
Empowering Retail Stores With Technical Ecosystems: Is The Association With Information Technology Symbiotic?

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Abstract

We are increasingly dependent on information technology for business as well as for personal usage because of its speed, accuracy, versatility and diligence. However, for information technology to provide value to the customers, we must reduce the complexity associated with its deployment and usage. There has been much debate on whether or not the investment in information technology (IT) provides improvements in productivity and business efficiency. This paper attempts to show that there are significant positive contributions from information technology towards productivity of operations, retention of the customers and profitability in the retail sector. This paper also attempts to analyze the various tools of information technology deployed at various levels of supply chain esp. in a retail store. The paper provides deep knowledge about future of technical trends in empowering retail store. The paper highlights the strong competition that exists amongst various IT players and how these tools will be able to meet the challenges of 21st century.

Objectives

The study being exploratory in nature adopts a case study approach to understand practices of retailers with respect to deployment of various technological tools and how these tools will help in furthering the prospects of retailers. An in-depth study would enable to gauge their needs and identify the areas as to where in the supply chain should IT be implemented.

Hence, the objectives of the research study are:

1) To understand practices and usage of various tools

of information technology

2) To discuss issues arising out of applications of information technology, benefits realized and future trends.

3) To identify areas in supply chain, where IT should be implemented

4) To study the level of IT implementation in India and

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to compare it with the western world
5) To study the various emerging trends for information technology

1. Introduction

1.1 Retail sector in India

The retail industry in India is often hailed as one of the sunrise sectors. The retail industry is divided into organized and unorganized sectors. Organized retailing refers to businesses employing more than 10 persons and includes the corporate-backed hypermarkets and retail chains. The organized sector accounts for just 4 per cent of the trade and employs just five lakh persons. Unorganized retailing refers to the traditional formats of low-cost retailing such as the local kirana shops, owner-manned general stores, paan/beedi shops, convenience stores, handcart and pavement vendors, etc, and employs over four crore persons. Obviously, India's retail sector is highly fragmented, with about 11 million outlets operating in the country and only 4 per cent of them being larger than 500 square feet in size. Its greatest contribution is that it is labour-intensive. Compare this with an employment of just 0.9 million in the US, yet doing a business more than 13 times of the Indian retail market size. AT Kearney, the well-known international management consultancy, recently identified India as the "second most attractive retail destination" from among 30 emerging markets. This has made India the cynosure of many foreign eyes. With a contribution of 14 per cent to the national GDP (gross domestic product) and employing 7 per cent of the total workforce or 42 million (only agriculture employs more) in the country, the retail industry is definitely one of the pillars of the Indian economy. It is the largest component of the services sector.

India's retail sector appears underdeveloped not only by the standards of industrialized countries but also in comparison with several other emerging markets in Asia and elsewhere. There are only 14 companies that run department stores and two with hypermarkets. While the number of businesses operating supermarkets is higher (385 in 2003), most of these had only one outlet. The number of companies with supermarket chains was less than 10. There has been vigorous opposition to foreign direct investment (FDI) in retailing from small traders who fear that

foreign retailing companies would take away their business, lead to the closure of many small trading businesses and result in considerable unemployment. Given the political clout of the small trading community, because of their enormous numbers, the government has barred FDI in retailing since 1997. Hence, at present, foreign retailers can only enter the retailing sector through franchising agreements. Organized retailing has finally emerged from the shadows of unorganized retailing and is contributing significantly to the growth of Indian retail sector.

1.2 Phases of Evolution of Retailing:

Taking a step back to thus assess the potential of the Indian market, let's understand at what stage India currently is in the retail evolution cycle. There are four distinct phases through which retail passes in its evolution cycle.

In the first phase new entrants create awareness of modern formats and raise consumer expectations.

In the second phase consumers demand a modern format as the market develops – thereby leading to strong growth.

The third phase sees a maturing market and as the market consolidates, intense competition forces retailers to invest in back-end operating efficiency.

And in the fourth phase retailers explore new markets as well as inorganic opportunities as growth tapers.

Today, India is at the cusp of the first and second phase, with the modern retailing format having emerged centre stage. The growing preference of the affluent and upper middle classes for shopping at these types of retail stores, given the conveniences they offer such as shopping ambience, variety and a single-point source for purchases have been the driving factors behind this transformation. From supermarkets such as big bazaar or food world, which are large self-service stores selling a variety of products at discounted prices to malls and department stores such as crossroads, lifestyle and west side, the Indian consumer is fast catching up with his / her global counter part.

