

# STUDY OF VARIOUS DIGITAL TECHNOLOGIES USED BY RETAILERS IN ORGANIZED RETAIL SECTOR

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## ABSTRACT

India's retail market is projected to nearly double from US\$ 600 billion in 2015 to US\$ 1 trillion by 2020, driven by sales expansion, urbanization and attitudinal changes are some of the key reasons for India's organized retail boom. Retailers are doing a lot of creativity because of the pressure, and to keep consumers happy and pleased. Therefore, consumers of today have greater choice. Technology has been one driver that is following the global trend most of the growths and is beginning to adopt technologies. Digital technology in retailing is seen as an essential tool for creating and sustaining relationships by improving shopping experiences by providing the consumer with ease, better service, speed and value.

In today's competitive market, modern trade participants are relying more on Digital Technology solutions or IT innovations to manage the rapidly changing business scenarios and rising customer demand. Digital technology in retailing is seen as an essential tool for creating and sustaining relationships by improving shopping experiences by providing the consumer with ease, better service, speed and value. Indian economic growth is bringing in many shifts in market demand and purchasing habits. It is difficult to forecast the Indian retail market, customers are changing and retailers are expanding operations, further increasing the need for IT adoption. This paper focuses on the role of emerging technologies like Bar code- Scanner, RFID, Mobile Point of Sale (POS), Self-Service Technologies, Security related Technology, QR Codes, Interactive kiosks, Cloud Computing, Big Data, Social Network, Wi-Fi (In-store), Internet of Things (IoT), Multi-channel customer management etc in organized retail to leverage cost control, boost supply chain efficiencies, and achieve product and service differentiation on the market as a competitive advantage in Indian retail growth.

## Index Terms:

Barcode –Scanner, Mobile Point of Sale (POS), Cloud Computing, Big Data, Self-service technologies, Wi-Fi, QR Codes, CRM systems, and Radio-Frequency Identification (RFID), Multi-channel customer management, Customer Service, Competitive Advantage, Digital Technology, IT., Organized Retail

## I. Introduction

India's retail market is emerging as one of economy's biggest markets. India is the fifth largest retail destination of choice worldwide. The nation is among the world's highest in terms of retail store supply per capita. The population of India is bringing the retail online in a big way. During FY15-FY20, the online retail market is projected to increase from US\$ 6 billion to US\$ 70 billion. India's government has put in place policies to draw foreign direct investment (FDI) to the retail sector. In multi-brand retail, the government has approved 51 per cent of FDI and raised the FDI cap to 100 per cent (from 51 per cent) in single brand retail.

In India, the retail sector consists of unorganized and organized segments. The unorganized sector consists of small family owned shops which are located in residential areas. Despite smaller buildings, low labour costs and little to no taxation, they have a low cost structure. The Indian retail industry is in its nascent stage; in 2015, unorganized players constituted 92 per cent of the industry. The organized sector (everything other than these small family owned businesses) accounts of only 8% of the total market, which is expected to raise by 20-25% by 2020. The organized retailing includes registered retail stores which operate with the required licenses and produce a cash memo for each sales transaction.



India's retail sector is rapidly increasing, with retail growth taking place not just in major cities and metropolitan areas but also in Tier II and Tier III cities. The other factors driving growth in India's organized retail market are stable economic growth, growing demographic profile, rising disposable incomes, urbanisation, evolving customer tastes and preferences. Increasing investment from international and private players has given Indian retail industry a boost. India's flexibility in quality draws major retail players to use it as a platform for sourcing. Global retailers such as Walmart, GAP, Tesco and JC Penney are growing their Indian sourcing and shifting from third-party purchasing offices to create their own wholly-owned / wholly-managed purchasing and sourcing offices.

There are several challenges that Indian retailing has to face; these are capital availability, real estate issues, legal frame works, human resource and supply chain development & management. Regardless of these challenges, the faster growth of organized sector may be attributed to the changes in demographic structure and attitudes of customers (fast life style changes) and improved supply chain management. Retailers in India have been already experimenting to arrive at a successful formula, but there is no 'one size fits all' strategy. The market is still undergoing a lot of changes, both from the demand side as well as regulatory. Below are some of the winning factors players should focus on:

