

Business Intelligence Market Trends and Growth in Enterprise Business

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Abstract – In today's digital economy, every business runs on data. According to the IBM report the world creates 2.5 quintillion bytes of data every day. In that perspective, this is equivalent of saying that 90% of the data, which exists now, has been created in the last two years. This is because the IT industry continues to rapidly evolve as well as volume of the analytical data is also increasing drastically. In the world, 47% of business professionals report dealing with slow or untimely access to information which impedes their business to make proper decisions at right time. It could be accomplished by implementing Business Intelligence. Delving into predictive analysis can give a competitive edge by going beyond the plain analysis. Not just reacting to changing market conditions but predicting them will be a huge competitive advantage. 22% large-sized business requires business intelligence capability to report budgeting, planning, and forecasting their business and future growth.

Keywords: Business Intelligence, Analytics Applications, BI Trends, OLAP, Query & Reporting Tools, BI Vendors.

I. INTRODUCTION

In today's ultra-competitive world, it is vital that businesses succeed in finding ways to stand out from the competition. Business intelligence is the key to gain this advantage and has become increasingly important to the success of businesses in every industry. Business intelligence represents the systems and tools that are important for the strategic planning processes of a corporation. As a whole, it is critical for the successful running of a business. This paper focuses on certain areas such as the significance and growth of business intelligence, forecasting, decision-making and budgeting.

From a number of years and still now, Business Intelligence (BI) has been considered as the No. 1 software application category in companies' implementation project plans. Increasing market volatility and empowered customers put a premium on data and information to facilitate strategic decision-making. IT industry revolutionary advances in big data analytics, pervasive mobile computing, and the "internet of things" have led to an explosive growth in the amounts and diversity of data. Keeping pace with the rate of innovation and new technologies is essential for today's enterprises to remain competitive. In the 21st century, the Business Intelligence is a prime battleground for business, and every company is trying to attract and retain top IT talent. According to the research data:

- 54% of business professionals say that their companies need to be more analytics driven to be competitive.
- Also 30% of mid-sized business organization says that reporting analysis is the #1 business analytics capability which they are most interested in.
- 59% of CFOs chose facilitating analysis and decision making as the #1 process area and that can be

addressed by the Business Intelligence tools and applications.

- Worldwide business intelligence total revenue drastically will increase to \$40+ billion by 2020.
- By 2018, 40% of analytics projects will provide business insights based on many types of data.
- 83% of business professionals have reported that easy access of data is one of the attractive features of Self-Service Business intelligence.

Business Intelligence is a key for competitive advantage and is a set of theories, methodologies, processes, architectures and technologies that transform raw data into meaningful and useful information for business purposes. Business Intelligence and analytics will be essential in supporting the explosive growth in data sources. Sources of data are rapidly growing both outside and within the organization. In each and every competitive business, being able to make decisions faster than competitors is a serious competitive edge and without this, no one will run their business successfully. Most of the companies say that information makes an important contribution to:



Figure 1. Information Contribution vs Business

II. A HISTORICAL PROSPECTIVE

Business intelligence is a relatively new term, coined in the early 1990's. Business intelligence can be defined as "a broad collection of software platforms, applications, and technologies that aim to help decision makers perform more effectively and efficiently". At senior managerial level,

business intelligence systems provide the input to strategic and tactical decisions and "at the lower managerial levels, helps individuals do their day-to-day job (operational)". On a strategic level, business intelligence systems create the information to be used in the forecasting of future results based on historical results; on the tactical level, they provide a basis for decision making to optimize actions for overall company performance; and on an operational level, business intelligence systems provide just-in-time analysis of departmental performance.

Prior to Business Intelligence, most of organization analyzes their business operations using decision support applications that are queried and reported directly on data stored in business transaction databases. There are several problems with this approach. The five keys are:

- 1) The data are not usually in a suitable form for reporting.
- 2) The data often have quality issues.
- 3) Decision support processing degrades business transaction performance.
- 4) Data are often dispersed across many different systems.
- 5) There is a general lack of historical information.

Data warehousing was introduced to help solve these data and performance issues. Before the advent of the Internet, processing power and storage were expensive and ad hoc queries were impractical. Applications collected the minimum data required to record a transaction and to identify a customer or describe a product. The data that companies used to collect included general ledger, payroll, accounts payable, accounts receivable, customer details, product description and invoices. In the previous year, if the management folks wanted to know the business data, they have to submit a query request to IT. As the cost of processing power and storage reduced, companies collected more data and extracted some of the data into data warehouses. On Line Analytical Processing (OLAP) of the data in data warehouses allowed anyone to analyze data without getting permission from IT.

