

THE ROLE OF DIGITAL TECHNOLOGY IN RETAILING

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ABSTRACT

In this ICE (Information, Communication, and Entertainment) era customers' preferences have become dynamic and ever changing. It's a great challenge for the retailer to provide value to the customers because they not only want it in terms of price but also in ambience, appearance, quality, information, selection, convenience, service and entertainment. It has become difficult for the stores to attract substantial number of footfalls. The customers are also constantly educating themselves before shopping and enjoy thoroughly using digital tools and mobile devices to make the retail experience more enjoyable. They search a series of information before going for shopping like who sells it, which brand is better, how much is the cost, the earlier users' comments etc. Customers have become techno-savvy and the rate of adoption of technologies is very fast. They constantly customize the utility of these technologies for different purposes. So it is very essential to meet the demands of the customers as soon as possible in order to keep their loyalty intact.

Digitalization has revolutionized every business and retailing is no exception to it. Today retailers need to have a fast and reliable updation of far more information pertaining to customers (internal and external) to take quick and better decisions. Application of IT in various core-retailing elements like store-operation, merchandising, inventory control is inevitable without that it simply cannot function in an efficient and effective manner. This is the only way to stop customer defection and restore their loyalty.

Keywords: Digitalization, IT, Adoption, Implementation, Customer experience management, CRM

1. INTRODUCTION

The adoption of emerging technologies is very slow in case of retail industry because primarily it depends on shallow margins and cannot afford to spend lavishly on experimentation.

Retailers face relentless pressure to reduce costs while delivering excellent customer service. State-of-the-art supply chains and back-office systems are becoming minimum requirements for successful retailers. But it is also a fact that new technologies remove the bottlenecks by speedy implementation and visibility to the end customer and tries to make new business opportunities. To win in this hypercompetitive environment, successful retailers are bringing the power of the enterprise to the selling floor and empowering store managers and sales associates with the information and tools to improve the customer experience and capture more sales.

A typical retail organization has the business objective of procuring goods from suppliers and reselling them to end customers or consumers. The chief value-added functions provided by the retail organization are in terms of providing a buffer or cushioning effect between the supply and demand (supply chain (Marshall 1997) – inventory, logistics, allocation, stores management, procurement, sales, channels etc.), stimulating the demand and arranging for adequate supplies to meet the renewed demand (promotion, feedback etc.) and customer service(profile management, check-out, product information, order management, customized service etc.) (Mason *et al* 1993).

In order to sustain in this competitive environment, the retailer needs to optimize on inventory levels, store shelf space, movement of goods between distribution centers and stores, maximize on ROI and finally maximize customer satisfaction by providing prompt, reliable and customized service. This calls for collection, processing and dissemination of valuable information across the supply chain, as well as across the retail organization including the stores, distribution centers, warehouses, marketing department, finance etc. With a view to form the basis for the critical success factors the following information are crucial for a retail organization:

- Product information – catalog, availability, new releases, promotion, supply and demand etc.
- Customer information – profile, behavior, activities, preferences, distribution etc.

- Operations information – logistics, allocation, procurement, schedule, inventory, shelf space etc.

Timely access and a real time information to the above said critical success factors for a wide variety of channels and partners is the key to make the entire retail business a digital one. Digitalization, web services technology, information technology, internet holds out a lot promises for the retail industry in this respect.

IT transformation is a key factor in achieving high performance for retailers. Today's retailers need to transform their IT capabilities for a number of reasons. These include:

- To aggregate and analyze customer data to enhance differentiation.
- To increase a company's ability to respond to a rapidly changing marketplace through enhanced flexibility and speed.
- To operate effectively, retailers need to have one system working across stores (sometimes across national borders) to ensure the most effective use of stock and to support optimized business processes.

Neutralizing the errors and improved efficiency are the two key factors by the result of which retail organizations benefit by automating the business processes. Not only this, better and informed decision making capabilities has improved with real time information available to retail companies.

With automation, retailers are able to effectively track the customer information so as to provide better & uninterrupted services to the customers round the clock. Retailers are no less in exploring the Internet world. Retailing over the Internet enables their businesses to be available 24/7. Moreover online retailing draws larger audience spread across the globe. Customers are given freedom to customize, browse online catalogues, and choose from a wide variety of options without having to leave their homes or offices. Also customers get the best deals and discounts through online retailing.

