shelf and the profit for the firm. However, he notices that 30% of the inventory of most retail shops is dead. Therefore, he argues that the inventory control is facilitate the shop operations by reducing rack time and thus increases profit. He also elaborates the two types of inventory calculations that determine the inventory level required for profitability. The two calculations are "cost to order" and "cost to keep". Finally, he proposes seven steps to inventory control.

- ***Dave Piasecki (2001)***

He focused on inventory model for calculating the optimal order quantity that used the Economic Order Quantity method. He points out that many companies are not using EOQ model because of poor results resulted from inaccurate data input. He says that EOQ is an accounting formula that determines the point at which the combination of order costs and inventory costs are the least. He highlights that EOQ method would not conflict with the JIT approach. He further

elaborates the EOQ formula that includes the parameters such as annual usage in unit, order cost and carrying cost. Finally, he proposes several steps to follow in implementing the EOQ model. The limitation of this literature is that it does not elaborate further relationship between EOQ and JIT. It does not associate the inventory turns with the EOQ formula and fails to mention the profit gain with the quantity is

calculated.

- ***Khouja (2001)***

  introduced one of the earliest mathematical models to design the optimal mix of drop shipping by optimizing profits. He found that drop shipping has significant advantages over holding physical inventories, including decreased holding and obsolescence costs. He also concluded that drop shipping causes fragmentation, resulting in a mixed strategy of drop shipping and physical inventory.

- ***Chopra and Meindl(2007)***

They categorized the various distribution networks available to e businesses into six models:

1) manufacturer storage with direct shipping, 2) manufacturer storage with direct shipping and in-transit merge, 3) distributor storage with package carrier delivery, 4) distributor storage with last mile delivery, 5) manufacturer/distributor storage with customer pickup, and 6) retail storage with customer pickup. The first model, manufacturer storage with direct shipping, ships product directly from the wholesaler or manufacturer to the end customer, bypassing the retailer. It is best used with items of high value and low, unpredictable demand. The second model, manufacturer storage with direct shipping and in-transit merge, combines portions of the order from various manufacturing sites into one shipment to the final customer. As with drop shipping, the ability to aggregate inventories and postpone product customization is a significant advantage in this model. The third design, distributor storage with package delivery, maintains inventories at an intermediate warehouse rather than at the manufacturer or wholesaler. The retailer then transports the product via package delivery to the end customer, requiring a

higher level of inventory due to demand uncertainty. Distributor storage with last mile delivery, is similar to model three with the exception that the product is delivered to the customer's home rather than using a package carrier. Aggregation with this model is low, thus inventories are high. In manufacturer/distributor storage with customer pickup, inventories are stored at the manufacturer or wholesaler. Customers place orders electronically with the retailer, and inventory is then shipped to customer pickup points as needed. Aggregation is high with this model, thus inventories are lower. Finally, in the sixth model, retail storage with customer pickup, inventory is stored locally at retail locations. Aggregation in this model is low and, thus, inventories are higher than with any other model.

3.3 UNIQUENESS OF STUDY

In this study we can understand about the various techniques that are used by Amazon for their inventory management. The Amazon is basically using different inventory management techniques like inventory outsourcing, drop shipment model and they are using an inventory management model which is called as the 3 tier model of amazon.

Here we are discussing about inventory management of Amazon. In Amazon they are providing two different inventory options that are the key factors of the success of the company. The two options are fulfillment by Amazon and fulfillment by Merchant these two options are only provided by Amazon no other companies have such an options and also they have some powerful inventory management strategies for the success of their company.

Only because of these techniques, models, strategies etc. the firm is growing this much faster in the market and now Amazon is considered as the most powerful e retailer in the world.