1.3 Growth of Retailing in India

RNCOS "India Retail Sector Analysis (2006-2007)" report helps clients to analyze the opportunities and factors critical to the success of retail industry in India.

- Organized retail will form 10% of total retailing by the end of this decade (2010).
- From 2006 to 2010, the organized sector will grow at around 49.53% per annum.
- Cultural and regional differences in India are the biggest challenges in front of retailers. This factor deters the retailers in India from adopting a single retail format.
- Hypermarket is emerging as the most favorable format for the time being in India.
- the arrival of multinationals will further push the growth of hypermarket format, as it is the best way to compete with unorganized retailing in India.

2. Role of Technology in Retail Sector

2.1 Is Technology Becoming Very Important In Retail?

Advancements in technology are becoming critical to retain and attract customers. Some customers are very loyal to one store or the other. But there are many who shop in more than one store. Retailers are attempting to attract particularly this latter set.

Effective use of technology helps manage and track inventory effectively. It also helps coordinate with suppliers and could slash lead times, reduce stock outs and inform in advance about the shipping notifications like having prior intimation of dispatches there by helping in plan for receipt, storage and onward transfer. E-pods provide electronic proof of receipt of goods at various distribution centers. Universal bar coding norms simplify the inventory management and sales procedure. Web ordering helps simplify the ordering process.

2.2 In what areas has technology helped?

The scanning checkout so ubiquitous now is six times faster than a manual one. The IT companies are working towards greater automation in the store,

so that it frees up time for the sales' people to serve the customer better. Most of the retailers in the western world have introduced wireless technologies in their stores. The employees of the store have handheld computers that tell them everything related to the store, including stock levels of each item. They have computers in the stores which tell a customer which aisle a particular product is in, how many units of that product are on the shelf, how much is in stock. Technology is also being used to improve customer relationships. Many new electronic loyalty cards have been introduced that have all the relevant information about customers, their preferences and their choices. In the process, a customer data bank too gets created. Every item can be looked at greater detail and even a decision as to what to stock in which shop and in which area can be taken. Most security systems are electronically based using cameras etc.

2.3 Technology powers retail boom in India

The Indian retail companies are not only matching, but also even excelling in the game of it

One new technology by itself rarely impacts the retail industry. The UPC (Universal Product Code) bar code was the result of the convergence of 16 IBM patents, lasers, and computers improved printing technology, split-beam mirrors, sensors and dozens more. We know that technology will enable a retailer to continually enhance the core competency while anticipating the needs of the consumer and building the future business. The point however is not just the technology but also the use of technology to allow a human to make a better decision more quickly. The key differentiator between the successful and not so successful retailers is primarily in the area of technology. Simultaneously, it will be technology that will help the organized retailer score over the unorganized players, giving both cost and service advantages. Technology has enabled the retail revolution. The retail sector is adopting information systems to manage the supply chain and understand customers better. With various tools like electronic cash registers (Epos), Quick response delivery system (QRDS), commutation of information for quick replenishment becomes easier.

The technologies that increase reliability and productivity will have the most impact.

3. Information Technology as a Business Tool

The most important aspect of managing retail sector lies in managing its supply chain. Supply chain efficiency is a must and stock outs are not acceptable (situations wherein a company's stocks are not available with a particular retail outlet). Increased supply chain efficiency is the top most business priority. Besides stock outs, monitoring and tracking movement of goods is important as it helps keep track of the shelf life of products and reduce pilferage. The supply chain management is also crucial as it helps forecast retail demand.

According to the survey, the top business priorities of companies in this sector are production, manufacturing and capacity expansion followed by the launching of new products and services.

3.1 ERP(enterprise resource planning) systems

ERP systems are a must-have. An ERP system integrates the many departments in these companies so that they can work in tandem. As, each department has a different way of functioning, the work processes differ and delays occur on account of poor data integration. With an ERP system in place, the processes are optimized and planning improves. Take the example of Godrej industries, which has deployed an ERP system. The company has successfully reduced the time taken for closing accounts by 15 days and gained better visibility into its inventory pipeline. Similarly, in the case of pyramid, a retail outlet, an ERP system is used for merchandise management.

