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Business intelligence and analytics: recent trends and benefits in retailing

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ABSTRACT

Today retailers are focussing on solutions oriented capabilities which create value and convert information into knowledge. While Business Intelligence (BI) provides a way of amassing data to find information primarily through asking questions, reporting, and online analytical processes, business analytics takes advantage of statistical and quantitative data for explanatory and predictive modelling. Business intelligence and analytics have emerged as principal tools that guide decisions and strategies for disciplines like marketing, research and development, customer care, credit and inventory management. By using these tools, retailers are analysing data to improve in optimization and performance. Present study is an exploratory study with an aim to learn issues and challenges faced by Indian retailers; BI concepts and tools and need for BI in retailing. The study identifies that BI plays a crucial role in insights about customer behaviour; thereby helping the retailers meet their ever-changing needs and desires. The recent trends observed in retailing are - spending more on technology, embracing high capacity computing tools and recruiting people who can combine business and analytics to learn more about customer insights. The study discusses various benefits resulting from implementation of BI and analytics in retailing.

Keywords: Business Intelligence, Analytics, Data Warehouse, Online Analytical Processes, Predictive modelling, Customer insights, Recent Trends.

1. INTRODUCTION

Big data has given businesses a window into valuable streams of information from customer purchasing habits to inventory status- Doug Laney, Gartner, Inc.

The term Business Intelligence (BI) was first used in 1958 (Luhn, 1958) and was identified with the tools for data analysis (Anandarajan & Srinivasan, 2004). BI is an umbrella term coined by Howard Dresner of the Gartner Group in 1989 to describe "concepts and methods to improve business decision making by using fact-based support systems" (Power, 2008). Business intelligence combines data gathering, data storage, and knowledge management with analytical tools to present complex and competitive information to planners and decision makers (Negash & Gray, 2008). The conventional definition of BI refers to the consolidation and analysis of internal data, for example, transactional POS (point of sales) data and external data e.g., consumer data for the purpose of effective decision-making. Business Intelligence refers to a set of business processes, the technology used in these processes and the information obtained from these processes (O'Brien and Kok, 2006). (Turban, et al. 2002) define BI as a computer-based decision analysis usually done online by managers and staff. It includes forecasting, analysing alternatives and evaluating risk and performance. (McLeod and Schell, 2001) argue that BI is an addition of competitive intelligence (CI). Competitive intelligence entails researching the business environment to influence its emerging

strategy for business development (Wikipedia2005b). It is defined as actionable recommendations arising from a systematic process, involving planning, gathering, analysing and disseminating information on the external environment, for opportunities or developments that have the potential to affect a company or a country's competitive situation (Wikipedia 2005b).

A business intelligence system is a data-driven DSS that primarily supports querying of a historical database and production of periodic summary reports. Data-driven DSS have been called various names over the years including data-oriented DSS (Alter, 1980), retrieval-only DSS (Bonczek, Holsapple, & Whinston, 1981), Executive Information Systems, OLAP systems and Business Intelligence systems. Business Intelligence (BI) is a set of abilities, tools, techniques and solutions that help managers to understand business situation (Saeed et.al, 2012). BI tools help managers get a view of previous, present and future situation. Managers at all levels can acquire high quality information any time with simple tools and obtain better results. Retailers have traditionally invested less in technology than other industries, but this standard is shifting with the availability of technologies that predict and optimize merchandise (Diana McHenry, 2010). In retailing, Business intelligence (BI) helps to analyse data received from various channels and use them to identify opportunities and enhance efficiency. Social media and social CRM generate a huge volume of data that needs to be compiled and interpreted, so that the data can be used for marketing and strategical purposes.

A recent report from the research firm Gartner, says that the benefits of fact-based decision making are clear to business managers in a broad range of disciplines from marketing, sales, supply chain management, manufacturing, engineering to risk management, finance and HR. The firm predicts that BI and analytics will remain the top focus for CIOs through 2017. BI solutions, when integrated with analytics, are capable of identifying and analysing patterns from a large amount of unstructured data. Gartner has identified three trends that describe information's ability to transform business processes over the next few years (Doug Laney, 2015):

- By 2020, information will be used to reinvent, digitalize or eliminate 80% of business processes and products from a decade earlier.
- By 2017, more than 30% of enterprise access to broadly based big data will be via intermediary data broker services, serving context to business decisions
- By 2017, more than 20% of customer-facing analytic deployments will provide product tracking information leveraging the internet of things (IoT).

