

BUSINESS INTELLIGENCE AND ITS USE IN DECISION MAKING

Omkar .V .Kulkarni

I. Introduction

In today's globally driven economic world, growth of the company given a limited set of resources is the only mantra for the survival of the company. In this fast growing economy where any decision could send you to the top or would show you the ground, companies are working round the clock to get their permutations & combinations of their resources right. TIME is one of the important factors, which many times is not considered by the decision makers of the company. Many times it so happens that a large amount of time is utilized to come to a decision but the problem for which it was taken is now out of hands.

In the above given scenario companies are utilizing IT-enabled tools which would facilitate them to take their decisions. IT tools like DBMS, MIS enable companies to store their data and based on the stored data companies can forecast for the future. **Business Intelligence** system comprises of such kind of tools, which drives the wheels of the company on the path of better decision-making, which would help the company.

II. What is Business Intelligence?

A term which represents those systems that help companies understand what makes the wheels of the corporation turn and to help predict the future impact of current decisions. These systems play a key role in strategic planning process of the corporation. Systems that exemplify business intelligence include medical research, customer profiling, market basket analysis, customer contact analysis, market segmentation, scoring, product profitability, and inventory movement

Business Intelligence provides business roadmaps to deliver solutions for business analysis, which includes data models, meta-data and analytical applications. By having these roadmaps, we deliver superior business value through improved return on investment, time value by enabling fast solution delivery, and technical value through open database enablement.

Information is typically obtained about customer needs, customer decision making processes, the competition, conditions in the industry, and general economic, technological, and cultural trends. Business intelligence is carried out to gain sustainable competitive advantage, and is a valuable core competence in some instances.

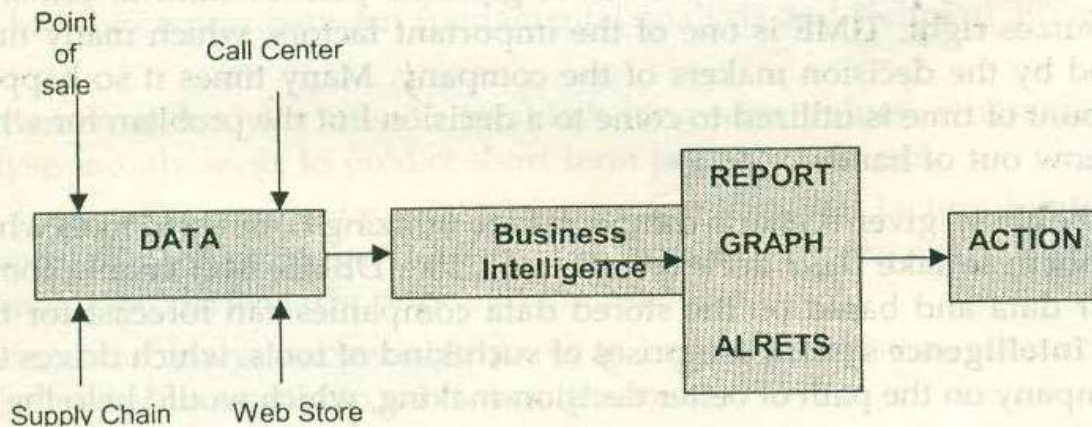
Business Intelligence (BI) is a code-name for a range of technologies which unlock knowledge that is hidden in business data and tell us how to use it more effectively.

Mr. Omkar Kulkarni, III sem. student of IMER and this paper was declared as best paper
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The overall objectives of BI are to improve planning, productivity, service quality, and profitability by making information and data more comprehensible and using business knowledge more effectively. **Business Intelligence helps us to use business data for competitive advantage.**

Business Intelligence allows management to gain insight into their business by analyzing business data to spot trends or using "what-if" analysis for scenario forecasting. BI technologies provide management with up-to-date information on vital business aspects of their operations.

III. How Does A Typical BI Solution Work?



IV. Evolution of Business Intelligence:

Ever since mainframe computers began accumulating vast storehouses of data in the early 1960s, managers and executives have sought ways to turn random facts and figures into useful information upon which to base sound business decisions.

But it wasn't until the arrival of relational databases and client/server technology in the early 1990s that companies took advantage of the market's need for decision support systems to create and define a new industry, which is now widely known as business intelligence (BI). Business intelligence allows organizations to extract useful, actionable information from a rapidly growing inventory of disparate data sources, including multiple database platforms, packaged applications, data warehouses, data marts and e-business systems.

The major database application vendors typically supply basic querying and reporting functionality for their own products. BI vendors provide tools that can be used across the organization to access, analyze and share information from a variety of sources — a giant step in the right direction for business decision-makers needing the big picture.

As the use of BI has matured, there has been increased interest in analytic applications, a logical extension of the business intelligence concept. Analytic applications provide users with prepackaged solutions to common business problems such as customer, sales and campaign analysis. Although analytic applications have been

available in areas such as financial budgeting for many years, they typically relied on older, proprietary systems and covered only a small fraction of the overall needs of the enterprise. Over the last few years, analytic applications have gained popularity in new areas, particularly for the analysis of e-business and click stream information.