- Changes in consumption patterns: The occupational changes and the expansion of media caused a significant change in the way the consumer lives and spends their money. The increases in sales led to increases in customer expectations and consumption habits. The buying basket of the consumer has changed. The share being spent on basics (food & beverages) is decreasing. On the other hand, expenditure on other items like cosmetics, apparels, medical and healthcare is increasing.
- The emergence of young earning India: More than 50 percent of the population belongs to younger generation which translates to higher propensity to spend and more consumption. Because of this boom in the retail trade in India more and more players are venturing into the retail business to introduce new attractive retail formats like supermarkets, shopping malls, discount stores, department stores and even changing the traditional look of the book stores, chemist shops and furnishing stores.
- Customer centric Innovation includes Technology investments and R&D and innovation capacity
- Digital Strategy focuses on to moves towards changing business models i.e. electronic commerce, electronic payments, employee and customer engagement and technological investment. In terms of how to search, browse items and perform online purchases, consumers expect an enhanced experience. As well, social media is becoming a common platform for customers to inform themselves about deals, seek product advice and compare brands. It is crucial for retail companies to identify how social media can help sales activities across the various channels, especially e-commerce.
- Changing the regulatory framework includes encouraging international investment in multi-brand retail trading, and simplifying the rules for single-brand retail trading to make it more business-friendly, leading to growth in organized retail.

## II. Technological factors affecting on Organized Retail sector

Retailing is the ultimate stage in the distribution process (from manufactures to consumer), in which the retailer as an intermediary, collects an assortment of goods and services from various sources including manufactures and offers them to customers. Any company that sells to end customers - whether it's a supplier, wholesaler or retailer - does retail. The main functions of the retailer includes Assortment of goods and services, Breaking the bulk, Maintain the inventory and Providing services to customers.

All technological innovations in organized retailing are based on customer centric initiatives. These include delivery modes, returns policy, customer loyalty programs and deployment of the digital technology to customers in a unified manner. For example, using barcode technology on product packaging and scanners at the payment counters has helped reduce customer time at the checkout counters. Holding a consumer today is more than just providing stocks.

Details of the extracted digital technological factors affecting Organized Retail Sector:

- Effective Buying Decisions: The important factor in the favour of using IT is effective buying decisions in terms of enhancing the confidence among customers, facilitating customers in their decision making, encouraging customer to purchase new or existing products which are available in different organized retail stores. Thus, consumers purchase through selected retail layout at regular interval which is good for the retailers as well.
- No Intermediaries: As customers are in direct touch with retail layout, the products are directly delivered to customer. Such direct contact between retailers and customers reduces the length of distribution channel leaving no or least scope for intermediaries.
- Ease of Use: The use of digital technologies increased the efficiency of the retailers by saving time and cost. It is also easy for customers to select and purchase the product of their choice by making comparison among various products.
- Multi utility of Digital Technologies: Multi utility of Digital technologies in present organized retail sector include Bar Code scanner, Radio Frequency Identification (RFID), Smart Phones- Mobile Apps- Mobile Point of Sale (POS)- Mobile Payments Digital Payments, Self-service technologies, QR Codes, Surveillance System, Cloud Computing, Wi-Fi - Internet (In-store), Internet of Things (IoT), Multi-channel customer management and Retail Accounting Software that are making daily operations at ease and provide retailers much needed competitive advantages.
- Cost: Use of technology is key factor in modern retailing which directly associates the cost parameter to the retailer. The high price of various digital technologies is a challenge that affects both the retailers and customers. Indian and global IT service providers are working on a number of other retail technologies such as technology related solutions in store, mobile solutions, shopping assistants, etc. that will ease daily operations and provide the much- competitive advantages for retailers. In spite of higher cost, retailers perceive that in comparison to traditional retailing this use of technology factor is more beneficial.

- **Maintaining Records:** By using digital technology, it is easy for retailers to maintain the details of customers as well as records of bills and purchases etc. Customers purchase through retail outlet, get bills and all other related information maintaining records which become routine through technology.
- **Customer Satisfaction:** All the variables on this factor have positive impacts and indicates that most retailers are using digital technology to satisfy the customers, as customer satisfaction is the ultimate aim. Basic structure of this factor suggests that customers are getting satisfaction over the purchase made by them using digital technology. By doing, so they are in direct touch with retailers thereby having direct relationship. It also enables the customers to visit such retail outlet more frequently, get information about pre-purchase, post-purchase products, and so they can purchase the product of their choice without cognitive dissonance. Thus, it can also be suggested that retailers use digital technologies as medium to maintain the relationship with customers, to satisfy their customers and get periodically feedback about its products/services.

### III. TYPES OF TECHNOLOGIES USED IN RETAILING

Digital Technology means Information technology, can impact a retailer's competitiveness and help fine tune the supply chain to customers' needs. In order to gain competitive advantage from digital technologies, which involves a long term investment on the part of the retailer, on a continuous basis and also to make improvements in most of the functional areas where technology can add value.