2. FUTURE TRENDS OF RETAILING

In this ICE (Information, Communication, and Entertainment) era customers' preferences have become dynamics and ever changing. It's a great challenge for the retailer to provide value to the customers because they not only want it in terms of price but also in ambience, appearance, quality, information, selection, convenience, service and entertainment. It has become difficult for the stores to attract substantial number of footfalls. The customers are also constantly educating themselves before shopping and enjoy thoroughly using digital tools and mobile devices to make the retail experience more enjoyable. They search a series of information before going for shopping like who sells it, which brand is better, how much is the cost, the earlier users' comments etc. Customers have become techno-savvy and the rate of adoption of technologies is very fast. They constantly customize the utility of these technologies for different purposes. So it is very essential to meet the demands of the customers as soon as possible in order to keep their loyalty intact.

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In any industry to make the business productive there should be a focus on the improvement of the image of the organization in the market place and the second is on centralizing the attention on improving the internal operation which results in lowering the cost and improving the services.

In retail a great opportunity lies in using the modern technology like IT and digital tools to make the processes more effective. Seeing the trends of customer buying behavior it is imperative for the retailers to digitalize the entire process to redefine the retail industry and change the approach

towards business. Foreign retailers like Walmart, Zara, Amazon.com use new and emerging technologies to stay continually relevant to the ever-changing consumer.

To have an uninterrupted flow of merchandize and information retailers have to keep pace with the demand. Because this is the one business where there is a need to have an accuracy in capturing information and make it available not only with in the store but also to warehouses, distributors and manufacturers as soon as it has been acquired, has been an important requirement. The need for making information available in real time emerges out of the need to manage the short shelf life of goods and the need to manage the costs of inventory. Sales require seeing the consolidated effect of each transaction to understand achievement of targets, and take decisions as may be necessary. Merchandizing looks at the data in the form of movement of merchandize, which has to be replaced and therefore reordered as the case may be. Finance will have to look into the movement of merchandize and the sales in terms of the inflow of case into the company and the payments have to be made to the suppliers. Marketing looks at the transaction to understand and evaluate new campaigns, sales promotions or spot offers which may be offered.

3. INFORMATION TECHNOLOGY

Information technology, as defined by the Information Technology Association of America (ITAA), is “the study, design, development, implementation, support or management of computer-based information systems, particularly software applications and computer hardware.” Encompassing the computer and information systems industries, information technology is the capability to electronically input, process, store, output, transmit, and receive data and information, including text, graphics, sound, and video, as well as the ability to control machines of all kinds electronically.

Every day, people use computers in new ways. Computers are increasingly affordable; they continue to be more powerful as information-processing tools as well as easier to use. One of the first and largest applications of computers is keeping and managing business and financial records. Most large companies keep the employment records of all their workers in large

databases that are managed by computer programs. Similar programs and databases are used in such business functions as billing customers, tracking payments received and payments to be made, and tracking supplies needed and items produced, stored, shipped, and sold. In fact, practically all the information companies need to do business involves the use of computers and information technology.

3.1. How Information Technology involved in Retailing Operations

Retail Demand Forecasting: Modern demand-forecasting systems provide new opportunities to improve retail performance. Although the art of the individual merchant may never be replaced, it can be augmented by an efficient, objective and scientific approach to forecasting demand. Large-scale systems are now capable of handling the mass of retail transaction data – organizing it, mining it and projecting it into future customer behavior. This new approach to demand forecasting in retail will contribute to the accuracy of future plans, the satisfaction of future customers and the overall efficiency and profitability of retail operations.

Inventory Management: To optimize the deployment of inventory, retailers need to manage the uncertainties, constraints, and complexities across their global supply chain on continuous basis. This allows them to improve their inventory forecasting ability and accurately set inventory targets. An IT solution is a proven and market leading solution for determining optimal time-varying inventory targets for every item, at every location throughout supply chain. This allows retailers you to significantly reduce inventory without adversely affecting service levels.

Store Management: Another example where Information technology can be beneficial is a store management. That alerts out-of-place or stock-out items. A store, commonly a shop or stall for the retail sale of commodities, but also a place where wholesale supplies are kept, exhibited, or sold. A place where something is deposited for safekeeping is called store. The in-store system uses magnetic strips or barcodes or RFID to monitor actual versus intended product location on the floor or in the stockroom.

