ISSN: 2277-9655
Scientific Journal Impact Factor: 3.449
(ISRA), Impact Factor: 2.114

IJESRT

INTERNATIONAL JOURNAL OF ENGINEERING SCIENCES & RESEARCH TECHNOLOGY

# STUDY OF APPROACHES AND COMPONENTS OF BUSINESS INTELLIGENCE

**Khushboo Patel*, Rudra Gupta, Anurag Punde, Adarsh Pillay, Mohit Vyas**

## ABSTRACT

companies are maintaining the direct contact with the huge customers, however, emerging the number of channel-oriented applications create a new data management dispute: that is useful way of integrating enterprise applications in real time of applications. To learn from the past and foretell the future, many companies are accepting Business Intelligence (BI) tools and structures. Companies have unspoken the significance of implementing accomplishments of the goals defined by their business approaches through industry brainpower discernments. It describes the imminent on the role and requirement of real time BI by examining the business requirements. This paper will tell you the idea of BI, components of BI, and various concerns in Business Intelligence.

**KEYWORDS**: Business Intelligence concepts, components, issues.

## INTRODUCTION

Business intelligence (BI) has two basic different meanings related to the use of the term intelligence. The main, less regularly, is the person intelligence capacity applied in business associations/events. Intelligence of Business is a new field of the investigation of the application of human cognitive faculties and artificial intelligence technologies to the management and decision support in different business problems.

The second relates to the intelligence as information valued for its currency and significance. It is skilled information, acquaintance and technologies efficient in the industry of individual and organizational business. Therefore, in this way, business intelligence is a broad category of applications and technologies for meeting, given that access to, and investigating data for the principle of helping enterprise users make better business judgments. The word entails having a wide-ranging knowledge of all of the factors that affect the business. It is much more essential that organizations have an in depth knowledge about all the issues such as the customers, opponents, business partners, internal operations and economic environment to make effective and good quality business assessments. Business intelligence enables organizations to make these decisions.

A specialized field of business intelligence known as competitive intelligence focuses solely on the external competitive environment. More or less the information is collected on the actions of competitors and decisions are made based on this information.

In today's businesses, increasing values, computerization, and technologies have escorted to enormous amounts of data becoming available and accessible. With the help of technologies like data warehouse have situated up all the repositories to accumulate/store this data. Extract the data when necessary, transform the data, load (ETL) and even recently Enterprise Application Integration tools have increased the speedy collecting of data. Online Analytical Processing (OLAP) coverage technologies have allowed faster generation of new reports which are more suitable and efficient way to analyze the data. Business intelligence has now become the art of separating through huge amounts of data; taking out relevant information, and try to convert those information in to knowledge upon which certain action can be taken.

## BUSINESS INTELLIGENCE

Stackowiak et al. (2007) define Business intelligence as the procedure, which is taking huge data, study the data, and presenting a high-level set of intellectual reports that compact the courage of that data into the basis of business actions, facilitating management to make basic daily business decisions. (Cui et al, 2007) view BI as way and method of improving business performance by providing influential assists for supervisory decision maker to facilitate them to have actionable information at hand. With the help of BI tools, we can facilitates the efficiency of business operation by providing an increased value to the enterprise information and hence the way this information is utilized.

ISSN: 2277-9655
Scientific Journal Impact Factor: 3.449
(ISRA), Impact Factor: 2.114

(Tvrdíková, 2007) describes the basic feature for BI tool is that it is ability to collect data from diverse source, to acquire advance analytical methods, and the capability to support multi users' demands.
Zeng et al. (2006) classified BI technology based on the way of information deliverance; reporting, statistical analysis, ad-hoc analysis and predicative analysis.
The concept of Business Intelligence (BI) is brought up by Gartner Group since 1996. According to him, application of a set of methodologies and technologies, such as J2EE, DOTNET, XML (Extensible Markup Language), Web Services, data warehouse, OLAP (Online Analytical Preprocessing), Data Mining, representation technologies, etc, to improve enterprise operation effectiveness, support management/decision to achieve competitive advantages. Business brainpower/ Intelligence by today are not a new technology instead of an integrated solution for companies, within which the important factor is definitely the business requirement that drives new ideas for innovation in the technology. How to identify and address chief business issues is hence always the major challenge of a BI application to achieve real business bang.
(Golfarelli et.al, 2004) defined Business Intelligence that includes effective data storehouse/warehouse and also an imprudent component capable of monitoring the time-critical operational processes to allow strategically and operational decision-makers to refrain their actions according to the company policy. It also defines BI as the result of in-depth analysis of detailed business data, including database and different application technologies, as well as analysis practices. He broaden the definition of BI as technically much broader tools, that includes potentially encompassing knowledge management, enterprise resource planning, decision support systems and data mining.
BI includes several software for Extraction, Transformation and Loading (ETL), data warehousing, database SQL query and reporting, (Berson et.al, 2002; Curt Hall, 1999) multidimensional/on-line analytical processing (OLAP) data analysis, mining of data and visualization.