This paper explores Issues and challenges faced by the retailers; Concepts of BI and analytics; Need for BI in retailing; BI and Analytics in Indian retailing; Recent trends in retailing and Major benefits of BI and analytics in retailing. Present study is part of large research work with an aim to learn the concepts of BI and analytics in retailing context.

2. ISSUES AND CHALLENGES FACED BY RETAILERS

. In today's competitive world, every retailer faces multifarious challenges like what will the customer buy? How will the market react? With increase in customer base, ever increasing customer expectations together with availability of more choices for the customers like a wide range of product offerings, multiple modes of interaction, retailers are constantly facing challenges for effective decision making and to enhance their operational efficiency

Retailers collect mountains of data that include point-of-sale transactional details, demographic information and ever-increasing volumes of unstructured data generated from blogs and social media sites.

- The aggregate amount of data available to retailers is increasing at a very fast rate; acquiring the desirable insights, targeting and retaining their ideal customers is becoming posing a challenge.
- With consumers having greater access to information via the Web and other resources, they have become value seekers and more selective. For this reason, retailers have to be more conscious of the consumer and must find ways to innovate and differentiate themselves.
- A recent survey by Accenture shows that retailers are hiring analysts to make sense of streams of data coming from different sources to learn more about their customers.
- Retailers find it difficult to how best they can take advantage of the technology as more consumers are using mobile devices to make purchases to learn where they can get the best deals.
- The practice of checking competitor prices online while visiting a store, a practice known as "showrooming" is gaining in popularity and causing traditional retailers a lot of concern. Customer service and in-store experience play a massive part in consumer attitudes to "showrooming".
- Retailers need to be flexible in the way that they interact with their customers to provide a consistent experience with an evolving marketplace to introduce more flexibility into its business processes.
- Today even with the most modern retailer, loyalty programs do not exist or even if they do are very minimally used. So, customers become anonymous and it becomes difficult for the retailer to segment them and see if they can be targeted with specific campaigns, promotions or product mixes.
- Retailers need to figure out the best way to use social media to its advantage, and spend wisely and allow customers to better connect with the chain's stores.
- As brick-and-mortar stores still dominate, retailers need to make their stores more attractive and make their stores to become destinations where people like to spend time.
- Retailers need tools to take advantage of the massive information at their disposal to keep track of important information and to know which information is valuable to them.

3. CONCEPTS OF BUSINESS INTELLIGENCE AND ANALYTICS

Technology is driving dramatic changes in today's retail management. Technology is enabling creative conventional retailers to use the growing wealth of individual consumer information to customize the in-store shopping experience, improve shopping convenience provide knowledgeable and personalized service and enhance the entertainment value and ambience of their stores (Cheryl, 1998). Retailers handle enormous amounts of information- from supply chains to sales information to store operations. The information technology available today allows retailers to make better business decisions and to better target performance goals. Almost every major retail segment, including apparel, discount retailers, department stores, discount drugstores, electronics, specialty retailers, and specialty grocers, take advantage of the benefits of business intelligence. Currently, retailers of all sizes are leveraging business analytics to predict what the customer prefers and how the customer behaves.

3.1 Business Intelligence: The business intelligence (BI) tools available today offer the ability to analyse data on a multidimensional basis with an on-line capability that allows the user to view the information and data in combination of formats including tabular reporting, graphical, and scorecard

views. BI helps retailers to report on, analyse, and monitor the vast amounts of data through business intelligence architecture and helps retailers reduce costs, increase revenue, and maximize the value of information.

A business intelligence system is a data-driven DSS that primarily supports querying of a historical database and production of periodic summary reports. Data-driven DSS have been called various names over the years including data-oriented DSS (Alter, 1980), retrieval-only DSS (Bonczek, Holsapple, & Whinston, 1981), Executive Information Systems, OLAP systems and Business Intelligence systems (Saeed et.al, 2012).

A BI system continually predicts and compares against actual events the data in real-time, and notify the administrators, managers, and executives that represents real intelligence, which can be applied to a whole range of activities within the business, including front-line customer-facing, supply chain, corporate financials, and production performance.

