

# BUSINESS INTELLIGENCE

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## ABSTRACT

Business intelligence holds an important role in extracting information and manipulates the information to discover hidden trends of data . Business intelligence is the use of technology to collect and translate information to improve business effectiveness the objective is to improve the timeliness and quality of inputs to the decision process. Business Intelligence is used to understand the capabilities available in the firm; the state of the art, trends, and future directions in the markets, the technologies, and the regulatory environment in which the firm competes; and the actions of competitors and the implications of these actions. The emergence of the data warehouse as a repository, advances in data cleansing, increased capabilities of hardware and software, and the emergence of the web architecture all combine to create a richer business intelligence environment than was available previously.

Although business intelligence systems are widely used in industry, research about them is limited. The framework highlights the importance of unstructured data and discusses the need to develop BI tools for its acquisition, integration, cleanup, search, analysis, and delivery.

**KEYWORDS:** Business intelligence, Data warehouse, Data mining, Extract Transform and Load, OLAP, OLTP, Data mart.

## Introduction:

According to business intelligence is defined as the right to access the right data at the right time to make the right business decision. The fast growing competency of data generation and collection has generated vital obligations for an application of business intelligence tools. Business intelligence tools help to

intelligently and automatically transform the processed data into helpful information and knowledge. The informative data could be transformed into a beneficial guidance via visual reports, trend-reviewing and key-performance indicators. Business Intelligence (BI) is defined as the processes, technologies and tools needed to

turn data into information and information into knowledge and knowledge into plans that drive profitable business action. BI encompasses data warehousing, business analytics and knowledge management. Business Intelligence is defined as "knowledge gained about a business through the use of various hardware/software technologies which enable organizations to turn data into information". BI systems combine data gathering, data storage, and knowledge management with analytical tools to present complex internal and competitive information to planners and decision makers. Sometimes business intelligence refers to on-line decision making, that is, instant response. Implicit in this definition is the idea (perhaps the ideal) that business intelligence systems provide actionable information delivered at the right time, at the right location, and in the right form to assist decision makers. The objective is to improve the timeliness and quality of inputs to the Decision process, hence facilitating managerial work. In order to do this, effective business intelligence needs to meet four major criteria:

### 1. Accurate

It refers to the accuracy in data inputs as well as outputs.

In order to get accurate output, the data must be accurate and relevant to the questions the business is seeking to answer. It is often impractical to try to dump all the data produced by a company into an analytical model and expect it to make sense of everything from production numbers to employees' marital status. This is why human discretion is often used to select the data that is relevant to a particular problem.

### 2. Concrete Insights

Not all insights are valuable. Knowing the handedness (left or right) of the majority of your customers may be useful for a baseball glove manufacturer, but would be of less use to a shoe manufacturer. Although crunching all the data to find out something that was previously unknown can be satisfying, BI should offer concrete insights. For example, if analysis showed a sports store that many customers who purchased baseball gloves also Purchased running shoes, the owner could rearrange the store displays to cluster shoes and gloves for customer convenience, or separate them to different corners of

the store to maximize the chances of browsing.