## COMPONENTS OF BI.

**OLAP (On-line analytical processing)**
It refers to the way in which business users can slice and dice their way through data using sophisticated tools that allow for the navigation of dimensions such as time or hierarchies. Online Analytical Processing or OLAP gives recapitulated, multidimensional views of business data and is used for reporting, analysis, modeling and planning for optimizing the business. OLAP techniques and tools can be used to work with data warehouses or data marts designed for sophisticated enterprise intelligence systems. These systems process queries required to discover trends and analyze significant aspects. The aggregated view of data generated by the Reporting software is used to keep the management informed about the status of their business. With the help of other BI tools, such as data mining and data warehouses; decision support systems and forecasting; document warehouses and document management; knowledge management; mapping, information visualization, and dash boarding; management information systems, geographic information systems; Trend Analysis; Software as a Service (SaaS), we can store and analyze the data.

**Superior Analytics**
it is referred to as data mining, forecasting or predictive analytics, this takes advantage of statistical analysis techniques to predict or provide certainty measures on facts.

**Corporate Performance Management (Portals, Scorecards, and Dashboards)**
this general category usually provides a container for several pieces to plug into so that the aggregate tells a story. For example, a balanced scorecard that displays portlets for financial metrics combined with say organizational learning and growth metrics.

**Real time BI**
It allows for the real time distribution of metrics through email, messaging systems and/or interactive displays.

**Data Warehouse and data marts**
The data warehouse is the noteworthy component of business intelligence. It is subject oriented, integrated. The data warehouse supports the physical propagation of data by handling the numerous enterprise records for integration, cleansing, aggregation and query tasks. It can also contain the operational data which can be defined as an updateable set of integrated data used for enterprise wide tactical decision-making of a particular subject area. It contains live data, not snapshots, and retains minimal history. Data sources can be operational databases, historical data, external data for example, from market research companies or from the Internet), or information from the already existing data warehouse environment. The data sources can be relational databases or any other data

ISSN: 2277-9655
Scientific Journal Impact Factor: 3.449
(ISRA), Impact Factor: 2.114

structure that supports the line of business applications. They also can reside on many different platforms and can contain structured information, such as tables or spreadsheets, or unstructured information, such as plaintext files or pictures and other multimedia information. A data mart as described by (Inmon, 1999) is a collection of subject areas organized for decision support based on the needs of a given department. Finance has their data mart, marketing has theirs, and sales have theirs and so on. And the data mart for marketing only faintly resembles anyone else's data mart. Perhaps most importantly, (Inmon, 1999) the individual departments own the hardware, software, data and programs that constitute the data mart. Each department has its own interpretation of what a data mart should look like and each department's data mart is peculiar to and specific to its own needs. Similar to data warehouses, data marts contain operational data that helps business experts to strategize based on analyses of past trends and experiences. The key difference is that the creation of a data mart is predicated on a specific, predefined need for a certain grouping and configuration of select data. There can be multiple data marts inside an enterprise. A data mart can support a particular business function, business process or business unit.

A data mart as described by (Inmon, 1999) is a collection of subject areas organized for decision support based on the needs of a given department. Finance has their data mart, marketing has theirs, and sales have theirs and so on. And the data mart for marketing only faintly resembles anyone else's data mart.

BI tools are widely accepted as a new middleware between transactional applications and decision support applications, thereby decoupling systems tailored to an efficient handling of business transactions from systems tailored to an efficient support of business decisions. The capabilities of BI include decision support, online analytical processing, statistical analysis, forecasting, and data mining. The following are the major components that constitute BI.

**Data Sources**

Data sources can be operational databases, historical data, external data for example, from market research companies or from the Internet), or information from the already existing data warehouse environment. The data sources can be relational databases or any other data structure that supports the line of business applications. They also can reside on many different platforms and can contain structured information, such as tables or spreadsheets, or unstructured information, such as plaintext files or pictures and other multimedia information.

## ISSUES IN BI

**Experts View**

Data warehousing experts view BI as supplementary systems and is very new to them. With the help of these experts, we can extravagance the BI as a technology platform that now able to take decision support applications. The author is of opinion that to data mining experts BI is set of advanced decision support systems with data mining techniques and applications of algorithms. To statisticians BI is viewed as a forecasting and multidimensional analysis based tool.