BI pulls information from multiple systems to gain a unified view of inventory levels and customer orders. By tracking and reporting on sales and merchandise availability, retailers improve customer service and profitability. BI applications ease the way employee's access and look at information, so that decisions could be made more quickly to satisfy customer demand (Perry Ellis, 2012). According to him, "In the retail industry, fashion trends change quickly. With the BI system, management has the tools it needs to monitor the business at all times, stay closer to customer buying patterns and manage inventory accordingly." With many divisions located across the country, employees must know the location and availability of specific items in order to better serve customers.

Using the BI applications managers can ship an order for delivery, the minute an order is placed. By managing inventory requirements on a daily basis, capital costs can be reduced with an objective of providing new merchandise to the consumers with a speed-to-market approach (Russ Hill, 2003). Inventory is the largest financial asset in retailing, and having the right product in the right store at the right time is crucial to success.

The Components of BI are: Data Warehouse, Extract, Transform and Load (ETL), Online Analytical Processing (OLAP) (Houston Neal, 2011)

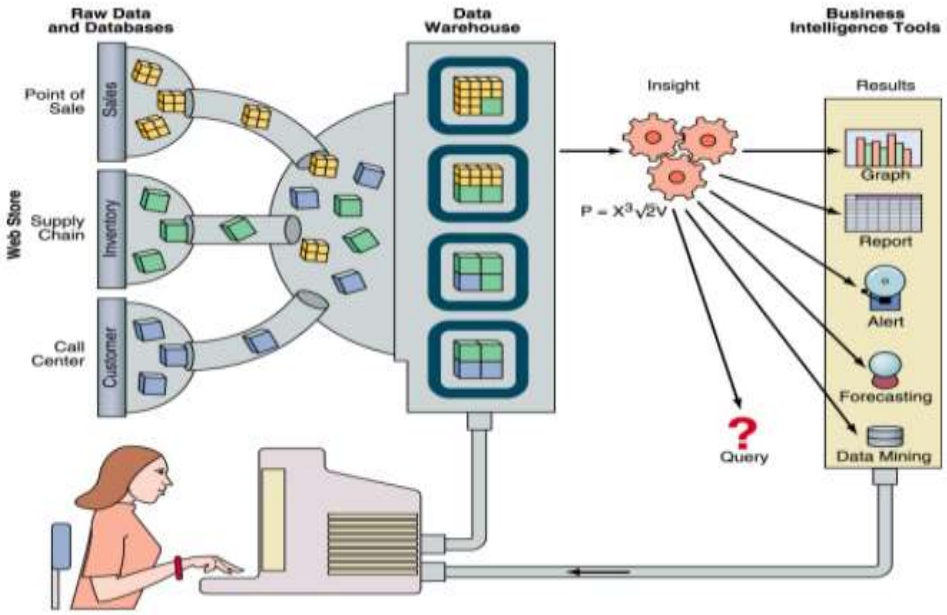

Figure.1. Basic understanding of BI (Source: Ranjan, 2005)

The concept of BI could be understood from the above Fig.1; raw data is collected from different sources with different databases, storing different information from sales in the form of bills, orders, invoices; CRM in the form of accounts, contacts; supply chain in the form of products, inventory movement, etc. Raw data is placed into the Data warehouse by generating cubes that contains all the information, and by performing analytic queries graphs or reports can be generated.

Data Warehouse: A data warehouse stores data and consolidates data from several sources and then performs queries and analyses. Data from different systems like enterprise resource planning (ERP) software, marketing software system and accounting system are aggregated and organized in a data warehouse. Retailers run queries from the data warehouse, or more accurately, from data marts which are considered to be the access layer. The operations are described in the following fig. 2.

An operational system supports daily activities such as entering sales interactions in a sales automation application or expenses in an accounting system. Data warehouses are specifically designed to run complex analysis on large volumes of historical data originating from multiple source systems.

Extract, Transform and Load (ETL): ETL tools perform three functions to move data from one place to another: Extract data from sources such as ERP or CRM applications; Transform that data into a common format that fits with other data in the warehouse; and Load the data into the data warehouse for analysis.