The firms that can confirm the accuracy of their information sources will be in a much stronger position than those organizations that cannot have faith in their business intelligence processes, so the decisions making is based on the wrong data. Ensuring that information and insight gleaned are able to share throughout the organization is also an important factor and that will require a close focus in the coming years. BI platform tools are useful in the retrieval and analysis of this growing amount of diverse data. The use of business intelligence systems has become popular in recent years as an approach to gather and analyze data for business use. Believe that this is because the business intelligence systems can deliver meaningful data at the right time to the right location in the right form.

III. SIGNIFICANCE OF BUSINESS INTELLIGENCE

When analyzing a business intelligence solution, it is important to consider the business benefits, including improved overall decision making and increased efficiency for

business reporting and analysis. To this first point, BI offers four important prerequisites for proper decision making:

- Required information is available.
- Data are consistent across organizational units.
- Information can be easily analyzed using built-in analysis functionality.
- Reports are presented in a user-friendly format.

Powerful transaction-oriented information systems commonly exist in every major industry for effectively 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 that 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 the business analysis is done, but also the actions in response to analysis of results can be performed and instantaneously change parameters of business processes.



Figure2. Business Intelligence vs Usage

BI programs usually combine an enterprise data warehouse and a BI platform or tool set to transform data into usable and actionable business information. A well-designed business intelligence solution ensures that information across the organization is available in a consistent and reliable manner. Figures can be aggregated and compared in different business units by assuring the validity of like-for-like data comparisons, and all the management reports provide operations leaders and top management with the information that they need to steer the business properly.

IV. GROWTH OF BUSINESS INTELLIGENCE

According to the McKinsey Global Institute assessment, by 2018 the United States alone will face a shortage of 140,000 to 190,000 personnel with deep analytical skills and a shortage of 1.5 million big data managers and analysts. Also the entire globe will face a shortage of about 75% of potential users by 2020.

- Current statistics shows that there is total revenue of \$23.1 billion worldwide due to business intelligence practices.
- Many people are currently adopting business intelligence practices and it is predicted that 75% businessmen and women will employ the use of Business Analytics by 2020.
- Currently, 54% of business professionals believe that their companies need to be more analytics-driven to stay competitive.



Figure 3. Growth of Business Intelligence

V. IMPORTANT ELEMENTS OF BUSINESS INTELLIGENCE

Business intelligence systems combine operational data with analytical tools to present complex and competitive information to planners and decision makers, in order to improve the timeliness and quality of the decision-making process. A business intelligence system is a set of tools, technologies and programmed products that are used to collect, integrate, aggregate and make the data available. Business intelligence systems provide actionable information to be delivered at the right time when decisions need to be made.

The beginning point of this study is to identify the key components that are common to all business intelligence systems. Business intelligence systems, as the term is typically used, is often confused with a specific "off the shelf" piece of hardware and with a software solution that businesses can simply purchase, turn on and utilize to create business intelligence to facilitate the decision-making process. But business intelligence systems are really just an umbrella term. In reality, business intelligence systems refer to a vast collection of tools and techniques that consist of dozens of hardware solutions with expensive software at one end of the spectrum and as little as one server with specialized software on the other end. While business needs dictate the necessity for different components and complexity for a business intelligence system, all business intelligence systems require, at a minimum, four specific components to produce business intelligence.

BI comprises a variety of analytical software that provides the information needed by businesses. The emphasis is on the

real-time information which supports reporting on every organizational level. The term is much broader in the sense of encompassing multiple tools and methodologies, which enable their users to connect all business processes. The article describes the key components of a business intelligence system by defining each of the four most common components and they include Data Sources, ETL tools, Data Warehouse and OLAP techniques, and Data Mining.

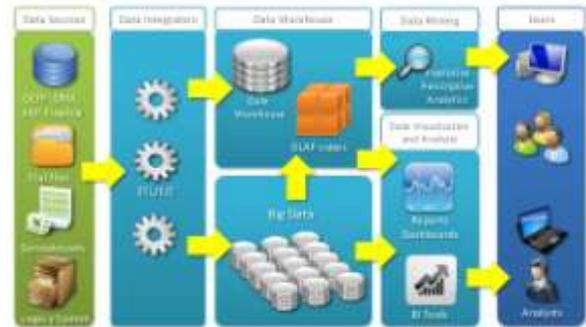


Figure4. Architecture of Business Intelligence

A. 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 XML or pictures and other multimedia information.

B. Data Integration

In modern businesses, increasing standards, automation, and technologies has led to vast amounts of data becoming available. Data warehouse technologies have set up repositories to store this data. Improved Extract, transform, load (ETL) and even recently Enterprise Application Integration tools have increased the speedy collection of data. OLAP reporting technologies have allowed faster generation of new reports which analyze the data. Business intelligence has now become the art of shifting through large amounts of data, extracting pertinent information, and turning that information into knowledge upon which actions can be taken.

C. Data Warehouse

In order to make the data give the desired information, all of it need to come together in the same place. Every database shares its information into a centralized location called a data warehouse. This is where different information from different departments get linked together to create the desired report called a query. Defining a specific query is when certain pieces of data are matched together to get the result you are looking for. The data warehouse is where the information from sales, marketing, and customer service would come together to answer the query of when the right time to start the sale.