**Approaches in Data Warehousing**

The main key to successful BI system is consolidating data from the many different enterprise operational systems into an enterprise data warehouse. Very few organizations have a full-fledged enterprise data warehouse. This is due to the vast scope of effort towards consolidating the entire enterprise data. (Berson et.al, 2002) emphasizes that in view of emerging highly dynamic business environment, only the most competitive enterprises will achieve sustained market success. The organizations will distinguish themselves by the capability to leverage information about their market place, customers, and operations to capitalize on the business opportunities.

**Analysis of right information**

Several surveys including Gartner, Forrester and International Data Centre report that most of the firms throughout the globe are interested in investing in BI. It is to be noted that despite major investments in enterprise resource planning (ERP) and customer relationship management (CRM) over the last decade businesses are struggling to achieve competitive advantage. It is due to the information captured by these systems. Any corporate would look forward for one goal called ‘right access to information quickly’. Hence, the firms need to support the analysis and application of information in order to make operational decisions. Say for marking seasonal merchandise or providing certain recommendations to customers, firms need right access to information quickly. Implementing smarter business processes is where business intelligence influences and influences the bottom line and returns value to any firm.

## CONCLUSION

Powerful transaction-oriented information systems are now commonplace in every major industry, effectively

ISSN: 2277-9655
Scientific Journal Impact Factor: 3.449
(ISRA), Impact Factor: 2.114

leveling the playing field for corporations around the world. To remain competitive, however, now requires analytically oriented systems that can revolutionize a company's ability to rediscover and utilize information they already own. The business intelligence (BI) has evolved over the past decade to rely increasingly on real time data. The BI systems auto-initiate actions to systems based on rules and context to support several business processes. These analytical systems derive insight from the wealth of data available, delivering information that's conclusive, fact-based, and actionable. Enterprises today demand quick results. It is becoming essential nowadays that not only is the business analysis done, but also actions in response to analysis of results can be performed and instantaneously changes parameters of business processes. The paper explored the concepts of BI, its components, benefits of BI, technology requirements, designing and implementing business intelligence, and various BI techniques.

## REFERENCES

1. Adelman Sid, Moss Larissa and Barbusinski Les. (2002) "I found several definitions of BI', DM Review. Retrieved 17 August 2002 from http://www.dmreview.com /article_sub.cfm? ArticleId=5700
2. Berson Alex, Smith Stephen and Thearling Kurt. (2002) 'Building Data Mining Applications for CRM', Tata McGraw Hill.
3. Cui, Z., Damiani, E. and Leida, M. (2007) 'Benefits of Ontologies in Real Time Data Access', Digital Ecosystems and Technologies Conference, DEST '07.pp. 392-397.
4. Curt Hall. (1999) 'Data Warehousing for Business Intelligence'. Retrieved 20 March 1999, from http://www.cutter.com/itreports/RP68E.pdf.
5. Davenport, T.H.(1993) 'Process Innovation: Reengineering Work through Information Technology', Harvard Business School Press, Boston.
6. Denison, D.R. (1997) 'Towards a process-based theory of organizational design: Can organizations be designed around value chains and networks?', Adv. Strategic Management, 14, pp. 1-44.
7. Gangadharan.G.R. and Swamy, N., Sundaravalli. (2004) 'Business Intelligence Systems: Design and Implementation Strategies', Proceedings of 26http://ieeexplore.ieee.org/ xpls/abs_all.jsp?arnumber=1372391 th International Conference on Information Technology Interfaces, Cavtat, Croatia. Retrieved 15 March, 2007 from
8. Goebel Michael and Le Gruenwald (1999) , 'A survey of data mining and knowledge discovery software tools', Volume 1 , Issue 1 (June 1999) Publisher ACM New York, NY, USA .
9. Golfarelli Matteo, Rizzi Stefano and Cella Luris. (2004) 'Beyond Data Warehousing: What's next in Business Intelligence?' Proceedings of DOLAP-04, Washington, DC, USA. Retrieved May 17 2006 from www.acm.org
10. Inmon, W.H. (1999) 'Building the Operational Data Store', Wiley Publishers-New York, 2nd edition.
11. Malhotra, Y. (2000) 'information management to knowledge management: Beyond "Hi-Tech Hidebound" systems', in Srikantaiah, T. K. and Koenig, M.E.D. (Eds.) Knowledge Management, Medford, NJ.