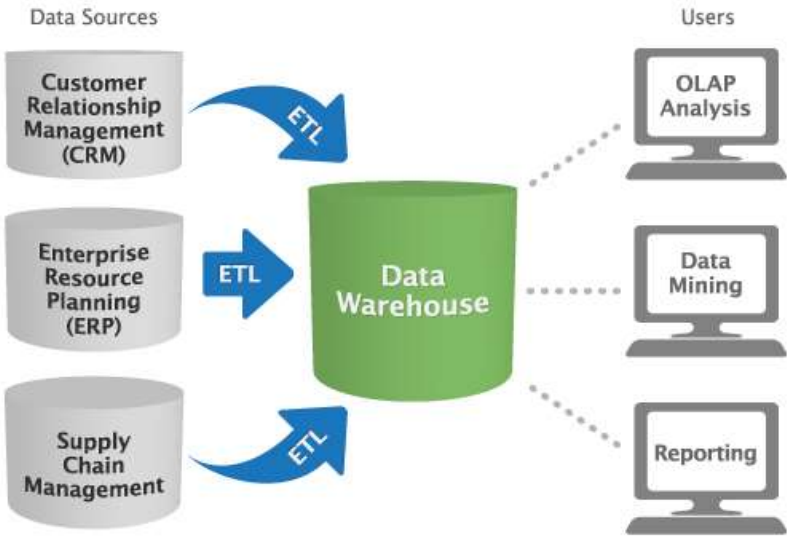

Figure.2

(Source:http://www.plottingsuccess.com/beginners-guide-to-bi-software-1113011/)

In the extract step, data comes from different source systems and different file formats or the old legacy systems. The transform step includes multiple data manipulations such as splitting, translating, merging, sorting, pivoting and more. The final step, load, involves loading the transformed data into the data warehouse. This can either be done in batch processes or row by row, more or less in real-time.

Online Analytical Processing (OLAP): Online analytical processing (OLAP) tools support the presentation layer or "front end" processes such as querying, analysis and reporting. OLAP tools provide the impressive tables, charts and visualizations that make BI exciting. OLAP tools allow retailers to analyse more than one dimension of data at a time. Retailers can analyse how many

products were sold during a particular month in any specific location and compare it against other products sales during the same month.

3.2 Analytics: is referred to as data mining, forecasting or predictive analytics that takes advantage of statistical analysis techniques to predict or provide certainty measures on facts (Ranjan, 2005)**.**

Retailers are using advanced analytics to understand and respond to today's digitally enabled consumers and to know information about customer preferences in order to respond in real time. Although most of the decisions till recently were based on expert judgment or in some cases intuition, analytics goes far beyond statistics and leads to insights and possible implications for planning future action in an organizational set up. According to Justin Heinze (2014), BI refers to the capabilities to access data, manage metadata, development tools for reports, dashboards, and applications, and publishing, scheduling and distribution capabilities. Analytics referred to either methods of analyzing information, (i.e., descriptive, predictive, regression, neural networks, etc.) or the tools to perform those methods.

	Business Intelligence	**Analytics**
Orientation	Rear view - Decision making based on past data	Future -Helps in understanding what would happen
Analysis	Creation of operational efficiency by accessing real time data by analysis of historical data from many sources	Exploration of historical data from many sources through statistical analysis for identification of trends for sustainable practices
Queries	What happened to sales of product 'X', when, how	What will happen to sales of product 'X', what will happen if we change one parameter
Methods	Reporting(KPIs, metrics), automated monitoring, dashboards, score cards, OLAP-cubes, slicing and dicing	Predictive modelling, data mining, text mining, statistical, quantitative analysis, simulation and optimization
Focus	Mainly on reporting	Lets people get in the flow of analysis, explore their data, and ask their own questions
Data types	Structured, some unstructured	Structured and unstructured
Big data	Yes	Yes
Knowledge generation	Manual	Automatic
Users	Executives, power users, store users, employees, data analysts, suppliers	Data scientists, business analysts, IT, business users

Figure.3: Distinction between Business Intelligence and Analytics

Analytics could range from routine tracking and monitoring of business performance that includes validation facts regarding the business domain, to diagnosis of root cause of business problems as well as strategic prediction about future business initiatives, the distinction between BI and analytics is explained in the above fig.3.