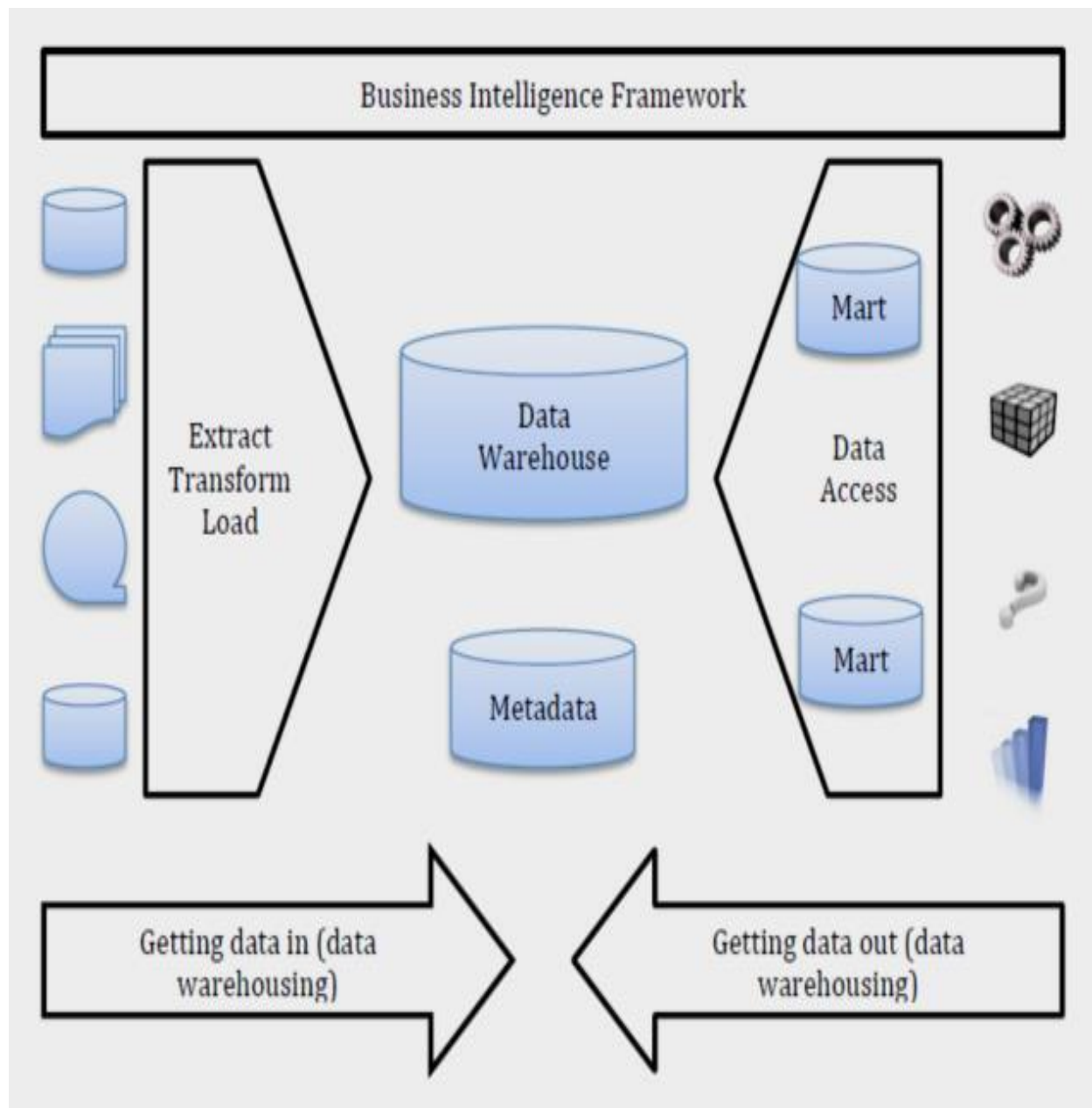
### 3. **Timeliness**

Getting accurate and valuable insight is only half the battle. Business intelligence must also be able to deliver those insights at the right time. There are two parts to timeliness: the timeliness of the data going in and the timeliness of the insights coming out. Businesses have different decision time frames depending on what they do. A retail outlet will likely want to be feeding very timely sales information into BI with the hope of getting timely insights to be implemented on a monthly, weekly or even

daily basis. Longer-term operations like an oil and gas exploration and production company may only be interested in insights on a quarterly or yearly basis.

### 4. **Actionable**

Business intelligence helps to provide insights that can be acted upon. To some extent, this means gaining an understanding of practical constraints. For example, virtually any company could become more efficient if it had unlimited capital to upgrade of all its equipment. So, good business intelligence should identify the upgrade that will produce the most return or, better yet, other utilization schemes that would make the most of existing assets.



Framework of Business Intelligence

### ETL(Extract Transform and Load):

In managing databases, extract, transform, load (ETL) refers to three separate functions combined into a

single programming tool. First, the extract function reads data from a specified source database and

extracts a desired subset of data. Next, the transform function works with the acquired data - using rules or lookup tables, or creating combinations with other data - to convert it to the desired state. Finally, the load function is used to write the resulting data (either all of the subset or just the changes) to a target database, which may or may not previously exist. ETL can be contrasted with ELT (Extract, Load, Transform) which transfers raw data from a source server to a data warehouse on a target server and then prepares the information for downstream uses.