In current days many leading firms are having different inventory management practices like ABC, FSN and so on which can be used by Amazon and I feel that it will be having lot of advantages like:

Advantages of ABC

- *This method helps businesses to maintain control over the costly items which have large amounts of capital invested in them*

- *It provides a method to the madness of keeping track of all the inventory. Not only does it reduce unnecessary staff expenses but more importantly it ensures optimum levels of stock is maintained at all times*
- *The ABC method makes sure that the stock turnover ratio is maintained at a comparatively higher level through a systematic control of inventories*
- *The storage expenses are cut down considerably with this tool*
- *There is provision to have enough C category stocks to be maintained without compromising on the more important items*

Advantage of FSN

- *Periodic review of categorization under F.S.N.*
- *Take appropriate action to increase number of orders (frequency) or quantity per order against fast moving items.*
- *Close watch of slow moving items.*
- *Find alternate use (substation) of slow moving items So that their usage rate can be increased.*
- *Take appropriate actions, in time, to dispose of dead stock and prevent their stockpiling.*

CHAPTER 4

METHODOLOGY OF THE STUDY

4.1 RESEARCH APPROACH AND DESIGN

Research Approach:

The research approach is a plan and procedure that consists of the steps of broad assumptions to detailed methods of data collection, analysis, and interpretation. It is, therefore, based on the nature of the research problem being addressed.

The research approach in this study is ***qualitative research.*** *Qualitative research is a kind of research that rely on unstructured and non-numerical data. The data may take the form of fieldnotes written by the researcher in the course of observation, interviews, audio or video recordings carried out by the researcher in natural settings or interviews, documents of various kinds and even material artefacts.*

Research design:

A research design is a framework or blueprint for conducting the marketing research project. It details the procedures necessary for obtaining the information needed to structure or solve marketing research problems.

A research design is a broad plan that states objectives of research project and provides the guidelines what is to be done to realize those objectives.

Here in this project we are using ***descriptive research****. Descriptive research is defined as a research method that describes the characteristics of the population or phenomenon that is being studied. This methodology focuses more on the "what" of the research subject rather than the "why" of the research subject.*

In other words, descriptive research primarily focuses on describing the nature of a demographic segment, without focusing on "why" a certain phenomenon occurs. In other words, it "describes" the subject of the research, without

covering "why" it happens. Here the descriptive research is based on the secondary data collected from different sources to study about the inventory management techniques of Amazon.

4.2 SOURCES OF ONLINE DATA

Secondary data:

The data regarding the company, the industry and other relevant data are collected through the internet, the online articles and journals. The online data sources are the following:

- *Company website*
- *Online journals*
- *Google books*
- *Shodganga*
- *Online magazines*
- *Online articles like blogs*

The data collected through data analysis through other related articles, journals and studies.

Author	***Article Title***	***Variables in discussion***
• *Abramovitz* • *Modigliani*	***Business reason for holding inventories and their macro-economic implications, problems of capital formation, studies in income and wealth.***	*The analysis is based on the relationship between capacity utilization and inventory investment.*
• *Randall* • *Netessine* • *Rudi*	***An empirical examination of the decision to invest in fulfillment: a study of***	*study of the relationship between traditional and drop ship inventory models.*

	internet retailers	
Farzaneh	***JIT purchasing vs EOQ with a price discount: an analytical comparison of inventory costs***	• *Just in time* • *Economic ordering quantity*
Rich lavely		• *Inventory control* • *Inventory calculations* *Cost to order* *Cost to keep*
Dave piasecki	***Optimizing economic order quantity***	• *Inventory model for calculating the optimal order quantity* • *Comparison between EOQ and JIT*
Khouja	***The evaluation of drop shipping option for ecommerce retailers, computers & industrial engineering.***	*The analysis is based on the mathematical models to design the optimal mix of drop shipping by optimising profit.*

• *Chopra* • *Meindl*	***Supply chain management: strategy, planning and operation.***	*Distribution network available to e businesses.* *Manufacturer storage with direct shipping* *Manufacturer storage with direct shipping and intransit merger.* *Distributor storage with*

		package carrier delivery *Distributor storage with last mile delivery* *Manufacturer/distributor storage with customer pickup* *Retail storage with customer pickup*

Table 4.1 summary of review of literature

4.3 SAMPLING DESIGN

This study used systematic sampling, Systematic sampling is the selection of specific individuals or members from an entire population .The selection often follows a predetermined intervals. The systematic sampling method is comparable to the sampling method however, it is less complicated to conduct.