3.2 Sales Force Automation (SFA) Software

However, realizing the importance of real-time sales information, some companies are spending extensively on redesigning their supply chain infrastructure. Indian companies are spending on building systems that help them capture data at the tertiary level (retailers). The operational efficiency is not limited to what can be achieved within an organization but whether it can extend across organizational boundaries. It will include different tiers of the supply chain right from primary to tertiary levels. Realizing this, most FMCG giants are investing in sales force automation (SFA) software.

3.3 Business Intelligence Tools

With a strong of an ERP system, the organizations are looking at investing in business intelligence (BI) tools. Many business houses have invested in data warehousing, data mining and business intelligence tools to find answers to questions, such as the location a particular product is selling more, the period when demand spikes and in which store etc.

A BI tool can be used to understand the buying patterns of customers. Once trends are identified, planning merchandise movements become simpler. In India, the customer is king. Knowing customer profiles and the products they are more likely to buy is essential and hence investing in customer relationship management (CRM) will be a wise idea.

3.4 A Common Standards-Compliant Information Data Pool – GDS (Global Data Synchronization Tool)

Some of India's top FMCG manufacturers such as Johnson & Johnson and Hindustan Lever, and retailers such as Canteen Stores, Food World, Big Bazaar and Pantaloon, announced the launch of a common, standards-compliant information data pool. This web-based model lets suppliers and retailers interact without facing data interoperability problems. It will enable the exchange of standards-compliant supply chain data. Inaccurate supply chain information is often cited to be one of the single biggest reasons for out-of-stock (OOS) conditions. Globally, retail giants such as Wal-Mart and Home Depot have already mandated that their global suppliers have to submit data as per the specifications. As many Indian organizations are part of the extended supply chain of global retailers, it will become imperative for them to start using these specifications. It is expected that companies using this data pool will gain from more accurate information and improve the performance of their business processes such as inventory management, replenishment and order reconciliation. Information about stock levels, management of stock outs, overstocking, new product initiatives, change in product change description and product withdrawals will be exchanged under the ambit of this data model.

3.5 RFID(Radio Frequency Identification)

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Let us imagine a shopping cart equipped with a scanner and a touch screen computer that acts as a virtual personal shopper. As we scan items and put them in the cart, the computer offers information about each product and suggests complimentary items. The computer keeps a list of items in the cart with a running total, so that we know exactly how much we are spending. When finished shopping, we head to a self-check out stand or to a cashier. Since the items are already totaled and bagged, the wait time is minimal. All that we have to do is to pay. This is RFID (Radio Frequency Identification) technology.

These technologies having caught the attention of global retail giants are yet to catch on in India. Globally, Wal-Mart uses radio frequency identification (RFID) readers to reduce stock outs. As soon as goods are sold, RFID tags automatically update the database. A software monitors which stock will be depleted and automatically generates a list of items that need to be replenished. The biggest advantage of RFID is that a particular item can be tracked from the warehouse to the retailer. Companies sell goods in the international market and in such cases, tracking consignments is crucial. Hence, RFID is an essential ingredient in a global integrated supply chain. RFID can be used in tracking assets and to know what the customer prefers. RFID helps track customer preferences which in turn helps retailers provide better service. However, in India, the trend is yet to catch on, but the cost of RFID must be brought down for Indian users. So, RFID is helping in improving inventory management, customer service and there by boosting customer loyalty.

3.6 Self-service technologies

These technologies like kiosks, mobile handheld devices and self-check outs will give customers more control over the shopping experience and alleviate frustrations caused by stock-outs, staff shortages and long checkouts lines.

An information kiosk (or information booth) dispenses free information in the form of maps, pamphlets, and other literature, and/or advice offered by an attendant. An electronic kiosk (or computer kiosk

or interactive kiosk) houses a computer terminal that often employs custom kiosk software designed to function flawlessly while preventing users from accessing system functions. Indeed, *kiosk mode* is a euphemism for such a mode of software operation. Computerized kiosks may store data locally, or retrieve it from a computer network. Some computer kiosks provide a free, informational public service, while others serve a commercial purpose.