Analytics is driven significantly by facts obtained as a part of business and market data collection initiatives by firms. Analytics is being used extensively these days by business managers owing to the availability of large customer data base, enabled by cheaper electronic storage and computer processing power (Business Analytics in India, 2005).

Analytics in retailing provides insightful results in different areas:

Marketing analytics helps retailers in their marketing spends by providing them in segmentation and profiling, campaign effectiveness, price and promotion strategy, cross sell and up sell.

Customer analytics gives insights to retailers in customer acquisition, customer behaviour and segmentation, customer retention and satisfaction

Operational analytics helps retailers to better plan and manage the operations like demand forecasting, inventory management and stock replenishment analysis.

Financial analytics gives insights to retailers using modelling techniques like portfolio optimisation and derivatives modelling.

Risk analytics provides retailers with credit scoring, fraud detection, price elasticity and optimisation, collection and recovery analysis with sophisticated modelling techniques.

While BI adds value to the business by eliciting sales and productivity, minimizes functional value and projects an enhanced understanding for retailers, analytics is helping retailers achieve price optimization, customer retention, and risk management by analysing their growing Big Data stores from which they can deliver insights.

4. NEED FOR BUSINESS INTELLIGENCE IN RETAILING

The key aspects of a retailer are that, they must understand who its customers are and what they buy in order to achieve competitive advantage. In the past, retailers relied on information technology for operational and management support. Presently, retailers are adopting new and innovative technological tools to gain significant competitive advantage.

Business Intelligence tools facilitate retailers to make well informed business decisions and hence act as the source of competitive advantages. BI elucidates firms to extrapolate information from indicators in the external environment and make accurate forecasts about future trends and economic conditions. BI helps retailers to improve the timeliness and quality of information and allows retailers to:

- know the position of the firm in vis-à-vis its competitors
- learn the changes in customer behaviour and their spending patterns
- know the market conditions, future trends, demographic and economic information
- know the changes in regulatory policies, and political environment

5. BUSINESS INTELLIGENCE AND ANALYTICS IN INDIAN RETAILING

Globally, the retail industry has undergone drastic changes over the last couple of decades. Whether in terms of an explosion of choices or a more personalised shopping experience, retail chains are now forced to offer a differentiated experience to shoppers, not only to woo new customers, but also keep their regular ones from moving to rivals (Sayinath A. G, 2013).

India has emerged as the fifth most favourable destination for international retailers, India's retail sector is worth $350 billion, has a low organized retail penetration of 5 percent to 8 percent and is growing at a compound annual growth rate (CAGR) of 15 percent to 20 percent (Arnab and Michael, 2015).

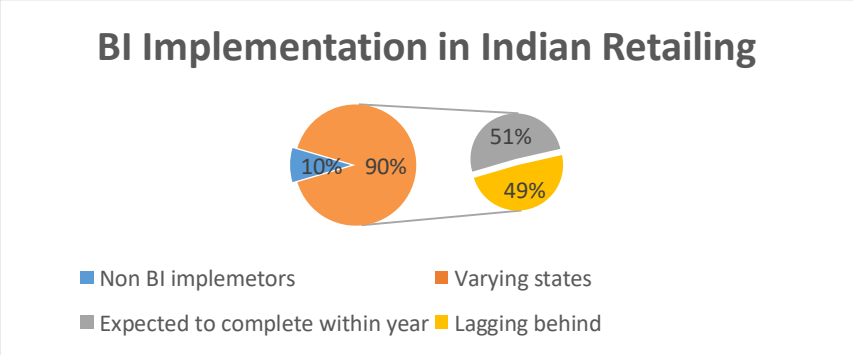

Figure.4: Implementation of BI in Indian retailing

Though Indian retail sector is undergoing several technology evolutions today, it is still progressing in its adoption of basic IT systems and infrastructure like ERP. Indian retailers are in the process of establishing robust transaction systems including suitable POS systems, merchandise management systems, CRM systems, and radio-frequency identification to enable retailers to increase efficiency, to improve customer service to become more competitive. Fig.4 shows the percent of BI implementers in India at varying states during 2013-14.

