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A Study of the Impact of Business Intelligence on Banking, Retail and Education Sector

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Abstract - Business intelligence (BI) is used to analyzing business data. The main idea in BI is to support flow of business information around and within the organization by identifying and processing the information into useful managerial knowledge and intelligence. BI can be used by banks for analyzing performance budgeting, trends, customer analytics etc, by retail for understand buying behavior, customer requirements, exact price points for products, shipping and inventory timing and by education sector to deliver quality education, knowledge management etc.

Keywords - *Business Intelligence, Bank, Education, Retail*

1. Introduction

Industrial world is managing their business with the rapid pace of globalization. people are introduced to various products from various segments to attract attention so that in the end they will use the products. The role of information technology in automating business processes is enormous. The global players have to manage huge data transaction in the big data era, that is difficult for a human being to analyze directly and deduce useful information from the data [1]. Data mining can solve the problem by providing solutions to business problems in the industry by identifying the current pattern and trend, how the behavior of stage funds towards the condition of the economy, politics, and social by correlating different variables in the business data and to arrive at conclusions regarding customer behavior patterns. Business intelligence and data mining help the managers and products' managers identify various classes of customers and develop compatible products or services with the customers' needs and or the act of determining pricing strategy to obtain better revenue management [2].

2. Business Intelligence

Definition of Business Intelligence Business intelligence is defined as a process of extracting, transforming, managing, and analyzing business data to support decision making process [3]. The process involves a set of data obtaining from a data warehouse. The process of business intelligence includes five stages:

Data sourcing: Business Intelligence extracts data from various business domains like marketing, finance, human resource etc and cleans, transforms and integrates for subsequent analysis.

Data analysis: In this stage data are converted to information or knowledge through various analysis techniques such as, visualization and data mining. The result of the analysis process can help the management understand the situation and make a better decision.

Situation awareness: This phase provides a deeper comprehension in current situational decision based on the result of data analysis.

Risk assessment: This phase helps themanagers to predict the future, identify threats and chances, and respond in accordance with the requirements. The decision making of business is more likely to be accompanied with risks that are coming from external and internal environments. Hence, it can be concluded that risk estimation is a main function in business intelligence system.

Decision support: The key function of business intelligence is to help managers in making decision wisely based on the current business data.

3. Business Intelligence System Architecture:

The typical architecture of Business intelligence is described in figure 1.

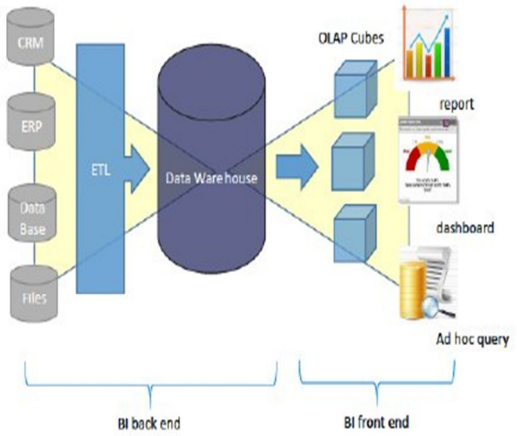

Fig 1:Business Intelligence Architecture

The Figure 1 demonstrates the components of a BI architecture. It includes ETL (extract, transform and load) engine, data warehouse, OLAP or reporting. BI applications can benefit users to understand the strengths and weaknesses of their organizations, to understand the relationship between different data for better decisions, and to discover opportunities for improvement. Organizations use Online Transaction Processing (OLTP) based databases to implement their operational systems. These operational systems contain large amounts of transactions that record the day to day life of the businesses. Examples of such operational systems might be order entry systems or stock control systems. Operational data in these operational systems describes the businesses' specific activities, processes or events. By using Extracting, Transformation and Loading (ETL) tools , BI retrieves operational data and restructures it while loading to facilitate analysis for decision -making. This restructuring can involve data operations such as summarization, aggregation or data joins. A data warehouse has a separate copy of the data for data analysis, data mining ,and reporting activities ,so that these operations do not affect the performance of core operational functions of the businesses [8].After data has been loaded to data warehouse the OLAP server fetches data from the data warehouses, organizes them in highly complex multidimensional data cubes, and presents it to the users through a user defined format or dashboards .