3.7 Wireless devices

These technologies encompass the personal digital assistants (PDAs) to give them real-time access to product and customer information. Interactive smart carts will make the shopping experience even more pleasant. Wireless POS(point of sales) will go a step further in combining real time information with on the spot check out services. Wireless manager workstations and wireless network infrastructures also improve the operational efficiencies.

4.Key IT Areas In Supply Chain To Be Taken Care Of :

4.1 Effective Data Integration

For an efficient supply chain, data integration is essential. This means the synchronization of product code, product description, and price list and, to some extent, inventory lists. Data has to be made available to suppliers, retailers, logistics providers and manufacturers.

One of the biggest advantages in this system is that companies will be able to monitor stocks in real-time. Having the correct information also means saving on costs. Having systems in place means reducing costs, improving inventory management and replenishment, order reconciliation, and new product introductions. Dabur is showing the way for other companies by adopting e-sourcing practices for extending the company's reach to international vendors.

4.2 IT Architecture

The other thrust area, according to the survey, is the growing realization among these companies that

they need to redesign their IT architecture. For instance, retailers such as Shoppers' Stop, Crossroads and Pantaloon have shifted from legacy systems or upgraded the same by deploying new applications. For example, Pantaloon shifted from Tally to Oracle for its finance function. Among server platforms, Windows are preferred. This is primarily because of the number of applications available on Windows and the ease of integration with new applications. UNIX is the preferred platform for running ERP applications—Dabur India and Godrej industries are instances where the ERP system runs on UNIX.

4.3 Database Management System

Should generalized software from respectable and renowned IT companies be preferred to self managed technologies by local vendors? How many and what number of parameters can be considered for a retail outlet? For retail companies, point of sale (POS) systems is essential. As retail does a high-volume, low-margin business, know which products are likely to sell in greater numbers is all important. Companies in the retail segment require a host of IT solutions to offer the right customer experience. Effective control of parameters such as pricing management and managing stock outs is crucial. So, the consolidation, standardization and centralization of DBMS services is highly sought for. The demand for highly scalable and reliable database systems is on the rise.

As data continues to grow exponentially, one can foresee the type of information changing from record-oriented to content-oriented. Abilities like data mining are being pushed for more analytics of the databases. XML (Extended Mark up language) will be important as users will store and build on content repositories. For database topologies, the ability to get performance, scalability and high availability in different environments has to be dealt with and that is why the vendors are bent towards SMEs (Small and medium enterprises). Another parameter can be the functionality of the database.

Open Source databases can be an addition to tools like Linux operating systems, the Apache web server and Java Servlet engines. Open source databases are very high performers especially in

read-only applications. There are no or nominal licensing costs and low administrative and operational costs.

4.4 Connectivity

Which kind of network would be most adaptable and how can it be decided? What will the measuring parameters? How should we safeguard the systems from concurrent deadlocks and the dirty read problems?

4.5 Creating IT Awareness

A majority of companies entering the Indian retail sector are not IT savvy. Hence we need to have infrastructure that is adaptable and easy to handle. Unfortunately, although Linux is best suited for India, it has issues with respect to support for certain enterprise applications. The ERP system caters to two principal functions—buying and merchandising. It also interfaces with a business to business (B2B) portal to fulfill the information needs of its supply chain partners.

5. Major offerings by chief IT companies

A boom in any sector is dependent on IT and will definitely defy the offerings/values of an IT product be it software, hardware or firmware. This leads to a tremendous cut throat competition between the major players in the market. Choice of the product too determines the performance of its related counterparts, thereby making the decision difficult. Answer to the question - "Mirror, Mirror on the wall, whose product is the fairest of all?" becomes a little too tricky to solve.

5.1 IBM

IBM comes with different products to help retailers transform the customer experience. These include *mobile shopping devices*, *self checkout*, *smart shopping carts*. Built specifically for the store, the store integration framework connects information, processes and business logic both within the store and between the store and the enterprise.

IT companies should include personalized applications for guided selling, faster checkout,

dynamic digital merchandising, employee scheduling, employee task management and key performance indicators for store managers. The retail industry is an ever-changing, highly competitive market and adapting to market demands and in-store technology changes is key to helping retailers maintain customer satisfaction and customer loyalty to develop an ecosystem to help retailers transform their store environments and improve the customer experience. This gives them the freedom to maximize their unique strategic advantages while reducing the challenges and risks around deploying and integrating newer technologies.