4. THE RETAIL REVOLUTION

Traditional physical retail stores are facing their biggest challenge since the dawn of the World Wide Web 20 years ago. Digital technologies in the form of smart phones, touch screens and information infrastructure are set to revolutionize retail outlets in the future.

4.1 More people buy food online than at kiosks

Online commerce has penetrated the telecommunications industry most deeply. One out of every two customers concludes his or her contracts online. In a survey it is found out that hybrid sales dominate fashion and consumer electronics. 58% (fashion sector) and 56% (consumer electronics sector) of the respondents shop both online and in physical stores. Sectors such as food and home improvement are still strongly characterized by physical stores. In those sectors, 91% and 70% of the respondents shop primarily in stores. Yet the next wave of digital commerce will also cover these sectors. More people already buy food online than at kiosks or gas stations.

4.2 The majority decides within two days

Purchasing decisions are made today on an extremely short timeline. With the exception of consumer electronics and telecommunications services, the overwhelming majority of consumers need two days at the most from the initial idea to the purchase (food: 93%, clothing: 86%, home improvement: 71%). While the numbers of routine and impulse purchases are very high for food and clothing, the other purchases are planned at short notice in the other sectors. With the spread of the mobile Internet, this trend is set to continue. Consumers will make their decisions even faster in future. Retailers and brands must therefore convince potential buyers within a very short time.

4.3 Those with expertise seek information independently. Those without ask friends and sales staff

Buyers combine three sources of information in order to make good decisions in such a short time: media, social contacts and sales staff. The most commonly used sources for independently gathering information are newspapers, television and the Internet. Majority uses

recommendations from friends and acquaintances as an orientation. 24-80% seek assistance from sales staff. Significant differences exist from sector to sector. As a rule, the more media-savvy consumers are, the more likely they are to obtain their own information. The less the experience consumers have in a particular shopping sector, the more likely they are to also ask friends, acquaintances, or sales staff. For retailers and brands, it will become increasingly important not only to sell, but to provide customers with the right information in the right location.

4.4 The majority observes with interest, only early adopters buy

Even in this fast-paced age, consumers remain interested in new products. The absolute majority of consumers take note of new products on the market without actually buying. New products capture attention, but do not sell immediately. Being the first to have new products is important only for a minority of 3-7%. However, the actions of many of these early adopters have a strong impact on their social environment.

4.5 Brand websites are indispensable

Traffic to brand websites is decreasing, while Facebook user numbers are growing. The purchasing process does not reflect this: visiting brand websites remains an indispensable part of it. The less developed online sales and the more important impulse buying is for a sector, the less important brand websites tend to be. Newsletters also play a role. They are often used as a way to stay informed of new products. Facebook pages and smartphone apps do not yet play a significant role in the buying process. In future, Facebook pages and apps will also sell.

4.6 Retailers benefit more from the Internet than vice versa

Retailers dread consumers who look at products in the store and then order online. Physical retailers complain of bearing the costs while online shops make the sale. Despite possible online price advantages, physical stores benefit from the immediacy of their offerings. The stronger retailers communicate locally what they have in stock and on sale, the more they stand to benefit from this effect.

4.7 Prices are being driven to unhealthy lows

Miserliness is no longer cool – as a famous German tagline used to proclaim – but the price nevertheless continues to play an important role. Consumers have learned that branded products can always be bought cheaper. Many customers postpone their purchases until prices drop or products are on sale. Others seek out retailers that offer discounts. To find such deals and discounts, a significantly greater number of people still rely on brochures and advertising inserts than on the Internet. New forms of discounting are also taking shape. For example, the depth of discounts can be linked to the disseminator effect of the network or the size of the buying group. While low prices are a very effective tool to promote sales, they can inflict lasting damage to brands and create the expectation that products will always be available even cheaper.

4.8 Routine trips to trusted dealers

People used to go to the shop on the corner. Today, consumers have their regular stores where they shop routinely. That also holds true for online shoppers. Approximately one in every two consumers regularly shops in the same business. For food items that figure is as high as 82%. The only sector where that is not true is telecommunications. Trusted online retailers are also a factor. This also holds true for offline buyers. Such retailer loyalty is practical, saves time and is a firm part of consumers' everyday routines. Unlike the past, modern buyers also frequent a wide range of additional shops.