4.4 DATA COLLECTION TOOL

The tool that is use in the study is telephonic interview technique at the method of data collection. Interview is one of the popular methods of research data collection .the term interview can be dissected into two terms as 'inter and view '.The essence of interview is that one mind tries to read the other.

Telephone interview is data collection method when the interviewer communicates with the respondent on the telephone in accordance with the prepared questionnaire. Usually, standardized questionnaire with closed – ended questions are recommended for this kind of questioning.

Telephone interview is a quantitative research tool practiced in public opinion customer or their target group survey.

4.5 REPORT STRUCTURE

Research structure is basically an outline of the work. The following is the research structure of this project:

Chapter 1*: In this gives an in detail introduction to the project. It gives background of the study. It provides the statement of the problem regarding project. It provides relevance to the topic and gives a scope of the study. It also show objectives of the study.*

Chapter 2*: In this chapter provides the industry profile of the company. The chapter provides information with the business process of the Industry. The revenue generation by the industry of the overall economy. It gives the list of firms operating in the Industry. The general pricing strategies of the Industry. It shows the prospects and challenges of the Industry. It provides*

with the key drivers of the industry.

Chapter 3*: In this chapter gives a brief information on other articles, journals and studies that are related to the research. It gives the theory behind the study. The chapter provides an overview of earlier studies that been done before the study. It gives the uniqueness of this study.*

Chapter 4*: In this chapter provides the methodology of the study. The research apprch, and research design, defines the data sources, also defines the data collection method. It points out limitation of the study.*

Chapter 5*: In this chapter analyses the data collected during the research and provides the inference of the data collected.*

Chapter 6*: In the chapter provides with the findings found in the study.*

Chapter 7*: In this chapter concludes with the summary of important points of the research.*

Appendix*: The relevant tables and data provided in this chapter.*

4.6 LIMITATIONS OF THE STUDY

- *In-depth study is not possible because of the time limit*

- *As we are using secondary data for this study so there is a chance that the information and data may not be accurate.*
- *The data may be old and out of date*
- *The company publishing the data may not be reputable*
- *The documents may lack authenticity*
- *The data may not be in appropriate*

CHAPTER 5

DISCUSSION

5.1 OBSERVATION BY THE CANTIDATE FROM LITERATURE REVIEW

This study is based on inventory management techniques at Amazon. The study mainly focused on the inventory management, inventory management strategies, inventory management models etc. followed by the company.

Inventory management is the supervision of non-capitalized assets, or inventory, and stock items. For properly and effectively manage the inventory the company is using different methods

Amazon has totally changed the game of online retail marketing for Amazon sellers. Many of them are yet to explore the online e-commerce site and it has already reached the number one choice for traders as well as buyers when it comes to online shopping. To accomplish such a feat in such a short span of time, Amazon has dedicated its entire discipline and coordinated efforts to make it to the top with some feature like Amazon inventory management system.

FBA AND FBM

As Amazon makes things easier, the one feature which it offers to ease the load

on traders is to offer FBA, not the US investigation department but ***Fulfillment By Amazon****. Fulfillment By Amazon is an excellent facility provided by Amazon through all its outlets, and also in the newly launched Amazon Australia. It aims to manage your inventory, packaging, shipping, and delivery which can be most stressful if you are a foreign trader on Amazon. Amazon's Inventory Management is FBA. There are several tools available in the market that help you manage FBA and make things even more comfortable. It helps you maintain your inventory and ship things to all markets.*

FBA starting up steps:

- *Add FBA to your account.*
- *Making your product listings*
- *Keep your products ready to go*
- *Ship them to Amazon*

- *Order, pack and ship them away*
- *Back office customer care support*

Advantages of FBA:

- ***Effortless logistics and shipping.***

FBA allows you to outsource the entire process, taking advantage of their expertise and experience.

- ***Discounted shipping rates.***

They pass those discounts on to sellers in the form of reduced shipping prices when sending your inventory to Amazon.