The tools offered enable retailers to quickly and efficiently snap-in new applications and devices such as mobile shopping devices, self checkout and smart shopping carts, which can improve and enhance the customer shopping experience. Such devices are compatible with increasingly popular technologies such as digital media displays, consumer wireless devices and radio frequency identification (RFID) devices. A retailer who implements the store integration framework will find the supporting infrastructure already in place, enabling them to achieve business benefits faster. Sales of products like Websphere, DB2, Rational and Lotus products are on the rise. It has also updated its older version of DB2 for easy retrieval of information.

5.2 Microsoft

Mobility solutions for retail are the latest from Microsoft. By empowering store managers and sales associates with information and tools on the selling floor, they are better able to impact business and operational efficiencies—a real advantage at the point of purchase. Mobility solutions are a key enabler for store employees and managers to achieve greater access to data, improve communication, and increase productivity. Microsoft-supported mobile solutions help make this possible through technology that provides fast access to pricing, inventory, and other data that can help the retailer rapidly respond to changing business needs. It is also aggressively growing its base for SQL Server 2000 named 'Yukon'.

5.3. Wipro technologies

It is setting up a lab dedicated to RFID technology.

The company plans to experiment with RFID within its electronic city campus in Bangalore.

5.4 Infosys technologies

It is contemplating a pilot within its campus to implement RFID for a better understanding of the technology. Retailers will be able to make major gains in terms of product visibility, in the back rooms and on the shelf, freeing up personnel from tracking and ensuring item availability, giving them time to interact with customers. This often takes up to 70 percent of their time.

5.5 TCS(Tata Consultancy services)

PSA (Personal Shopping assistant) is a new product being currently rolled in the market. The PSA is a scanning device with a LCD screen that is mounted on a regular shopping cart. Upon scanning the customers' loyalty card, the screen will guide customers to special offers and discounts available in the stores. This also recognizes bar codes and RFID tags.

6. The benefits of using IT and its enabled services are:

- 1. Increased operational efficiency:** improve store manager and associate productivity through access to data while on the store floor. Tightly manage inventory levels and reduce shrinkage through increased visibility into sales data.
- 2. Better responsiveness to customers:** increase customer satisfaction by empowering sales associates with the right information to help customers make better decisions.
- 3. Real-time information access:** instantly access critical data (product information, customer preferences, real-time inventory, etc.). Coordinate with suppliers and distributors through increased access to real-time inventory tracking and supply chain management systems.
- 4. More up-sell and cross-sell opportunities:** provide sales associates with key data to make recommendations inline with customer interests and needs.

5. Increased connectivity and availability: help employees stay connected and responsive with one another from virtually any location in the store. Help regional and local store managers stay connected to their district and corporate offices.

6. Managers can spend more time on the floor in face-to-face interactions, Accurate; real-time access to individual stores and alerts, less time spent preparing routine reports due to up-to-date data access to store information. Faster, real-time line busting, improved customer satisfaction through knowledgeable sales associates

7. Mobile PCs give retailers the ability to collaborate, communicate, and retrieve information quickly on and off the sales floor. Using windows vista, a sales associate can view, find, and organize information on their mobile PC just as they would on a desktop—making it easy to manage, configure, and interpret query results.

8. Servers and self managed technology support the communication between store employees while they are on the floor and mobile. New servers are being designed to help deliver greater security, availability, and reliability while offering mobile users access to email, voice mail, calendar, and fax.

The retailers thus have flexible and interactive technology that helps them to :

Embrace the complete enterprise:

Whether it's the director reviewing performance, the store manager deploying her workforce, employees assisting customers, or customers making buying decisions, the offering gives all parties important information when, where and how they need it.

Supercharge employee knowledge:

Retail employees have real-time access to information on products, inventory, warranty, delivery, and service. Employees can assist customers at a much higher level, reducing training time and cost, enhancing employee morale, and reducing turnover.

Create tailored customer programs:

Sharing information across the enterprise enables store managers to tailor in-store sales and advertising to their customers, offering promotions on items that are most appropriate for and appreciated by their shoppers. This leads us to the introduction of an empowered store to drive retail store.