4.9 Stores are too rational

It pays for physical retailers to provide additional incentives to profit from the short-term nature of the buying process. Surprisingly, they have considerable room for improvement in this regard. Currently, customer communication and product presentation are dominated by a rational approach. Fashion and home improvement stores are the only ones to deliver a semblance of inspiration. Faced with considerably more aggressive pricing, growing competition from new points of sale and massive improvements in digital shopping experiences thanks to tablet computers and smartphones, physical retailers must take immediate action. New digital

technologies such as touchscreens and interactive display windows and advertising spaces offer a variety of applications to that end.

4.10. Convenience is more important than price

Online shoppers have the reputation of being price-focused. Indeed, consumers buy online primarily out of ease and convenience, the lack of fixed opening hours, and the fact that they do not need to carry the products home themselves. They also appreciate the greater selection offered by online retailers. Especially in the food sector, more choice plays a decisive role. Buying behavior with regard to consumer electronics differs significantly. There the price is much more important. For physical retail outlets, turning the multitude of touch points into points of sale holds great potential to let them serve customers whenever they have the time and inclination to shop. This will require changes such as the introduction of new ordering and delivery models.

4.11. Brand loyalty is decreasing

Brands continue to play an important role in the purchase process. Yet commitment to individual brands has decreased. Buyers often purchase products from a variety of brands. They switch brands, experiment, and are open for inspiration. Most buyers' decisions are based on product-specific criteria rather than the brand. In future, the number of newly emerging niche products and brands will continue to increase. Only brands that focus on the customer relationship rather than the products can expect loyal customers. All others will experience much tougher competition. For retailers, digital technologies provide the opportunity to extend their range considerably and to test the sale of new brands online.

4.12. Assistance and distraction

Smartphones will play a central role at the POS in future. In the present scenario, some consumers already use their mobile phone to make better purchase decisions or buy cheaper elsewhere. These figures are significantly higher for consumer electronics and home improvement products. With the increasing penetration of smartphones, this is set to change in

the future. Retailers will gain a wealth of opportunities to sell, and to provide information, navigation and assistance.

4.13. Friends to salespersons

Brands and retailers are beginning to weave social media into the sales process. In future, Facebook, Twitter and the like will not only be communication tools, but also sales channels. Retailers will turn friends and acquaintances into affiliates in order to meet the growing needs of consumers for personal guidance and orientation. They thus gain quality and flexibility. They can personalize the shopping experience, make more relevant offers and require less staff. Initial approaches are pointing toward this development. Even today, users who tell their friends what they are buying or where become eligible for discounts. Twitter is being used actively for sales assistance and product announcements. Retailers use Facebook to identify customers at the start of the buying process, present personalized offers and deliver recommendations from their friends. The first online stores are opening within Facebook. And the key to the success of new players such as Groupon is that many consumers shop together.

4.14. Shops to playgrounds

After the emotionalization of shopping in the 90s and the event-driven nature of the 00s, retail outlets will be transformed into playgrounds over the next 5 to 10 years. The retail trade must reinvent itself to remain relevant in the digital age. Physical stores are losing their added value. New incentives to enter a store and spend time there are needed. It will take new approaches to create loyal customers. New concepts are needed to help familiarize customers with new products and solutions. Brands and retailers must find new ways to generate social dynamics. Games provide the answers to all of those questions. They are far more than a pastime – players take part voluntarily and enjoy themselves. They learn and make discoveries. Players train and want to get ahead. They are communicative and want to see how they measure up to others. While some approaches for turning stores into playgrounds already exist, these are just the first

steps and isolated campaigns. In the future, such elements will be integrated permanently into the buying experience.

4.15. From advertising space to involvement space

The era in which physical retail outlets and e-commerce were separate and competing spheres is drawing to a close. In the future, consumers will buy in numerous physical locations and via a variety of physical media. The triumphant progress of touchscreen computers and smartphones is making this possible. Consumers will be able to browse and make purchases at display windows and outdoor advertising spaces. They can also use touchscreens to order products in stores or view additional information. Tablet computers let sellers present products more effectively and sell them directly. A variety of new digital services will support this buying process via sensors. Orders are then delivered or are ready for collection in the store.

5. APPLICATIONS OF DIGITAL TOOLS IN RETAILING

The retail industry is one that lives and dies on margins, with managers on a never-ending quest to increase revenue and decrease costs. Technology has been an area of intense focus in retail industries as a way to accomplish both goals.