- ***Management of returns.***

From dealing with upset customers to inspecting returns and handling all of the administrative aspects, Amazon takes care of all of that for you.

- ***Customer service management.***

They offer 24/7 support via phone, chat and email.

- ***Potentially unlimited storage space.***

There are no inventory minimums, so you can send in as little as just one product.

- ***Quick delivery.***

Once an order is placed, Amazon automatically figures out which fulfillment center is closest to the customer and ships their order from there.

- ***Fulfillment of orders from other channels.***

They can even automate the process for free by using the FBA Shipping app. It automatically sends orders from your BigCommerce store to Amazon for fulfillment.

Another main concept that we are studied are ***FBM (fulfillment by merchant)*** *Fulfilled by Merchant, popularly known as FBM, is when sellers list their products on Amazon and*

choose to ship products to each buyer by themselves. In other words, sellers are responsible for fulfilling their orders and do not rely on Amazon for the same. While it is a rather advantageous method for products with lower margins, FBM Amazon is rather overlooked owing to easy shipping, handling, and other benefits that come with Amazon FBA. After setting up the seller account on Amazon and creating the listings, sellers have two ways to deliver their products: they can either use Amazon's fulfillment network to ship your orders on their behalf, that is, Amazon FBA or, they can do it by themselves and go with the FBM Amazon way.

The merchants are responsible for shipping the orders to the customer's delivery address, from their warehouse location/slash the place where they have stored the products. The MFN (Merchant Fulfilled Network) seller is also responsible for handling returns and providing customer service.

Amazon merchants who are going this way need to keep FBM shipping in mind. They need to find shipping/delivery partners who are reliable and most importantly, cost-effective. If FBM shipping charges are higher than the fees

incurred with FBA, then it doesn't make sense for merchants to fulfill the orders by themselves as it will only impact their margins negatively.

Advantages of FBM:

- *A better understanding of how things work*
- *Freedom to run the business exactly as seller chooses*
- *Opportunity for an offline and online retail store Greater Margins. No unexpected costs.*
- *Opportunity to build an independent brand is more feasible*
- *Less unavoidable losses due to changes in Amazon policies*
- *Less paperwork, particularly when dealing with non-sales-tax states*

OUTSOURCING AND DROPSHIPMENT MODEL

These are the main two concepts that are related to inventory management of amazon When you hear the word "Amazon", the first thing that comes into your mind is online marketing. Amazon has been able to run a seamless business for a decade now and is moving towards success with each passing day. The brains at Amazon have always

tried to make it improved with different and unbelievable tactics to maximize earnings. And in doing so, Amazon Inventory Management has played a vital role.

Inventory Management is a critical process in any business. People working in the business sector have a knack of how inventory management can earn them or how much it can cost them if not operated efficiently. An efficient inventory enables you to ascertain how much stock you have in hand to meet the needs of your customers. Amazon inventory management has proven its mettle in earning the title of "great customer service" and an invaluable trust from its customers. Amazon inventory management is enhanced by the use of Appath software. To earn better customer relations, here Appath software is an ideal choice to make. The cloud software enables online businesses. Thus, you are able to carry out your business work without any inconvenience.

When Bezos launched the company in 1995, his sole aim was to earn money without much ado. At first, he aspired for hassle-free operations. He wanted to concentrate more on earning heavily, satisfying his customers also. What Bezos aimed was to spend his time and money on more important things rather than on dealing with the inventory. He wanted to offer a wide collection of books but did not want to get stuck in opening store and warehouses and running them smoothly. However, he soon realized that the only solution to satisfy his customers and enable Amazon to enjoy the benefits of time and cost-efficiency was to build and maintain its own warehouse. Amazon's Inventory Management costed him about $50 million and in order to get the money, Amazon issued $2 billion as bonds.

Amazon earned huge sums of money, their sales increased to a considerable amount of percentage every year and therefore, steps were taken to improve the inventory. But as the sales increased, Amazon's inventory ballooned by 650%. Experts say, "When a company manages inventory properly, it should grow with its sales growth rate", they noted, when inventory grows faster than sales, "it means simply that they are not selling as much as they are buying." In this particular scenario, people at Amazon thought it in their best interests to outsource Amazon's Inventory Management.