Earlier in India, the use of IT is confined to the organised sector, a small proportion of the retail industry with small modern retailers making small investments in IT infrastructure like barcode scanning and automation of front-end point of sale processes. The growth of the Indian economy is bringing about several changes in consumer demand and purchase patterns. The Indian retail industry is difficult to predict as consumers are evolving leading the retailers to expand their operations; further driving the need for IT adoption.

Traditionally, most companies have used their ERP systems for generating analytics and MIS. When Business Intelligence (BI) tools were introduced, most retailers simply used the same metrics as in the past – they merely used BI tools to produce faster. With FDI currently allowed, large multinational retailers and consumer goods companies are finding huge opportunities in India. With competition on the rise, retailers have realized the power of business analytics to build predictive models on transactions and loyalty card data to customize their promotions and give customers a holistic shopping experience. OperationsResearch techniques help retailers optimize category assortment and manage shelf space allocation that could result in higher profitability.

The usage of analytics in the retail sector is linked to maturity of the industry. Indian customers tend to be anonymous, and retailers have very little idea in terms of who is buying what and how they should sell products to them, or how appropriately the retail space is being used, how products are stacked and how accessible and visible these products are. Thus, analytics plays a crucial role, if retailers understand who are its customers and what do they buy (Sayinath A. G, 2013).

According to Gunjan (2013) 74% of retail organizations still create or share insights over spread sheets and only 9% have moved onto mobility platforms. The difference between ERP reporting and BI reporting is about converting information into actionable intelligence (Niraj, 2013), according to him, not all retailers appreciated this and did not always have the support of good BI people to help them infuse BI into the DNA of the company.

Indian retailer, Shoppers Stop, uses analytics to mine customer preferences and buying behaviour to source merchandize more intelligently and connect with the customers on things they would like to see at the stores. The retailer's buying team uses sales data to figure out what is selling and where, which in turn enables it to take supply decisions.

India's largest B2C e-commerce platform, Flipkart, using QlikView, was able to optimize stock levels and lower costs associated with excess stock, improving its inventory utilization and provide up-to-date analytics for embedded, data-driven decision making. Analytics applications in HR allow enterprises to identify workforce trends, to work out a cost or revenue model that suits their 'hourly pay workforce' models, minimizing the number of employees to be billed.

6. RECENT TRENDS IN RETAILING

Retailers of all sizes today are focussing on how they can realize higher value from data. Retailers need to maximize their information gathering and make the best use of the data to gain knowledge and improve business strategies. BI applications facilitate retailers to reach wide and diverse user populations and to report on vast amounts of transactional data across multiple business dimensions.

More spending on Technology-BI implementations:

Retailers are spending on BI tools to easily collect, analyse, and visualize their data that leads to better decision making; that lets them build dashboards and reports to visualize their data in the form of pie charts, graphs to get solutions within seconds. According to a DAS survey, the objective behind implementing BI initiative is the need for better decision-making (James Polasek (2013). Earlier retailers with profound ability implemented BI tools, but there is drastically change in the spending of BI tools with the availability of more cost-efficient BI software.

BI implementation touches every area of a retailing setup and complements existing IT capability that can be achieved by leveraging current IT infrastructure to provide the back end and the front end solutions. Retailers are spending more on BI and analytics to:

- to make the correct decisions about operational efficiency, cost reductions, and reduced risk.
- BI implementation allows retailers to analyse profit and loss, including product sales analysis, operational expenditures, and the cost effectiveness of different sales channels.
- BI implementation allows retailers to grow revenue by identifying consumer trends and needs and by providing the most successful products. BI applications reduce expenses by minimizing inventory surplus and by increasing store productivity as well as improving operational efficiency and overhead costs.
- BI's unified architecture allows retailers to easily integrate and cross-reference vast amounts of information from multiple sources, identify relationships among the information, and learn how different factors affect each other and the company's bottom line.