Usually, the areas of technology innovations for achieving competitive advantage in the retail industry are supply chain and customer interactions. Supply chain efficiencies enable retail organizations to lower costs and provide better responses to customers, ensuring profitability of the business. Besides supply chain efficiencies the application of digital tools enhances the performance of the retail business to a great extent. Some of the digital tools are discussed below:

a. Windows Mobile–based Solutions in Retailing

Windows Mobile–enabled solutions are designed to provide the benefits of Smarter Retailing. The three focus areas of Smarter Retailing can be summarized as follows:

- **Smarter Shopping** recognizes that customers value excellent service, improved product availability, targeted promotions, and convenient access to information that makes it easier to make informed decisions.
- **Smarter Selling** helps retailers to maximize sales and improve customer satisfaction by empowering employees with real-time information about products and customer preferences.
- **Smarter Operations** improves business efficiency by providing real-time, anywhere visibility into the measures that drive profitability.

Some examples of areas where mobile solutions are providing significant business value include:

- Store management and operations
- District and regional management
- Assisted selling
- Interacting with consumer devices

b. Mobile Point-of-Sale

Point-of-Sale (POS) is the physical location where goods are sold to customers. Traditionally, this was a counter where a cash register was located. Customers would line up in front of the counter and wait for their turn. Sales counters are a fixed size, however, and can support a fixed number of people. Increasing the size of the sales counter is not possible, so customers are forced to endure long lines during congested periods such as holidays. Studies show that as many as one in ten customers will abandon the line while waiting, leaving the store without making a purchase. Long lines also engender ill will from customers, making them less likely to return to a store in the future.

c. RFID and Location Tracking

RFID (Radio Frequency Identification) has received a huge amount of attention in recent years, with many predicting that the technology will revolutionize everything from logistics to inventory processing to the customer experience. While time will tell if these predictions hold

up, the use of wireless technology to track objects is certainly promising. There are two general types of RFID in use today –passive and active. Passive RFID uses small, inexpensive tags or stickers that contain a unique identifier. The cost of RFID tags is not yet low enough to place tags on every individual item, so tags today are typically placed on cases or pallets of goods. Passive RFID tags contain no battery, and must be energized by RFID readers located within a few meters. The typical use for passive RFID is to track inventory as it moves through doors, loading docks, or other “choke points” in a retail operation. Passive RFID systems keep track of events such as “Tag 125532 passed reader 26 on conveyor belt 3at 14:52:11.” Some RFID systems can determine direction of passage, to record if a tag moved into or out of a room.

d. Business intelligence in Retail

Business Intelligence in retail refers to the compilation and usage of data in an organization or retail company in order to increase the knowledge that companies have about their sales and facilitate their marketing processes. BI in retail applications are tools that allow real-time analysis and interactive manipulation of critical company’s information.

These applications provide users a higher understanding of the current performance of their Points of Sale (POS) and the purchase behaviour of their clients to anticipate future events, to improve profitability, business efficiency and customer service, and offer the possibility to identify new business opportunities.

e. Standard ERP/CRM

The basic needs of a retailer who deploys ERP solution can be classified into two. First to have an enterprise wide platform and second to have a transaction management system. So in order to fulfill these needs many of the ERP vendors focus on developing retail ERP solutions that can help in consolidating all the functions. The retailers want that the entire solution should incorporate POS, supply chain, inventory reporting, billing management, etc. Now with the use of ERP system in place, it focuses more on retail centric components that fulfills the requirements of a retailer or a retail organization.

CRM systems: it is well known that CRM solution helps in managing and building relationship with the customers using different methodologies and technologies. CRM solutions help in building relations with the customers by tracking their interests, their needs and their buying patterns.

f. POS terminals

POS or the point of sale terminals can be described as cash register replacements. They are the systems that have the ability to track, record customers' information as well as process and verify credit card transactions. For businesses such as outdoor sales kiosks etc, small options like wireless POS modules, credit card readers, etc are handy as they help them to record and process credit card transaction.