Although, Amazon did great business and earned the reputation of providing great customer service when it managed its inventory however, it wanted to concentrate on its important activities and outsource its Inventory Management to earn profits. The people at Amazon had an idea that outsourcing Amazon's inventory management would damage their hard-earned reputation. In spite of that, they decided to go ahead with their decision to outsource their inventory.

These points were considered while deciding a strategy:

- *Reduce redundant inventory*
- *Blockage of working capital*
- *Low inventory turnover*
- *Inventory goals – right products in the right quantity to the right place at the right time.*
- *Cost of holding > cost of outsourcing.*

And this is how they outsourced! Amazon achieved its goal, i.e. to make money while ensuring great customer services. Amazon inventory management outsourced holds products that are high in demand, and if any customer asks for a product that is not in Amazon's inventory, it is then, ordered to the distributors and sent to the client.

To manage sales, purchase and payments Amazon inventory management is supported by the Appath cloud software, which carries the online e-commerce business to anywhere, without geographical limitations.

Drop shipping model *- Dropshipping is an e-commerce method in which the seller takes orders on behalf of a manufacturer, distributor, or supplier. Then, when a customer buys the product, the seller uses their supplier to fulfill those sales.*

Often, dropshippers reposition the sold goods as their own and the end consumer is never made aware that the goods came directly from the manufacturer. This practice is popular on ecommerce sites like Amazon, Ebay, and Shopify.

Steps of Drop shipping model:

- *First, an Amazon customer purchases the product you've listed on Amazon.*
- *Second, once the transaction is finalized and you receive the funds, you purchase the product directly from the supplier and give them the customer's information.*
- *Lastly, with the buyer's information in hand, the supplier then sends the product to the customer.*

Advantages of drop shipping model:

- *As mentioned before, you don't have to worry about the nitty-gritty of buying and selling. Forget about things like ordering, stocking, storing and shipping, and just focusing on passing on the order and address to the supplier.*
- *You'll have a ton less overhead to pay for with no products to store.*

- *You'll also save money on shipping because you won't have to do it!*
- *Time will become more plentiful because there's no order fulfilment to worry about you can focus on growing your business in other areas.*
- *A limited product inventory is of little worry because you can 'present' huge selections by teaming up with multiple suppliers or manufacturers. Variety, in this sense, can really help broaden your appeal.*
- *Doing drop-shipping on Amazon means you're privy to their search engines and marketing tools so you can piggyback on the work that other sellers have already done.*
- *You have immediate access to a potentially HUGE audience because of the sheer numbers that buy from Amazon.*

MULTI- TIER INVENTORY MODEL

Next in this study we are discussed about multi tier inventory model, A supply chain links upstream suppliers and downstream customers with the flow of products and services between a set of facilities, companies, supply points, and service providers.

Multi-tier supply chains are multiple single-level collaborations, meaning multiple supplier to buyer relationships, within one supply chain.Multi-tier supply chains are becoming a key strategic driver, to lower costs, reduce capital assets, and get products to market more efficiently than the competition. At the same time, multi-tier strategies have led to increased complexity, as well as less visibility and control over the manufacturing process, as the key planning and execution data resides outside the four walls of the enterprise.

- *Amazons Tier 1: Warehousing*
- *Amazons Tier 2: Delivery*
- *Amazons Tier 3: Third party interaction*

INVENTORY MANAGEMENT TECHNIQUES

Next comes the different inventory management techniques used by Amazon, Inventory management refers to the process of ordering, storing, and using a company's inventory. These include the management of raw materials, components, and finished products, as well as warehousing and processing such items. The major inventory managemet techniques that are use in amazon are

- *Lean inventory manufacturing*
- *Vendor managed inventory*
- *Ware house management and 3pl*

Lean is an inventory management technique that consists of a set of tools, a philosophy and a system. The crux of it is that it aims to reduce waste, optimise production and helps put the customer first. The philosophy associated with this concept is known as Kaizen.