D. Data Mining

Once all the data are configured for the desired statistics, they need to be displayed in a form that is both effective and decipherable. Any data acquired can be displayed on a spreadsheet, but the act of getting the desired information out of it might prove to be difficult, if not impossible. Data mining is in place to take the data, break it down into the preferred statistics, and display them in a legible and relevant way that the user can easily access. This takes the legwork out of manipulating the data by hand, and creating a new document every time.

VI. LEADING BUSINESS INTELLIGENCE PRODUCT AND LEADERS

Demand for Business Intelligence (BI) tools, technologies, and approaches are increasing across the globe. Competitive pressures in both mature and growth markets across the region are driving investments in reporting and decision supporting to improve operational insights and efficiency. Widespread adoption of mobile technology and social computing has driven interest in visualization capabilities and real-time analytics. Finally, rapidly changing data privacy laws and regulations have forced organizations to implement more stringent information governance capabilities and processes.

Various Business Intelligence vendors are available in the market to meet the client’s business criteria. Numerous parameters involve in the measure of the top BI market vendors. According to recent survey, world most Business Intelligence software providers are Birst, GoodData, IBM, Information Builders, Microsoft, MicroStrategy, Oracle, Panorama, Qlik, SAP, SAS, Tableau Software, and TIBCO Software. Among all these, SAP, IBM, SAS, Microsoft, Oracle, Information Builders and MicroStrategy are top market leaders in BI on recent year. Below are the various products which are available in the market from the top leaders:

Table I. Business Intelligence Vendor vs Product

VENDOR	PRODUCT
GoodData	GoodData
IBM	IBM Watson Analytics
Information Builders	WebFOCUSInfoAssist/InfoDiscovery
Microsoft	Power BI
MicroStrategy	MicroStrategy 10
Oracle	Oracle Business Intelligence Cloud Service
Panorama	Panorama Necto
Qlik	Qlik Sense Enterprise
SAP	Lumira
SAS	SAS Visual Analytics
TIBCO Software	Spotre

Having different BI platforms may be overkill, but trying to standardize on a single platform brings diminishing returns. Large organizations will likely settle on at least three platforms: a broad, scalable enterprise suite; BI embedded in ERP, CRM, and financial software packages; and lightweight desktop self-service tools for business users. Many BI platform features are becoming commoditized; it’s not the individual’s capabilities that differentiate the Leaders, but rather the completeness, comprehensiveness, and integration of the entire BI architectural stack along with the increasingly popular features like analytics, data visualization, dashboards, and data exploration

According to IT executives and technology decision-makers, mentioned below are the statistical data about the Business Intelligence tool s currently used in the market by wide variety of people.

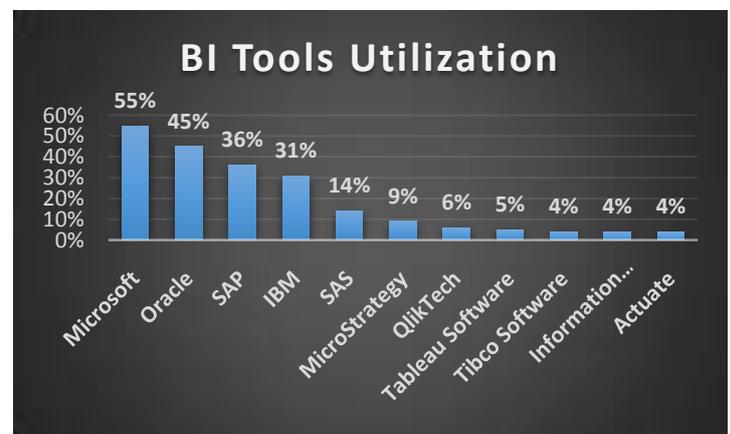


Figure 5. BI Tools Utilization

VII. CONCLUSION

This goal of this study is to present a guide to enable IT professionals, managers and executives to identify the current market and key components of a business intelligence system. Essentially, BI improves efficiency on both the information technology (IT) side and the business side of the organization. On the IT side, workers are freed from the recurring task of creating and changing data reports, as end-users are able to create and change their own reports. On the business side, less time is spent in data analysis and preparation, as management reports are created directly from the BI dashboards. Not only is the data in these reports are more up-to-date and credible, but also they are easier to read and handle. And importantly, the information can be downloaded on smart devices, including the iPhone and iPad.

BI tools provide access to data and their analyses in order to effectively manage enterprises across all sizes. However, the usage of BI in small and medium businesses is lower than in large companies, as common BI solutions seem to be too complex or costly for small business needs. The emergence of business intelligence applications and tools further enhances business decision making by giving business users simpler interfaces, improved data analysis features, and the ability to compare actual and planned performance.

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