Retailers take the help of digital technology in carrying out basic functions such as systems for selling items, obtaining item-wise sales data, control of inventory, buying from manufactures and other sources, management reports, customer information, accounting and many more. Today retailers have to focus on differentiate their service offers from competitors and adopt innovative ways to serve the end users. In India today, retail technology use is small compared to rates achieved in developed economies, and varied in their usage of IT infrastructure, ranging from basic point-of-sale (POS) systems to once complex retail ERPs. Throughout the areas of supply chain management, vendor growth, merchandising, and inventory management, many retailers have few IT systems. The annual spends on IT is quite negligible by Indian retailers.

Organized retailing in India is quickly becoming a reality and is only possible with the adoption of the new retailing technologies borrowed from the west. Retailers are doing a lot of creativity because of the pressure, and to keep consumers happy and pleased. Therefore, consumers of today have greater choice. Technology has been one factor that changes the most of the growths is following the global trend and has started adopting technologies. Digital technology in retailing is seen as an essential resource for building and sustaining relationships by improving shopping experiences by providing the consumer with ease, better service, speed and value. Medium and large retailers are in the process of establishing robust transaction systems including suitable Barcode and POS systems, merchandise management systems, CRM systems, and Radio-Frequency Identification (RFID) technology to avoid pilferage. It is difficult to forecast the Indian retail market, customers are changing and retailers are expanding operations, further increasing the need for IT adoption.

In today's scenario the customer is in charge and providing value to the customer has become a challenge for every retailers. Customers demand "value" in terms of not only price, appearance, ambience, quality, service, information but also in terms of selection, convenience, service, quick payment and entertainment. Digital technology helps retailers to manage costs and deliver better value to the customers. The use of technology enhances the shopping experiences by providing convenience, better speed of service and value to the customer. The consumer research studies shows that consumers are also willing to accept the technological advantage in retail, especially those that address their most demanding issues of long lines at the checkout counters mostly at each retail outlet, difficulties identifying where products are located in store, lack of product information in store and out of the stock situations.

The importance of digital technology in retail stems from the importance of data. A entire lot of accurate information regarding customer purchase, how payment has been made by individual customer for the products purchased, the sales of individual merchandise lines, a customer loyalty reference number, the time and date when specific transaction took place etc. can all be obtained through this data collection. The data collected regarding customers, their purchases, the duration of their purchase and the average basket size helps to prevent stock-out situations for retailers, spot goods or items with timely markdowns and higher inventory turns, helps retailers as well. The retailer can distinguish the customers who shops at his store frequently and reward them accordingly. The use of technology helps in knowledge collection and transmission.

Customers are actively finding the ease of one-stop shopping experience in order to make better use of their resources. They are also looking for speed and reliability in processing and therefore on the quest for additional content, better quality and value goods, shorter queues and a safe and transparent atmosphere for shopping. In order to meet these demands, there has been an evolution in the retail sector; furthermore, the success of the retail sector has been influenced by better distribution models for selecting the right locations to cater for every customer class and computerizing retail store operations etc. Retailers must actively monitor consumer demand to ensure that at any given point in time they do not get out of stock. The retailer couldn't afford to have large inventories at the same time, thus rising his costs and decreasing profit margins.

**Price and Efficiency Benefits to Retailer due to emerging technologies used in the retail sector:**

- Timing performance with increased transport speed and reduced operating costs
- Improvement in administration handling invoices etc.
- Reduced workforce, Shorter lead time and more stock keeping capacity
- Possible to make price modifications whenever necessary

**Marketing Benefits to Retailer due to emerging technologies used in the retail sector:**

- Faster product movement with better data management, and more room for sale with.
- Enhanced data processing-stock estimates, promotional events.
- Benefits by improved trading partner relationships
- To pass on productivity gains to customers
- Allow faster responses to changing business conditions