### **Data Warehousing:**

Data warehouse is a type of transactional data specifically for structured query and transaction data specifically structured for query and analysis and is informational, analysis and decision support oriented, not operational or transaction processing oriented views data warehouse as a collection of corporate information derived directly from operational systems and some external data sources. Its specific purpose is to support business decisions, not business operations. Inmon who coined the term "data warehouse" in 1990, argues that a data warehouse is a subject oriented, integrated, time-

variant, non-volatile collection of data that is used primarily in organizational decision making. Data warehouses, targeted for decision support, are maintained separately from the operational databases. The architecture of data warehouse can take a variety of forms in practice. But before designing a data warehouse, the requirements and resources of the organization should be taken into consideration. However, some of the options of architecture from which organizations may choose under different circumstances may include: Data Mart; Central Data Warehouse; Distributed Data Warehouse; Virtual Data Warehouse.

### **Data Marts:**

Data marts or localized data warehouses are small sized data warehouses, typically created by individual departments or divisions to facilitate their own decision support activities. For example, a data mart can be created for specific products or functions, like customer management, marketing, Finance etc. One of the purposes to build a data mart is to get prototype as soon as possible without waiting for a larger corporate data warehouse, because it's small and easy to develop. But after having several data marts, organizations face operational difficulties in using them in an

overall corporate data warehouse strategy, because individual data marts are not consistent with each other.

### **Metadata:**

To understand and locate data in the data warehouse users need information about the data warehousing system and its content. This information known as metadata, data about data, includes format, encoding/decoding algorithms, domain constraints, and definitions of the data. It also includes business definitions, data quality alerts, organizational changes, business rules and assumptions, as well as other items of business interest. Metadata help the business user to understand what is available, how to access it, what it means, which data to use, when to use them, etc. to serve the needs of different groups of users. It include OLAP, Data Mining.

### **OLAP:**

Online Analytical Processing (OLAP) and data mining (DM) techniques). OLAP provide users with the means to explore and analyze large amounts of data, involving complex computations, their relationships, and visually present results in different perspectives. OLAP tool are a combination of analytical processing procedures and

Metadata browsers provide an easy to understand view of the data warehouse.

### **Data Access:**

The access component of the BI is referred to as the front end. It consists of access tools and techniques that provide a business user with direct, interactive, or batch access to data, while hiding the technical complexity of data retrieval.

The interface provides an intuitive, business-like presentation of information, friendly enough for use by a no technical person. This is accomplished by use of BI tools, a suite of software tools that presents a graphical user interface (GUI) with rich reporting and business analysis features. A variety of tools are typically used in an integrated fashion

graphical user interface. The key features of an OLAP application are: multidimensional views of data, calculation intensive capabilities and time intelligence. A multidimensional view of data that is usually used in OLAP applications provides quick and flexible access to data and information. Typical applications performed on multidimensional data views are: roll-up (data is summarized with increasing generalization), drill-down (increasing levels of detail are revealed), slice

and dice (performing projection operations on the dimensions), and pivoting . Complex analyses are possible, such as time series and model charting, forecasting, modeling, statistical, and. Analytical processing procedures represent methods of detecting different forms of information needed in the decision process.

### **Data Mining:**

Data mining is analysis of data and extracting these in such a way that they can be put to use in the areas such as decision support, prediction, forecasting and estimation. The data is often voluminous, but as it stands of low value as no direct use can be made of it; it is the hidden information in the data that is useful. Data mining, as it is also known, is the nontrivial extraction of implicit, previously unknown, and potentially useful information from data. This encompasses a number of different technical approaches, such as clustering, data summarization, learning classification rules, finding dependency networks, analyzing changes, and detecting anomalies. Data mining is the search for relationships and global patterns that exist in large databases but are hidden among the vast amount of data.



**Conclusion:**

In today's world, the quality and timeliness of business information for an organization. No business organization can deny the benefit of BI. Recent industry analyst reports show that in the coming years millions of people will use BI visual tools and analytics every day. Today's organizations are deriving more value from BI by extending actionable information to many types of employees, maximizing the use of existing data assets. BI is spreading its wings to cover small, medium and large companies, more and more analytical tools are penetrating the market to do any kind of analysis and help to make informed decision making. The rapidly changing business environment will increase the need for BI. In this paper an attempt has been made to know about the development and application of BI.

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