4. Benefits of Business Intelligence

Business intelligence improves efficiency of an organization by increasing productivity as information is shared among various departments of the organization. It provides extensive data analysis by providing rich visualization capabilities. The major benefits are:

- better quality information acquired for decision-making
- improved ability to anticipate earlier the possible threats and opportunities
- increase of sharing information
- easier information acquisition and analysis
- strengthening strategic planning
- faster and accurate reporting
- increased revenue

5. Business intelligence in Banking

Business intelligence in banking industry is the key success in making the main business activities effective and efficient. It has the ability in obtaining, managing, and analyzing the data of customers, products, services, operational activities, suppliers, and partnerships in a very large numbers. Examples of the implementation in business intelligence in banking industry are customer relationship management, customer credit analysis, risk management, credit card analysis, customer segmentation, etc. [4,5].

Business intelligence in business activities can provide personalized customer services and radically increases the service quality from the bank. For example customer credit scoring analysis using business intelligence models the risk potential from loan application and helps in decision making process with reduced operational cost and time. Similarly implementation of business intelligence in customer segmentation makes it easier to identify customers and manage them based on demography. Hence banking business industry automation when integrated with business intelligence system makes the functionality of banks much more efficient by using up-to-date information.

6. Business Intelligence in Retail Industry:

BI helps retailers lean into that and make sure that the look and feel of the store, as well as the interactions with retail staff, are strategically designed to enhance the customer experience. For example, Nexshop Behavior Sensing is capable of capturing and analyzing data of customers in a

store, enabling management to allocate staff in a way that is conducive to "nudging" a customer into making a purchase decision or understand the effectiveness of a given promotion or marketing initiative. BI data can empower sales staff with knowledge of customers' purchase history, shopping habits, and recommend specific promotions to help sales reps offer targeted advice and recommendations at the right time.

BI makes data-driven, efficient operations achievable in ways never before possible. From a staffing standpoint, BI can help you understand how to staff your retail location to match the ebb and flow of traffic in the store ensuring you have enough staff to keep customers happy, but aren't overstaffing and being wasteful due to inaccurate, subjective predictions. Using insights from BI, store managers can not only tell where customers are spending most of their time in the store ,but also identify slow-moving product and displays that are not attracting much customer attention. This allows managers to not only create displays and sales to help push slow moving product, but also to plan a floor layout to better drive traffic to the right places.

The implementation of BI in alternative sales channel can increase the effectivity in managing various types of distribution channels such as Internet, catalog, etc. With the development of today's technology, it enables a customer to interact with the company through various channels in a period. As an example, the development of tablet and smartphone causes the management to expand m-channel to provide additional choices for customers to access the company. The application of BI in alternative sales channel is E-business analysis, web log analysis, referrer analysis, error analysis, keyword analysis, web hosting, channel profitability, and product-channel affinity.

7. Business Intelligence in Education:

BI software is used in educational organizations to reduce the complexity of administrative management and increase academic performance. The implementation of business intelligence in educational industry can be done in the process of college admission, teaching management, etc. [6,7].Business intelligence is an important solution to the education sector as students will understand the courses availability and the schools will be providing all the required information about academics and extra- curricular activities on web by using BI software solutions. By adding BI in the field of education management complexity can be reduced and accurate management decisions can be made. NECTO 14, BI360, Yellowfin are the software's of Business Intelligence used by different organizations and institutions to make their academic performance better and to reduce the management stress. The BI software becomes essential in the education sector which makes schools successful.

BI360 is software used to increase the performance to keep low costs and increase the enrollment. Education managers are using Solver's Microsoft based BI360 software to utilize an integrated cost-effective solution for: reporting, roll-ups, budgeting, forecasting, modeling, dashboards, scorecards based on key performance measures, data warehousing or data marts to mix financial data with student data. With this software educators, can execute –

- a combined budgeting, reporting, dashboard, and data warehouse solution for: student data (admissions), survey data, HR/payroll data, Financial data.
- To set goals, the head of the department and administrators are involved.
- Calculate funds required.
- Associate to develop strategy of focus which relates to budget.
- Assess and track progress of an organization.
- Develop administrative process by lessening the costs.
- High accountability and student satisfaction. (BI360 suite for education, 2017)

8. Conclusion:

Managements of various industries have to develop information system to fulfill the complex stakeholder's needs. In order to use the information obtained from business activity through the information system, it is necessary to develop business intelligence system. The ability to better serve banking customers by having timely and accurate information available is proving to be an invaluable asset, especially in a market where pricing is relatively flat across the industry. The investment in BI continues to separate institutions looking to maintain the status-quo from those looking to position themselves as industry leaders. Implementing a reliable, single source of authoritative data demands buy-in from across the organization and will require collaboration between business and technology which will provide incredible opportunity to bank, retail and education sectors

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