Vendor Managed Inventory (VMI) is a business model where the buyer of a product provides information to a vendor of that product and the vendor takes full responsibility for maintaining an agreed inventory of the material, usually at the buyer's consumption location.

Third-party logistics (abbreviated as 3PL, or TPL) in logistics and supply chain management is an organization's use of third-party businesses to outsource elements of its distribution, warehousing, and fulfillment services. Third-party logistics providers typically specialize in integrated operations of warehousing and transportation services that can be scaled and customized to customers' needs, based on market conditions, to meet the demands and delivery service requirements for their products. Services often extend beyond logistics to include value-added services related to the production or procurement of goods, such as services that integrate parts of the supply chain. A provider of such integrated services is referenced as a third-party supply chain management provider (3PSCM), or a

supply chain management service provider (SCMSP). 3PL targets

particular functions within supply management, such as warehousing, transportation, or raw material provision.

In current days many leading firms are using different inventory management techniques that are not used by Amazon. Most of these techniques are really good for the companies who are keeping inventories like Amazon, some of these techniques are:

1. ***Bulk shipments***

This method banks on the notion that it is almost always cheaper to purchase and ship goods in bulk. Bulk shipping is one of the predominant techniques in the industry, which can be applied for goods with high customer demand.

The downside to bulk shipping is that you will need to lay out extra money on warehousing the inventory, which will most likely be offset by the amount of money saved from purchasing products in huge volumes and selling them off fast.

Pros of bulk shipments

- *Highest potential for profitability*
- *Fewer shipments mean lower shipping costs*
- *Works well for staple products with predictable demand and long shelf lives*

2. ***ABC inventory management***

ABC inventory management is a technique that's based on putting products into categories in order of importance, with A being the most valuable and C being the least. Not all products are of equal value and more attention should be paid to more popular products.

Although there are no hard-and-fast rules, ABC analysis leans on annual consumption units, inventory value, and cost significance.

Pros of ABC inventory management

- *Aids demand forecasting by analyzing a product's popularity over time*

- *Allows for better time management and resource allocation*
- *Helps determine a tiered customer service approach*
- *Enables more accurate inventory optimization*
- *Fosters strategic pricing*

3. Just in Time (JIT)

Just In Time (JIT) inventory management lowers the volume of inventory that a business keeps on hand. It is considered a risky technique because you only purchase inventory a few days before it is needed for distribution or sale. JIT helps organizations save on inventory holding costs by keeping stock levels low and eliminates situations where deadstock - essentially frozen capital - sits on shelves for months on end.However, it also requires businesses to be highly agile with the capability to handle a much shorter production cycle.

Pros of JIT

- *Lower inventory holding costs*
- *Improved cash flow*
- *Less deadstock*

4. FSN inventory management

FSN stands for fast-moving, slow-moving and non-moving items. Essentially, this segments inventory into three classifications. It looks at quantity, consumption rate and how often the item is issued and used. Fast-moving items are items in your inventory stock that are issued or used frequently. When it comes to slow-moving items, these ones are issued or used for a specific period of time. Lastly, non-moving items are not issued or used at all over a certain time frame.

Pros of FSN

- *Periodic review of categorization under F.S.N.*
- *Take appropriate action to increase number of orders (frequency) or quantity per*

order against fast moving items.

- *Close watch of slow moving items.*
- *Find alternate use (substation) of slow moving items So that their usage rate can be*

  increased.
- *Take appropriate actions, in time, to dispose of dead stock and prevent their stockpiling.*

DISCUSSION OF LITERATURE REVIEW

Literature review is one of the main part of this study for conducting this study we are used different articles written by different persons and after reading all this we get more ideas about inventory management techniques of different organizations mainly we studies the articles of 7 famous analysts or researchers. The main contents in the literature are:

The 1st study is conducted by Abramovitz and modigilani in 1957. This study is done from one of the research, the title of the article is "business reason for holding inventories and their macro- economic implications, problems of capital formation, studies in income and wealth." This study is mainly based on the relationship between capacity utilization and inventory investment. In this they are trying to define that sales and inventory investment have a positive relation that is if the inventory invenstment is high then the sales will also become high.