A retail point of sale system comprises of components that includes a computer, monitor, bar code scanner, cash drawer, etc. Nowadays, a complete or all in one unit fulfills the requirement as the POS monitors use touch screen technology and computers are built into the monitor chassis that also helps in saving counter space for retailers. The software is designed in such a way that it is capable of handling different customer based functions such as sales, returns, loyalty programs, discounts, etc. We can also categorize the POS system into two, the first unit handles the sales information for reporting purposes, sales trends, cost analysis, etc, while the other comprise of 'back office' computers. An accounting interface is also used, to feed the information related to sales & cost of goods in many retail POS systems.

g. Bar code readers

The bar code readers are basically hand-held or stationary input devices. They are also known as price scanner or point-of sale (POS) scanner & their functionality is to capture and read information that is contained in a bar code. A unique identity is provided to all the products so that after scanning the product, details like price, weight & other details are gathered. This information helps to keep track of total sales, inventory list, etc when the information is entered into the systems. Barcodes have completely redefined the system of tracking sales & thus helped

in increasing the integrity of POS transactions. They also help in saving time, cost and effort and at the same time helps in maintaining accuracy with less possibility of errors.

h. Cloud Computing

In the context of retail industry, cloud computing is particularly efficient in collection and analyses of huge volumes of sales data and in real time inventory management.

In retailing, points of sales generate large amounts of data each day. The sales data can be obtained through loyalty cards and discount coupons also. Most low and medium level retailers do not have the necessary resources to capture or utilize such enormous amounts of data. Cloud provider in retail can collect such data from sophisticated server networks connected to the Supply chain to independent cash registers at family owned small stores and store it for the retailer. Such stored data may be accessed from anywhere, provided internet is accessible. A cloud computing provider can track performance of products in comparison to previous time periods. The cloud provider can identify the trend and seasonality component of each product, brand or category and identify and monitor the performance. Then it can provide analytical results to the retailers. The provider of the service can serve many retailers at the same time, without making each retailer do it individually for themselves.

Cloud providers can provide valuable advises to retailers regarding product availability and back-up stock from forecasts. They can get realistic forecasts by analyzing huge amounts of data from numerous retailers. Thus retailers can develop a supply chain where the right product arrives at the right time.

i. Smart Operating System

SmartOps customers are proactively managing supply chain uncertainty across all stages to improve their total chain inventory planning, so that their customer service levels can be stabilized and even increased while overall costs to the business are minimized.

SmartOps enterprise software solutions support many initiatives and challenges associated with different manufacturing and distribution industries from Lean Manufacturing, Just-In-Time

(JIT), and Six Sigma initiatives, to postponement strategies, to Collaborative Planning, Forecasting, and Replenishment (CPFR), and Sales & Operations Planning (S&OP) activities.

SmartOps inventory optimization algorithms manage uncertainties in the data and offer visibility into the drivers of inventory at the item-location-time period level of detail. SmartOps is able to do that because it looks at the right granularity of data to adequately manage safety stock levels and understand where the biggest ongoing opportunities for improvement are within their supply chains.

j. Point of Sale

Point of sale systems use computers or specialized terminals that are combined with cash registers, bar code readers, optical scanners and magnetic stripe readers for accurately and instantly capturing the transaction.

Point of sale systems may be online to a central computer for credit checking and inventory updating, or they may be stand-alone machines that store the daily transactions until they can be delivered or transmitted to the main computer for processing.

Basic point of sale systems currently in use includes standalone electronic cash registers, also known as ECRs; ECR-based network systems; and controller-based systems. All function essentially as sales and cash management tools, but each has features that are unique.

6. ISSUES AND CHALLENGES

Retail operations are inherently complex due to four factors:

a) Product complexity The retail sector has a high degree of product complexity, with the number of SKUs in stores running anywhere from the tens of thousands to more than two hundred thousand, a high degree of seasonal and fashionable items, and a lack of standardization of product hierarchies.

b) Supply chain challenges With so many different outlets and channels, multiple hand-offs, and high frequency of replenishment, developing and managing an efficient supply chain remains one of the primary challenges in the retail sector. "...retailers who do not manage their

IT landscape effectively will find that, in time, the IT systems become part of the problem rather than components of the solution.”

c) Scale complexity Retail operations are executed on an extremely complex scale. The U.S. retail sector alone deals with hundreds of millions of transactions per day, driven by millions of customers who shop through tens of thousands of outlets.

d) Process complexity The business processes that support this environment are also inherently complex due to the multiple touch points across players in the value chain (manufacturer, distributor, retailer, consumer), the coordination required between the different planning cycles of each of these players, and geographic dispersion. While third-party packages do exist for several functional areas of the retail world, most retailers find that these packages either do not cover a broad enough functional footprint and/or they require a fair amount of customization, as the ‘out of the box’ functionality seldom meets the retailer’s holistic needs.