The technology helps improve visibility and control over raw material and critical components, leading to better synchronization between demand and supply. Reid's potential in logistics is huge. It can help improve asset tracking, leading to optimum asset inventory levels, in turn reducing waiting time. It can beef up security and authentication procedures for containers and help generate audit trails of efficient shipment routes. Similarly, in the pharmaceutical sector RFID can improve raw material tracking for the manufacturing audit trail, in batch tracking and control and in product tracking for high-value or regulated drugs.

This has led to the development of an empowered store.

7.1 Introduction to Empowered Store

The empowered store is a combination of technology and process and enables the retailer to leverage all of its resources to empower customers, sales associates and suppliers to collaborate and maximize store performance. There are four key elements that make up the heart of the empowered store:

1. Customer empowerment
2. Sales associate empowerment
3. Supplier empowerment
4. Business collaboration

Since none of these parts can survive in isolation, together with each other they seem to have to a collaborative approach to synchronize their activities. This way by which retailers, manufacturers, wholesalers, logistics' companies define and align their processes, data whether real time or other wise to ensure faster time to market and unsurpassed the consumer experience across all channels is called as **Ecosystem Synchronization**. The key processes can include:

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1. Merchandising
 2. New product introductions
 3. Customer care
 4. Inventory Control
 5. Invoicing
 6. Re order levels and so on.

Greater mobility can help achieve competitive advantage for retailers through an enhanced customer experience and reliable access to the most current data. Technology helps make this possible through innovations in hardware such as mobile PCs and mobile devices and through flexible, integrated store systems that enable speedy access to pricing, inventory, merchandising and other critical data that can respond to changing business needs. The specific segments of retail store systems that are highly adaptable and readily available for mobile solutions include:

1. Store management and operations,
2. Field management,
3. Assisted selling models.

One example of the empowered store is sales associates using in-store wireless technology to be more responsive to customer requests by quickly contacting product experts to answer merchandise questions and suppliers to check inventory levels, right from the sales floor during the sales transaction. This results in better customer service, more efficient stores and improved inventory control.

Today's demanding customer is increasingly fickle, fast-moving and more and more difficult to retain. Via the Internet and other resources, the customer can quickly explore and value product alternatives, and become better informed than virtually all of the employees attempting to service them. Retailers will have to evolve toward empowered stores that leverage technology and process in order to create an environment where the customer keeps coming back. Retailers will give more and more control to the customer at the purchase point of decision - through self-service opportunities, empowered sales associates and suppliers and easily accessible back

office systems. This will lead to more loyal customers and ultimately lower the cost to serve them.

Customer empowerment extends the value from the retailer to the customer by providing additional access, content, education and commerce to wherever the customer is located.

The empowered store concept is new and properly acknowledges that one of the retailer's keys to success is to leverage the familiar technologies- such as cellular phones, personal digital assistants and other wireless devices- already in the consumer's hands in order to create a compelling and fulfilling shopping experience.

Sales associate empowerment links store associates to resources and increases their effectiveness in more diligently serving the customer.

In-store wireless communications systems instantly connect staff, managers, and customers to quickly provide the information needed. Being able to instantly locate product information or speak to a subject specialist will increase the value a retail employee brings to the in-store selling process. Supplier empowerment shifts access, content, inventory and responsibility from the retailer to the supplier in order to allow the supplier to more effectively manage their demand chain and increase insight into product lifecycles.

Improvement of store management and operations is also necessary. Store management and operations are the processes and systems involved in keeping retailers performing at peak levels at all times. Retailers are increasingly reliant on interconnected applications to realize increased operational efficiency and improved productivity. Store managers can stay in touch with voice and data while on the floor, Maximized productivity of store associates by keeping them effective on the floor, checking real-time data from back-office (ERP) systems while on the store floor.

7.2 IT Implementation in an Empowered Store

While deciding to implement a new technology, major **factors considered are**

scalability and user adaptability. This is because the most important thing in retail business is customer friendliness. Ultimately, the business is all about providing service to the end customer. Inevitably, modernization of the Indian retail sector will be reflected in rapid growth in sales of supermarkets, department stores and hypermarkets. And with this increased competition, retailers will look at various opportunities to maximize customer satisfaction. These will include initiatives to streamline internal back end costs so as to translate savings onto customers, maximizing mind share in a cluttered market and delivering the best in store experience.