The 2nd study is conducted by Randall, Netsessine, Rudi in the year of 2006, the title of the article is "an empirical examination of the decision to invest in fulfillment: a study of internet retailers" this study is based on the relationship between traditional and drop ship inventory models. The first view assumes that one structure is dominant and will lead to better firm performance. The second states that performance is a function of fit between structure choice and the firm's competitive strategy, controlling for other performance-related variables. They found support for basing supply chain structure decisions on strategy.

This study is done by Farzaneh in 1997, the title of this article is "JIT purchasing vs EOQ with a price discount: an analytical comparison of inventory costs" in this mainly they are dealing with just in time and economic order quantity. He

highlights that the EOQ model focuses on minimizing the inventory costs rather than minimizing the inventory. And also said that Just in time method is better than economic order quantity.

The next study is done by Rich lavely 1998, in this study he considered as the inventory is piles of money, he notices that 30% of inventory in the retail shope are dead stock, therefore he suggested that different inventory management techniques that they need to implement inorder to reduce the dead stock. And also there are 2 main concepts that are mentioned in this study they are cost of order and cost to keep. If the retailers will try to reduce all these cost then they can reduce their overall inventory cost.

The next study is done by Dave piasecki in 2001, he focused on inventory model for calculating optimal order quantity that use the EOQ method. In this study also they are mainly dealing with two concepts like EOQ and JIT. He says that EOQ is an accounting formula that determines the point at which the combination of order costs and inventory costs are the least and also he proposed different steps to follow the implementation.

Next study is done by khouja in 2001, he introduced one of the earliest mathematical model to design the optimal mix of drop shipping by optimizing profits. He also studied about different advantages of drop shipping model and also studied different mix strategies for drop-shipping model.

The last study is done by chopra and meindl in 2007, They categorized the various distribution networks available to e businesses into six models: 1) manufacturer storage with direct shipping, 2) manufacturer storage with direct shipping and in-transit merge, 3) distributor storage with package carrier delivery, 4) distributor storage with last mile delivery, 5) manufacturer/distributor storage with customer pickup, and 6) retail storage with customer pickup.

5.2 LOGICAL CONCLUSION RELATED TO THE BUSINESS PROBLEM

Today, in this ecommerce retailing, a lot of problem that are faced by the firms one of the main problem is inventory management. Inventory is the asset of every firm so it is really important to properly manage the inventories. For the survival and growth of an industrial enterprise, it is highly essential that all the pervasive efforts

are made to minimise and control the total costs, to achieve higher operational efficiency and profitability of an organisation. Inventory is an important resource of an enterprise. Inventory management is an important scientific device for controlling inventory and eliminating wastage, is considered an integral part of Industrial management in modern times. Modem management has started taking more and more interest in "Inventory Management" as Inventories are highly essential for any enterprise and at the same time it has a direct impact on the financial resource, as it locks up funds. There are lot of possibilities to minimize inventory, both in terms of investment as well as quality, as it is a controllable variable.

Proper inventory management helps you figure out exactly how much inventory you need to have on-hand. This will help prevent product shortages and allow you to keep just enough

inventory without having too much in the warehouse. A good inventory management strategy supports an organized warehouse. If your warehouse is not organized, you will have a hard time managing your inventory. Many companies choose to optimize their warehouses by putting the highest selling products together and in easily accessible places in the warehouse. This, in turn, helps speed up the order fulfillment process and keeps customers happy. inventory management can have real-time and monetary benefits. By keeping track of which products you have on-hand or ordered, you save yourself the effort of having to do an inventory recount to ensure your records are accurate. A good inventory management strategy also helps you save money that could otherwise be wasted on slow-moving products.

In the point view of a firm their ultimate objective is to make profit by reducing cost for this they are using different methods to reduce cost. Inventory management is one of them. if the company will properly manage the inventory they can make large benefits.