Analytic applications provide key additional BI benefits to specific groups of end users through the use of "best practice" analysis techniques — in particular business areas and "closed loop" integration with operational systems. However, their implementation has not always been painless. While they address a business need for a particular population, they perpetuate the problem of stovepipe information sources and may make it more difficult than ever to get an overall view of the enterprise.

V. Market Growth For Business Intelligence :

The BI market has experienced modest growth in recent years (5%-10% annually). We expect this level of growth to increase somewhat, to 10%-15%, in 2004.



VI. Why should Industries use business intelligence?

Business intelligence enables the industry achieve the following:

Companies achieve returns from business intelligence solutions in three main areas:

- **More efficient reporting.** Without business intelligence, many companies often have teams of employees spending time to gather, aggregate, and analyze information from different systems to provide reports to management. Business intelligence can significantly reduce the amount of time spent developing reports on different aspects of the business. What's the return? Companies can reduce employee time spend developing reports and reduce finance staff headcount or redeploy finance staff to other activities.
- **Improved information for decision-making.** Because companies can access, view, and analyze numbers that were either too unwieldy, distributed, or expensive to access, managers can get the reports they need to make effective decisions and

correct problems. What's the return? Companies could use improved reporting information to identify where they were missing revenue generation opportunities, to reduce overhead costs based on utilization, and to manage billing and accounts receivables. For example, one shipping company used business intelligence to analyze shipping information and determine where it should be charging customers more – and where it could reduce internal costs.

- **Improved customer management.** Companies can use business intelligence to identify customer and market trends and use that information for forecasting, planning, marketing, and promotions. In cases where a customer is part of a supply chain, companies can also open access to business intelligence information directly to the customer to reduce management costs and streamline interaction. Where's the return? Nucleus found companies could reduce customer support costs by providing customers with self-service access to information, or increase profits based on better customer data. For example, one bank increased its collection rate by using business intelligence to identify delinquent borrowers.

VII. Few of the Tools Used in BI:

People doing business intelligence have developed tools that ease the work, especially when the intelligence task involves gathering and analyzing large amounts of data. These are some tools commonly used for business intelligence:

- **Data warehouses :** A **data warehouse** comprises a computing system used to store information regarding an organization's activities in a database. The database design favors reporting on and analyzing the data in order to gain strategic information and to facilitate decision-making.

Data warehouses may hold large amounts of information, sometimes in smaller logical units called Data marts. Often the schemas of data marts are stored in what are known as "Star Schemas", or Dimensional Modeling form; however there is no industry standard requiring that the schemas of data marts be in any particular form. There is, in fact, some controversy about the most useful form of data mart schemas.

- **Data mining:** **Data mining** is the practice of automatically searching large stores of data for patterns. To do this, data mining uses computational techniques from Statistics and Pattern recognition.

Data mining has been defined as "The nontrivial extraction of implicit, previously unknown, and potentially useful information from data" and "The science of extracting useful information from large data sets or databases". Although it is usually used in relation to analysis of data, data mining, like artificial intelligence, is an umbrella term and is used with varied meaning in a wide range of contexts.

It is also known as **knowledge-discovery in databases (KDD)**.

- **Predictive Modeling:** **Predictive Modeling** techniques are used to build models that predict or forecast numerical outcomes such as sales volume.

- **Genetic Algorithms:** Genetic Algorithms an advanced algorithmic method can be used to solve complex optimization problems such as scheduling and logistics.
- **Decision Support System:** Decision Support System provides the decision maker with models and data to support decision-making tasks. These systems can either contain expert knowledge, which has been captured, or rules and models developed from data. These systems support delegation of decision-making authority by distributing knowledge and allow effective decision-making in very complex situations.
- **Intranet Web:** Intranet Web technologies make business information available company-wide in a format that addresses employees' needs.

VIII. What Does Typical BI Solution Deliver its Users?

Understanding BI using MICROSTRATEGY 7i (a BI solution from Microstrategy):

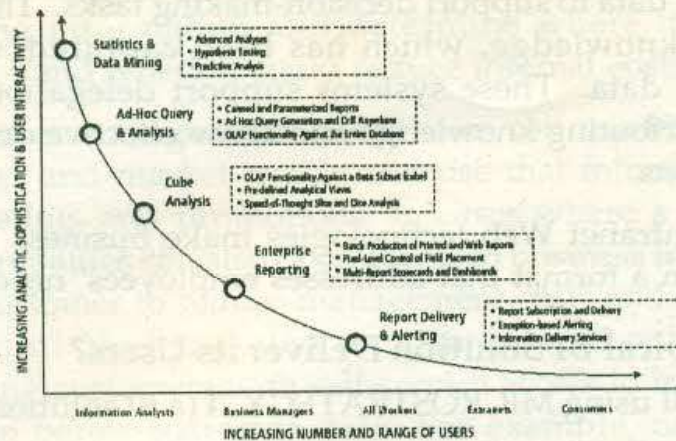
During the formative period, companies actively discovered many new ways to use their data assets for decision support, operational reporting and process optimization. And during this era of invention, BI technology vendors reacted the way software vendors always react to new evolving markets – that is, by building niche software to implement each new pattern of application that companies invented. These patterns of applications resulted in software products centered exclusively on one Style of BI, as follows:

1. **Enterprise Reporting** – Report writers were used to generate highly formatted static reports destined for broad distribution to many people.
2. **Cube Analysis** – Cube-based BI tools were used to provide simple slice-and-dice analytical capabilities to business managers.
3. **Ad Hoc Query and Analysis** – Relational OLAP tools were used to allow power users to query the database for any answer, slice-and-dice the entire database and surf down to the lowest level of transactional information.
4. **Statistical Analysis and Data Mining** – Statistical and data mining tools were used to perform predictive modeling or to discover the cause-and-effect correlation between two metrics.
5. **Report Delivery and Alerting** – Report Distribution engines were used to send full reports or alerts to large user populations based on subscriptions, schedules or threshold events in the databases.

At this point in time, most leading enterprises have purchased many different BI tool sets from many different vendors – with each tool targeted at a new BI application and each tool delivering user functionality focused on only one of the Styles of BI.

One way to look at these different Styles of BI is to place them in a two-dimensional space (Fig. 1) where the vertical axes represents the sophistication and interactivity of the analytical processes and the horizontal axis represents scale, or the size of the user

population. We can then locate each of the 5 Styles of BI in a region on the grid, as we see in the figure below.



The most sophisticated and interactive Styles of BI are used by relatively small groups of users consisting of information analysts and power users, for whom data and analysis are their primary jobs. Less interactive Styles of BI deliver basic data and results that are applicable to very large user populations ranging from senior executives all the way to staff personnel. Leading organizations have recognized the benefits of putting information into the hands of all their employees, regardless of job title or function. Only the MicroStrategy architecture can deliver all 5 Styles of BI functionality to each and every user within an enterprise, offering different functionality levels within the 5 Styles of BI tailored for each user.

IX. The Problem with Multiple BI Tools for Different Styles of BI

There are five macro forces that are obsolescing the “strategy” of isolated departmental islands of BI and the use of disparate departmental BI tools.

Problem 1. - Enterprise BI Applications Need to Access More Data and Support More Users –Departmental BI Lacks User and Data Scalability.

Problem 2. - Inconsistent Versions of the Truth Are Propagating Through the Enterprise – Multiple Islands of BI Result In Multiple Inconsistent Metadata Repositories.

Problem 3. - Users Are Increasingly Dissatisfied About Being Forced to Use Multiple BI Tools – Multiple User Interfaces Are Problematic.

Problem 4. -IT Organizations Cannot Afford the Excessive Cost of Managing Multiple BI Technologies–Disparate BI Technologies for Multiple BI Applications Are Burdensome.

X. What Should BE in Place Before Companies Invest in BI Technology?

A company embarking on a BI initiative must have a plan in place to deploy a pilot solution quickly. It is critical to not include the entire organization in the first

rollout. Because of the arduous conversations to reach agreement on what will be deployed and how, the scope must be managed or the process will become too bogged down to proceed. As the solution is completely supported by the underlying data, the data should be manageable, consistent and clean. While not a prerequisite to beginning a BI initiative, the lead-time of cleanup efforts is often lengthy and will be in the critical path.

XI. Companies Should Look for :

- Architecture that supports all 5 Styles of BI in a **mix and match** fashion, allowing customers to implement just the functionality they need, whenever they need it.
- Architecture that delivers all 5 Styles of BI through a **unified user interface** that is sample enough for novice users, and powerful enough for the most advanced users.
- Architecture that delivers all 5 Styles of BI on a **single unified backplane** that ensures rapid development time, minimum maintenance effort, a single version of the truth throughout the enterprise, and 24 x 7 operation.

Ultimately, the MicroStrategy architecture is future-proof. Companies can start small with limited functionality and limited scale, but can grow to include all BI functionality, with the highest scalability, highest performance and best reliability.

XII. Conclusion :

In today's scenario of globalization and liberalization, where the resources are limited Business intelligence can be thought of as an facilitator which enable companies to locate and utilize there resources to the fullest extent, achieve 24 x 7 operation level, know what the customer wants, how he wants and when he wants.

Business Intelligence in the world of globalization thus is a guiding light to companies, which face a tough competition from the other business competitors around the world.

ANNEXURE

Websites:

1. www.microstrategy.com
2. www.binews.com
3. www.businessintelligence.com
4. www.businessobjects.com
5. www.informationbuilders.com
6. www.intelligententerprise.com
7. www.wipro.com/itservices/datawarehouse