**Various Digital Technologies used in Organized Retail Sector:**

- **Radio Frequency Identification (RFID)** is a shopping cart with a scanner and touch screen device that offers product information and suggests complementarities. RFID role for the retailer is very crucial as the differences between a business armed with RFID and one without it is really large i.e. if the product in a store is tagged, any alteration in the stock or inventory can be tracked. Moreover, if any item moved from the shelf without being paid for at the counter can be traced at the exit area where the antenna or the reader is deployed, the major task of stocktaking and replenishment are also made easier where the data is immediately updated and notified. RFID device consists of transceiver, tag, server, and middleware as well as software framework. The RFID tag is a small chip with low functionality and an antenna attached to the object which to be marked or tracked, and stores the item's unique identification number. These chips convert the electromagnetic energy of radio frequency signals / queries from an RFID reader / transceiver in order to respond by sending back information that they contain. For reading / writing the information stored on them, the readers interact with the identifiers, as well as updating the servers that may be stand- networked. The readers may be mobile or fixed. Finally, the reader is piloted by a device running a specific RFID program and processes the data it sends.
- **BarCode Scanner** is an electronic device which scans and decodes the printed barcode, use stored data to compute the cost and produce invoice for a customer. Using scanning technologies help cashiers more productive reduced the number of errors at the register and made the inventory and buying trends more visible and accurate. Bar-coding is the most commonly used product labeling and identification device technology. Bar coding is an established tool for the business's automated data collection needs. Typically, the barcode includes the Item ID (e.g. item code, product code, etc.) on retail products that must be entered into the computer system to change the data while paying, receiving or dispatching. Once the barcode in place, the data is automatically fed into the device by scanning the barcode using a bar code scanner, rather than punching the same via a keyboard. The fast checkout and reduced queues draw more customers and ensure customers frequent the store over and over again. Barcode applications play a significant role in making use of personalized in-store promotions, through incentives for upselling and cross-selling, rapidly identifying products, easily tracking inventory and price reviews. Barcode-based solutions enable retailers to enhance the customer experience at the primary decision point-the sales floor.
- **Electronic/Digital shelf signages** are in-store electronic display panels on the shelf. Such panels provide overview of the product or any promotional schemes provided by the retailer. Digital signage means static signboards have not proved beneficial in terms of helping a customer track a product. This monitoring is supposed to be made simpler by digital signboards integrated with an automatic tracking system. Pricing and advertising labels also need to be manually applied to the shelf. This contributes to data duplicity, and thus to human errors. The product pricing in software and computers can be changed instantly but shelf edge labels must still be printed and replaced. Throughout the day the labels will stay unchanged in the case of a price change. The solution lies in digital LCD electronic shelf signage implementation. The solution lies in digital LCD electronic shelf signage implementation. The signage can be connected to the machines at the back end, thereby updating prices on the LCD display to eliminate human errors and time.
- **Electronic Point of Sale (EPOS)** is a computer based billing system mainly used by retailers that have a large number of regular sales, stock-keeping units, fast and accurate billing system to customers and brings efficiency at the retail checkout. One of the important goals of sales point automation is to streamline the billing operations and improve performance. A simple EPOS, normally a regular PC with all its accessories (barcode scanner, weighing scales), manages payment rapidly, updates inventory and provides instant sales and stock reports. Mobile POS technology enables consumers to purchase goods while putting them in a shopping cart. For long queues the customer is spared the hassle of waiting for. In addition, computers help build the sales and consumer data database, on which the company's future activities and decisions will be centered. The first position where automation will be introduced is the retail point of sales. The creation of huge databases, efficient information systems, and customer satisfaction begins with automatic point of sales in retail. Automating the point of sales operations serves helps in Collection of primary sales and customer

data, Efficiency in service delivery, avoid the cost of connecting to the mobile operator network and being able to deliver data like pricing in more secure way.