Keeping these deliverables in mind, some of the key modules that the store of the future will look to implement will include:

1. Store connectivity: *stores will invest in building wide-area networks (WANs) and virtual private networks (VPNs) to access information across various sites. With visibility into every resource, stores will take advantage of up-to-the-minute data at the right time for increased strategic flexibility and informed decision-making. Widely regarded as the key defining technology to hit the retail sector, RFID tags on each piece of merchandise will enable companies to monitor their inventory at a more detailed level than ever before. Executives will identify when problems occur by monitoring signal readers installed at key junctures, such as loading docks, receiving points, distribution centers, backrooms and store shelves. These readers in turn will be networked to a centralized monitoring system that would give companies information they could never imagine with current operations, allowing them to identify problems as shop lifting, inventory management, and even "gray market" sales that can erode profits and damage distribution relationships.*

2. Store mobility: stores will use wireless technologies at the point of sale for faster checkout and real-time product information in the store to improve operations, and throughout the supply chain to reduce costs.

3. IP(internet protocol) communications: stores will converge their data and voice systems, providing instant communication throughout stores at significantly reduced costs.

4. The store as a medium: with the average time any buyer spends in the department store estimated to be under 48 minutes, the challenges presented by this rapidly moving audience will encourage retailers to look for new ways to attract and interact with customers throughout the store. Stores will thus leverage off IP technologies to deliver dynamic content such as in-store broadcasting and digital signage to create new revenue-generating advertising as well as accelerating brand awareness and customized messaging. The same platform will also be used to support cross branch employee training and productivity.

7.3 The Return on Investment (ROI) Factor

Though ROI on IT implementations is not the easiest thing to measure, it can be judged from the quality of information that is available for better decision-making. This helps improve the bottom-line and sales. It also helps in finding other avenues for expansion and improving profitability. With the support of good IT systems, it is possible to create proper benchmarks which can measure efficiencies in the IT implementations and systems. The achievements of the benchmarks reflect positively on IT and business processes, and eventually on sales and profitability.

8. Technology Top US Retailers Are Investing In

The Home Depot (#2) and Kroger (#3) have both leveraged multiple technologies to enhance store operations and processes. The Home Depot's most recent IT initiative is a deployment of an IT lifecycle management system. The emporium suite is being used across all 2,164 Home Depot retail stores globally and centralizes the management of all enterprise networked devices. The home depot is using emporium to increase productivity and reduce administrative support costs.

Supermarket retailer Kroger also is deploying both back-end and customer facing technology to maintain a competitive edge. With a best-in-class shopper experience in mind, Kroger has been among the first supermarket chains to install self-checkout and DVD rental kiosks. On its back-end, in January of this year Kroger began an implementation of a new IBM infrastructure. The infrastructure will enable Kroger

to more easily, and more speedily, create new services for its customers.

Number five is Target. As with the Home Depot and Kroger, Target is leveraging technology to improve its back-end operations. In particular, Target recently partnered with Swiss Log to create and implement a new picking and storage system for its warehouse operations. The system will be designed to minimize warehouse logistic costs while optimizing distribution processes.

In the West, many organizations have deployed ERP as the foundation of their IT set up, organized retailers are exploring CRM (customer relationship management), BI (business intelligence), RFID (radio frequency identification deployment) as tools for enhancing their capabilities.

9. Challenges Before Indian Retail To Go Hi – Tech

The challenges include limited visibility into the supply chain and store operations; time-consuming business processes, restricted customer information, and little collaboration between store sites. The broadband infrastructure is expected to lay the groundwork for multi-channel sales expansion and growth, creating in the process an agile, service-centric retail operation. In the days to come with access to real-time point-of-sale (POS) data, retailers will be able to plan replenishments better and help manufacturers improve demand planning. Real-time POS data will inform retailers as to what's selling and what is not.

Major problems by using IT in India :

1. Most of the technologies like SFA, RFID are still in a nascent stage and standards are being set up. The idea is to have the best feasible technology available at the front-end retail store. This facilitates faster checkouts and there is timely as well as correct recording of client information. For this purpose, barcodes can be used. Even credit card magnetic swap readers can also be used to capture correct information into the database. Emphasis on a proper IT implementation needs

to be given.