BI Users: Employees are a company's most valuable asset. Business Intelligence helps them to efficiently perform their job while simultaneously monitoring them. Retailers have extensive networks of distributed stores, and each store needs to track information in the company's database and will have many people in different locations with different skills that use the information for varying purposes. Employees in multiple departments across the retail organization utilize BI tools to perform reporting and analysis to support numerous business intelligence applications, including merchandising, marketing, market basket analysis, category management, reporting and strategic business planning, and advertising effectiveness studies. BI tools have unique and intuitive analytical capabilities and allow different users to manipulate the data to gather the most from the information that affects their decision-making:

- executives who need high-level customized summary data with drill-down capabilities
- power users who need to create and design custom reports
- data analysts that identify and communicate market trends
- store users who can remotely access the information corporate headquarters that is designated for them by running easy-to-understand and intuitive reports and analyses

- suppliers who track relevant and specific information in the retailer's database from BI's extranet facilities. Retailers grant them to access to a secure website where they can utilize BI's extensive analytical and reporting capabilities.
- BI architecture provides unique abilities for retailers to reach both intranet and extranet users immediately and securely with extensive information reporting and analysis.
- employees utilize BI tools to run reports to track sales trends and margins, perform analysis to understand the drivers behind product-line.
- BI tools enables employees to track the performance of the entire company, optimize product assortment, and make decisions that help retailers make more customer-responsive and competitive to increase revenue and profitability.

High Capacity Computing Tools:

Big Data – also termed as the next frontier for business intelligence, the big data trend is getting considerable attention from retailers with the modern data sets becoming extremely large and unmanageable. Big Data technologies are a new generation of technologies and architectures designed to extract value economically from very large volumes of a wide variety of data by enabling high-velocity capture, discovery, and/or analysis (IDC, 2011).

Big Data is characterised by the "Four Vs": volume, velocity, variety and value. **Volume** refers to the huge amount of data and a scalable solution that can grow with the data; **Velocity** refers the rate the data changes rapidly and also to know how fast retailers can analyse and utilize it; **Variety** refers to many types of data and sources, and increasing amounts of unstructured mobile and social data that provides the right set of solution to store, maintain and analyse each type of data retailers use; **Veracity** refers to the trustworthiness of the data, whether the data is representative due to redundancy and to help clean the existing data in place to reduce the accumulation of dirty data going forward.

According to Andrew Brust (2013), more retailers are finding that Big Data can revitalize an industry challenged by a slow economy, increasingly empowered consumers, mobile proliferation and an ever-growing number of channels.

Big Data applications are used for deploying Web sites for social media or gaming applications; for large content stores that provide information access to massive amounts of documents that include:

- Analytics (e.g., data mining, multi-dimensional analysis, data visualization)
- Operations (e.g., running a Web site, processing online orders)
- Information access (e.g., search-based access to information, normalization, and access across content and data sources

In-Memory Processing – A classic case of Moore's Law, in-memory processing is mainly attention gaining traction because of the reduced costs and increased power of random access memory (RAM). Accessing data in memory is "literally millions of times faster than accessing data from disk and it provide more flexibility," suggests BI analyst Cindi Howson. Retailers can perform ad hoc queries to make quick, insightful business decisions.

Predictive Analytics – While traditional analytic tools allow collecting insights from historical data, predictive analytic tools allow looking into the future and identifying potential opportunities and threats. Retailers can predict which customers are most likely to respond to a marketing campaign based on data such as their demographics like income and location, purchase statistics like frequency of purchase and more.

Software as a Service – also called as SaaS the software is essentially rented as a service on a monthly or annual basis. These systems can be deployed quicker and accessed from any location

with broadband Internet and preferred by retailers as associated costs are lower with little to no maintenance required.

7. MAJOR BENEFITS OF BUSINESS INTELLIGENCE AND ANALYTICS IN RETAILING

Business Intelligence adds value to the business by helping retailers in different functional areas. Some of the benefits are as shown in the fig.6, other benefits from BI tools adoption are explained as:

Management of Stock

Retailers are now relying on data analytics to mine customer preferences and buying behaviour to source merchandize more intelligently and connect with the customers on things they would like to see at the stores. BI tools helps to stock different SKUs particularly in food & groceries, during seasons; helps to optimally manage stocks and avoid costly stock-out or over-stock situations; helps to know about consumer choices in different geographical regions and helps to analyse sales during seasons and to customize promotional offers to different customer segments.

Figure.6

Source: orientitservices.com/bus_int.html

Pricing and Cost Decisions

Business intelligence makes easy for retail organizations to perform cost-effective initiate like-"what if" analysis, so they can anticipate the results of specific scenarios to make better and more informed decisions. BI permits retailers for pricing and markdown optimization and helps in identifying price elasticity of retail store and in deciding the right markdown strategy. Retailers can optimize prices and tailor local assortments and can extend the art of merchandising with the help of business analytics.