6.1. Key challenges in managing the complex Retail-IT landscape:

CIOs in the retail sector are faced with challenges along four key dimensions:

a) IT cost and performance under pressure owing to the high growth in annual IT spend in the retail sector (~13%) while revenues have grown much slower (~2%).

b) Lack of standards in a complex, highly customized IT environment leading to integration challenges, Making changes and new functionality development cumbersome and expensive.

c) High maintenance costs stemming from the high degree of customization and fragmentation of point solutions, many of which span different technology platforms.

d) Poor data integrity, the result of systems fragmentation, point solutions, high degree of customization and lack of an underlying best practice architecture, because there is no good practice standard, out-of-the-box solution that spans the full retail space.

6.2 There are two critical areas where IT can reduce complexity and improve results:

Functional Retail Areas

Merchandizing systems impact top-line revenues and need to be configured, customized and managed effectively for the retailer to improve its top line. To achieve this, retailers need to

effectively mine large amounts of data and leverage this data to carry out effective forecasting, assortment planning, and collaboration with its suppliers so that promotions and other merchandizing activities are effective and efficient. Supply chain systems are key from a bottom line point of view as they play a key role in getting the right product to the right place at the right time—which in turn impacts the inventory levels and the rate of flow of products through the retailer's stores, both of which are significant components of the retailer's cost of doing business.

Data Cleansing and Architecture Improvement

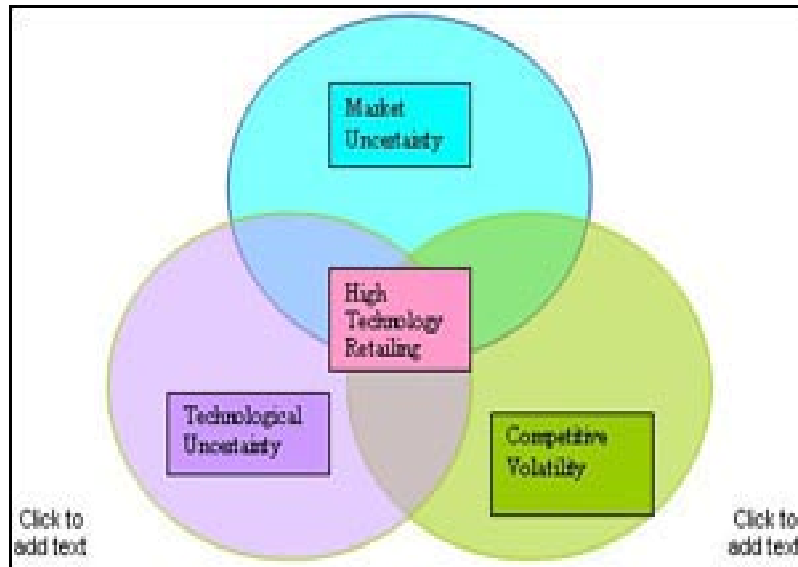
Data cleansing, and thereafter, effective mining (via large data warehouses) is fundamentally important in the retail space because so much decision-making is based on data. If the data is bad, the effectiveness and efficiency of carrying out retail operations is hampered. This becomes particularly crucial when the retailer is implementing new systems and a large data conversion effort is required—it becomes essential that the old data be effectively cleaned, re-architect and made ready in the new system, so that the business functions can make decisions effectively. In challenges, place ever-greater demands on retailers. IT systems are at the complexity of products, scale and processes, along with supply chain heart of retail operations and hence play a central role in alleviating pressure points in the retail sector.

7. CONCLUSION

It is evident that there is a significant role of information technology in today's business world and in retail management. It indicates that a sound Information Technology system is imperative to success in large format retail. IT system can be leveraged to increase efficiencies in supply chain and vendor management as well as centralize their control.

The findings from this study shows that with an efficient IT system a retailer can observe sales and consumer behavior more efficiently and accurately and thus plan its sourcing and customer promotions more effectively which helps to increase customer loyalty and customer satisfaction. An IT system is also beneficial for various retailing related operations. Retailers need to

understand that technology is not a sunk cost but rather an investment to reduce heavy long-term costs. It is an investment to maintain competitive advantage for long-term growth.



The High Technology Retailing Environment

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