2. Timely information should be provided to everyone from the back office staff as well as the head office managers. The entire information flow must work seamlessly. A retail business works on a network environment because the stores are connected to one another as well as to the supplier sites. This is because in the retail business **quick response** is the key to success. Proper IT implementation also ensures that investment in retail is reduced substantially.

3. The customer sees a picture or a description not the actual product.

4. The Indian retail sector is ready to take on technology from global retail players such as Wal-Mart and Carrefour. The Indian customer is looking for an emotional connection, a sense of belonging. Hence, to be successful any retail outlet has to be localized and personalised. The customer should feel that it is a part of his culture, his perceived values, and does not try to impose alien values, methods or concepts on him. Indian customer is not keen to buy something just because it is sold by an international company. Ultimately, it boils down to how much localization and adaptation the company is willing to do for India.

5. Many distant suppliers returning faulty goods may be difficult to resolve – if it happens only through e-commerce.

6. Placing an order can take time – if the system 'times out', the customer may give up.

7. Issues of security crop up, if the retail outlet uses RFID tag. It can constitute a breach of privacy as anyone having a tag reader, authorized or not, can track an object or a person using these tags.

8. Payment methods too get restricted in e-commerce transactions as cash may not be acceptable.

9. Negotiation of discounts for large orders is difficult to bargain for in an automated system.

10. Costs of setting – up soar high. The high price of these technical tools readers is a stumbling block

too.

11. Specialist skills are required at all levels for training, development, maintenance and trouble shooting of the systems.

12. Many retail outlets improperly set up their display models of LCD(liquid crystal displays) and plasma screens without even realizing their usage patterns.

13. Retailers must keep their information centrally updated and relevant. Customers are not interested in ordering all kinds of products and services. What customers want from an information kiosk should be examined so that an appropriate balance is struck between 'being customer' and 'technology led'. It is quite possible to look at different ways that allow retail firms to communicate with their customers using automatic speech recognition and verification of voice. (Surprisingly, the solution too comes from IT).

14. While the cost of hardware and software in information systems continue to decrease dramatically technological advances and competition, the total cost of ownership (TCO) is increasingly dominated by people costs.

10. Future trends

In the future, with the retail sector booming, companies are likely to deploy IT tools that help them enhance the end-customer's experience. For instance, Shoppers' Stop is looking at deploying self-checkout systems. Globally, these systems are commonplace. They do away with the need for staff at checkout counters saving the retailer big bucks in salaries. With the Indian retail sector being opened up to foreign direct investments (FDI), analysts expect Indian companies to increase their IT spends to boost productivity. Foreign players are also expected to bring in systems that they use abroad and this will force Indian companies to follow suit. Applications such as CRM are increasingly being introduced to provide better services to customers and in understanding their requirements. The need for IT in these sectors is very apt. This business is unique since a retailer has to understand twin aspects of how to control volumes and predict what the customer wants.

Today, Japan's DoCoMo phone, which is connected to the internet, is a credit card, a wallet and a camera. A consumer can walk into a store, scan a bar code on an item with the phone and find out who else is selling the item and for how much. The consumer can then decide to buy the item either in the store he is in or on line, or go to another store to buy. Payment can also be made with his phone. This dramatically changes the relationship between the retailer and the consumer.

Once the customers are in the store, managers with wireless handheld devices are controlling the crowd and changing floor layouts to ensure smooth customer traffic flow. Wireless shelf tags, and web-enabled terminals can give real-time information about in-store promotions and the customer ends up getting some really good bargains. While current deployments are nowhere half as sophisticated as these examples, leading retail outlets will eventually move to a centralized, network-based processing architecture that takes advantage of high-speed broadband connections to survive and thrive in the future.

11. Conclusion

It is sufficient to say that faced with legacy technologies and a rapidly changing environment, today's retailers will most definitively look for the most effective way to simplify operations, control costs, and build for the future. With networks that will improve store operations, mobile, telephony communications, and collaborative technologies will increase productivity and operability. Technology can also drive innovation to enhance retail by:

1. Strengthening customer relationships
2. Continuing to improve operations
3. Building high-value business connections.

This in turn will also lead to tremendous cut throat competition of IT companies in terms of their product excellence, platform required for execution, product delivery and maintenance and of course the features of the product. The Indian market is all set to go hi-tech and revolutionize the shopping experience. The Indian consumer has a lot that's *in store*.

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