Improving Sales and Profitability

Use of BI permits retailers to improve inventory availability, increase the size and value of the basket purchases and decrease operational costs. Retailers are achieving better organizational performance in terms of sales per employee, return on sales which in turn affects organizational sales and profitability.

Store Location and Planning

Analytics provides various insights for retailers that are looking for expansion in different geographical regions and retailers decide the optimal size of each new store they open, by taking into account key parameters like real estate rental costs, catchment area, average incomes in the geographical area, presence of competition etc. Retailers can address issues like whether new store planning assists to alter and strengthen the retail positioning.

Market Segmentation

BI allows retailers to segment and analyse such market areas and consumers for successful marketing alternatives. Retailers are applying this concept to design promotion campaigns that are targeted precisely and to fine-tune their pricing strategies to build up long-term relationships with customers, vendors and other channel members.

Customer Segmentation

BI permits retailers to allot merchandise optimally to all the stores, avoiding overstocking at some stores, based on store sales quantity. BI allows retailers in identifying customer purchasing patterns and to understand the specific needs of customers improving the customer shopping experience.

Demand Forecasting and Planning

BI systems help retailers analyse historical customer data, and to identify the patterns that will help them anticipate future shopping trends. BI allows retailers to set realistic, accurate sales targets, forecast promotional sales lifts, and plan the demand for new products and new stores. BI helps retailers in anticipating demand based on product and volume mostly on weekly or once in fortnight basis at the most granular level, for better planning and inventory management.

Distribution and Logistics

An effective supply chain improves back-end processes and ensures a smoother transfer of goods from point of origin to point of consumption, increases operational efficiencies and reduces overall costs thereby improving customer service since goods can be moved between factories, warehouses and outlets more efficiently.

Management of Shrinkage

According to retailers, inventory shrinkage is one of the most sought after issues in retail management. Most of the inventory shrinkage in food and groceries occurs due to perishable items, decay due to short shelf life, rotting, spoilage and other reasons. BI implementation helps in reducing the level of inventory shrinkage with appropriate employee training with effective demand forecasting analysis and proper storage methods.

Employee Retention

Business Intelligence is a system that turns data into information and then into knowledge thereby adding substantial value to firm's decision making processes (Loshin, 2003). An effective business intelligence system not only aids in increasing the quality of strategic and operative planning but at the same time reduces the time used for decision-making by improving the various information processes and information quality (Hannula and Pirttimäki, 2003). Analytics applications in HR are allowing retailers to identify workforce trends, empower them to make actionable decisions in a timelier manner. Retail executives are working with store management to execute strategies that deliver immediate results from the store floor, empowering store managers.

Return on Investment

Implementation of BI tools to areas like product, promotion and functions can generate high revenues for the firm. BI tools aligns data across unrelated systems, with future logical support like data mining to offer insights into client, dealer, merchandise, and functional data that can be utilized to raise revenues.

8. CONCLUSION

Technologies and practices for getting the most out of data with BI and analytics are changing rapidly; however, retailers cannot stand still but should think to stay abreast of the changes. The future of BI in retail is promising and the benefits from implementation BI are numerous that include easy-to -use reports, more targeted decisions about merchandising and promoting products, directing traffic more effectively through the store and maintaining best-in-class customer service at all touch points. With insights from business intelligence (BI) and analytics, retailers are improving customer experiences; making smarter decisions about how to allocate resources and to develop strategies to improve business performance. BI and analytics is helping retailers to get creative by using unconventional marketing methods to distinguish from their competitors by drawing insights into customer buying patterns by tracking the variance of customer behaviours, week on week, month on month, year by year among channels, enabling segmentation. BI and analytics helps retailers by supporting them to reach customers and to make shopping at their store a memorable experience thereby earning customer loyalty driving revenue, protecting margins. However, the Indian scenario is different from that of developed nations. Though many large retail chains in the market adopted BI tools for some time, most of them are yet to offer loyalty-based benefits to regular customers; therefore, Indian retailers need to look for ways to analyse customer behaviour and their requirements to better serve them.

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