- **Surveillance & Security (CCTV)** Technology means placing security cameras near high-trafficked and unguarded areas within store will help reduce the number of retail crimes who are facing many challenges in keeping the store secure. Simultaneously, properly designed retail surveillance systems ensure shoplifting and bribery of employees are captured on camera. Cameras can be placed at Entrances and Exits to monitor the flow of customers and employees, Cash Register area to monitor and observe all activity taking place at the register, including transactions, refunds, and money counting, Sales Floor area to monitor customer movement, Warehouse area to keep track and movement of Inventory and Parking Lot area.
- **QR Codes:** Mobile commerce is perhaps the biggest game changer of all. Apps in mobile allow shoppers to scan QR (quick response) codes to redeem coupons at store checkouts and collect or use frequent shopper reward points. Shoppers can display product photos, scan a QR code to attach products to their baskets, and purchase by phone. The product is shipped home without having to go to a physical store.
- **Retail Accounting Software** gives you an entire set of core accounting functionalities plus the features and flexibility you need for your retail business, such as managing and reporting on your finances, monitoring sales orders, and controlling inventory. Retail Accounting Software is also on cloud based which helps access to retailers as well as customer from anywhere at any time, lower support costs, automatic backup and easy connection to other apps.
- **Inventory management Software** is the system for tracking inventory levels, sales, orders and deliveries. This may also be used in the manufacturing sector to establish a work order, materials bill and other documents relevant to the production. Enterprises use inventory management tools to prevent the overstocking and outages of items. This is a method for organizing inventory data that was usually stored in hard-copy or spreadsheet form before. Inventory management software helps in the number of units that should trigger a replenishment order, the number of units that should be reordered, based on the reorder point, stock on hand and stock on order, the number of units that will be sold during the lead time, the number of days left before a stock out if no reorder is made and the expected accuracy of the forecasts.
- **Cloud Computing** allows users to obtain computing capabilities regardless of their physical location through a shared physical infrastructure via internet. It enables retailers to spend less in the storage, tracking and updating of shared working papers, email and operational information. Instead, it helps them to concentrate money on websites, social media, digital marketing, and so on. The advantages that cloud provides are quickly understood by retailers. Cloud computing allows retailers to handle seasonal and unpredictable demand and weather-catastrophic events effectively. Retailers need to scale fixed data center resources before demand spikes in a typical IT environment. This results in lost resources and higher costs. Nevertheless, retailers can adapt to the changing demand by taking advantage of cloud computing. Retailers only have to pay for the quality of service they need with cloud storage, without the costs of unused or under supply power. Ultimately, cloud computing changes the manner in which retail workers communicate and exchange knowledge. Through incorporating a shared intranet with email, online meeting and social networking resources that cover time zones and geographies, workers can more easily communicate, whether in the field, at headquarters or with a supplier. Cloud computing increases the flow of information and helps retailers to have more flexibility to communicate with customers.
- **WiFi & Internet (In store)** is a tool for personalized experience and behavioral analysis for next generation store. WiFi connectivity in the store recommended by the shoppers who are looking for Internet-based information on costs, ratings and feedback. Shoppers in dressing rooms or in far-off parts of the store who tend to check out right there and then expect Internet access. Generation Y-age associates who want to still be linked often want fingertip-access to information that will bring more sales.
- **Self-service technologies** perform tasks of sales person, store, and sales mechanism. The vending machines were used for items which are fast selling that do not need a sales person's services that satisfy a customer's limited day-to-day needs. Interactive kiosks are computers with touch screen displays which provide in-store shoppers with product information. Customers can find and select items with the aid of these kiosks, without moving around the store. Kiosks help retailers sell an increased range of products. Video kiosks can also include a store map and an indication of the position of the products chosen. This decreases and monitors the shopper's movement, which is beneficial to retailer as well as shopper.
- **Multi-channel (Omni Channel) customer management** have significant impact on the industry, as more retailers move to make omnichannel a reality. Retailers need to offer a smooth customer experience across all their networks, with customers having expanded options on how and when they shop. Optimizing and integrating their shopping channels as

part of a single strategy for driving compelling customer experiences has become necessary. All businesses aim to attain customer loyalty, but some are hunting for consumer delight. Customer Feedback Application captures real-time Customer feedback which helps retailers to fix problems easily and executives can understand customer feedback, can avoid negative customer reviews from being viral. Many Retail Feedback Apps can help gather raw data, interpret information, and convert it into pie charts, tables, graphs, and all kinds of valuable information to help you determine all customer input and responses. An integrated retail feedback system would be able to rate staff, locations and districts based on customer reviews. This report helps to recognize the needs and areas that require improvement of the product based on different regions. Examination of the Sales count of an employee shows scope for recognition or improvement. A digital feedback system is very cost effective and easy to run. The implementation of a digital feedback program which is very user-friendly costs little or none. Running a digital feedback system which is really user-friendly costs little or none.

- **Electronic Data Interchange (EDI)** is the computer-to-computer exchange of business documents in a standard electronic format between business partners which helps retailers to directly contact with wholesalers and other sources and help to inventory management inside store.
- **Digital Payment System** allows retailers in less risk of theft and robbery, because no cash stored on the store, no cash processing fees from the bank, and no visits to the bank to pay it in quicker transactions, great for retailers and consumers, shorter lines, Good marketing opportunities by gathering consumer data for potential use.

#### IV. CONCLUSION

Indian and global IT service providers are working on a number of other retail technologies such as hi-tech shops, mobile solutions, shopping assistants, etc. that will ease daily operations and provide the much-needed competitive edge for retailers. Most of the technology's applications have evolved internationally over the years. Such technologies have a tremendous effect on the way retail is managed. While several factors, such as the size and complexity of operations, accessibility of qualified Technology workers, the financial resources available to the company, the nature of the market, etc., influence the use of technology in retailing, the innovative application of technology enables retailers to save a significant amount of time as well as valuable resources channelized to provide consumers with the best services.

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