CHAPTER 6

FINDINGS

FINDINGS OF THE STUDY

- *The company Amazon is using different inventory management process to manage their inventory this basically include some steps:*

- *First the goods are delivered in the receiving are of the warehouse*
- *Receive and store*
- *Customer orders product*
- *Pick, pack and ship*
- *Customer service*
- *Customer returns*

- *Amazon is using an ERP system to keep track of goods in inventory, this software also used to calculate cost often in different currencies.*
- *Amazon is using outsourcing method or they are transferring some of their works like product design and manufacturing to third part to reduce their working difficulty and also it helps them to concentrate on their work more and they can improve their efficiency.*
- *The company is also using Drop shipping supply chain model to proper transfer of their inventories from one place to another.*
- *Amazon is using Multi- tier inventory model, this model helps them to properly doing warehousing, delivery and also third party interaction.*
- *The company have 3 different supply chain secret that are very important for their success, the three main factors are: technology, manufacturing and pricing.*
- *Amazon is mainly using three different inventory management techniques like vendor managed inventory, lean manufacturing, warehouse management and 3pl.*
- *The company is also using three different inventory management strategies*
    - *Reworking Warehouse, Distribution and Fulfillment Processes*
    - *Distributing Warehouses to Bring Products Closer to Customers*

- *Giving Customers More Power in the Supply Chain*

CHAPTER 7

CONCLUSION

The study is mainly conducted for the purpose of finding out the different inventory management techniques that are used by Amazon. The inventory system is an extremely important problem area in the management of materials handling. It is quite susceptible to control and a very large amount of scientific models are available in the literature to enable us to choose an optimal inventory policy. Buying the optimal quantity can result only from a sound inventory control system that is achieved by judicious reconciliation of conflicting costs and departmental objectives. However, inventory is only an indicator of performance of materials management function and to cut down inventories we use not only scientific inventory management principles but also models along with it also take long-term measures to reduce inventories through strategies such as variety reduction and standardization, source development and optimization, and vendor rating, lead-time reduction through improvement in the systems and procedures of procurement. It is obvious that scientific inventory management has to be practiced selectively rather than indiscriminately to make it cost-effective. It is also important to have Informational inputs like demand forecast, lead-time estimate, and other cost estimates to be realistic to make effective use of inventory models.

From this study we will get a cler picture about the different inventory management techniques that are used by the company and also we can understand what all are the benefits that are provided by these techniques to the company. And also we can find out the different models that are used by Amazon for properly and effective maintenance of their inventory.

BIBLIOGRAPHY

- *Abramovitz & Modigliani, Franco (1957), "Business Reasons for Holding Inventories and Their Macro Economic Implications", Problems of Capital Formation, Studies in Income and Wealth, Vol. 19, NBER, pp. 495-511.*
- *Farzaneh, D.P(2012), The effect of inventory management on firm performance, international journal of productivity and performance management, 57(5), 355-369.*
- *Khouja, M 2001, 'The evaluation of drop shipping option for e-commerce retailers', Computers & Industrial Engineering, vol. 41, no. 2, pp. 109-126.*
- *Randall Taylor, Netessine Serguei, Rudi Netessine(2006), An empirical examination of the decision to invest in fulfillment capabilities: A study of internet retailers, vol. 36, pp. 105- 108*
- *Agarwal Rashmi, 2001, Research methods concept, process and practice, New Delhi, shipra publications.*
- *Aswathappa k, 2010, production and operation management, Himalaya publication.*
- *Attila Chikan, 1981, inventory management, mathematical models of inventories, Elsevier publishing co.*
- *Kothari C R, 2004, research methodology methods and techniques, New Delhi, new age international publishers.*
- *Slack Nigel, Jones Alistair, 2018, operations & process management, Pearson India publications.*

WEBILOGRAPHY

- *http://opepiimraipur.blogspot.com/2015/01/inventory-management-at-amazon.html?m=1https://www.warehouseanywhere.com/resources/amazon-inventory-management/ https://www.rfgen.com/blog/amazon-s-inventory-management-secrets/*

- *https://www.scribid.com/doc/36122374/20695369-case-study-report-on- inventorymanagement-management-at-amazon-com*