Comparative Business Analytics vs Business Intelligence

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Resumen

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Abstract

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I. Introduction

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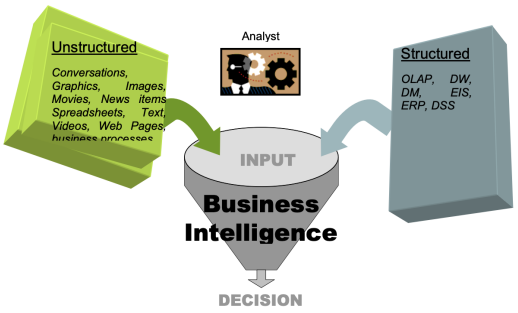
II. State of Art

i. Business Intelligence (BI)

In 1958, Hans Peter Luhn first defined Business Intelligence as the "ability to apprehend the interrelationships of facts in such a way as to guide action towards the desired objective". This author states that Business Intelligence is not only a product, but a tool that uses different technologies and in them associates and combines effective methods with certain products, to organize sets of data, whose use and interpretation is relevant to improve the profits and performance of a business, and also states that such a tool allows to build and apply mechanisms capable of accelerating certain actions and provisions on the operation of business, as well as the systematization of key information for making the right decisions[3].



Inputs to Business Intelligence Systems[4].

ii. Business Intelligence Components

Convert the organization's scattered data into information that can be useful for business intelligence, accurate decision making and the provision of the necessary tools for data analysis[3].

Main components of business intelligence such as data source:

- **Datamart**: It can be defined as a departmental data warehouse that specializes in storing data for a particular business area. It is also known as a subset of data derived from the data warehouse that is designed

to support the specific analytical requirements of a particular business unit[3].
- **Data warehouse**: Corporate database designed to manage large volumes of data from various sources or types, characterized by its ability to integrate and clean data from one or more different sources before processing them in a way that allows analysis from infinite perspectives and at high response speed[3].

iii. Business Intelligence Infrastructure

The development of business intelligence has focused mainly on three objectives: Acceleration of executive decision making, cost reduction and process automation are objectives that must be met, and for this to happen, databases need to meet the following criteria[3].

- Have a single point of immediate access to all information regardless of the source.
- Covering all business processes: multi-system and multi-application analysis.
- Possess high quality information (content and evaluate data in a flexible way).
- To provide high quality support in decision making (operational and strategic management).
- Reduce time and resources in its implementation (fast implementation and easy access and avoid laborious preparation of heterogeneous data).
- Possess high quality business information: detailed data, comprehensively compiled and presented in a multimedia manner.
- Make use of Business Intelligence and lower-level data warehousing components.

iv. Business Analytics (BA)

Business analytics is about getting useful information from business data to promote the efficiency of an Enterprise and generate more business values, and the target of business analytics is to get insight from data and support making fact-based decisions. More specifically, business analytics can be viewed as "a broad umbrella entailing many problems and solutions, such as demand forecasting and conditioning, resource capacity planning, workforce planning, salesforce modeling and optimization, revenue forecasting, customer/product analytics, and enterprise recommender systems". From the perspective of disciplines, business analytics is a branch of management science, which can be seen as an application of operation research, and a combination of knowledge of signal processing, computer science, and statistics[5].

v. Relation and difference between BA & BI

Business analytics and business intelligence are two frequently used terms. However, the relations and differences between the two are not well-understood, and opinions towards business analytics and business intelligence vary. Chae and Olson consider business analytics and business intelligence as similar terms, both reflect the use of analytical capabilities for decision support, whereas Wixom, Yen, and Relich view business analytics as a process and business intelligence as insights and business intelligence is obtained from business analytics. Gorman and Klimberg think business analytics as an extension of business intelligence by incorporating advanced statistical and operation research techniques. Varshney and Mojsilovic share the same idea that "from the managerial perspective, business analytics is an outgrowth of what is known as business intelligence"[5].

vi. Components

- **Data Aggregation**: Data is collected to one single, central location from where sorting can begin. Inaccurate and incomplete data is removed, and only usable data is left behind. Even duplicate data is checked for and removed completely. This data is collected from various sources[2].
- **Data Mining**: To further go deep into the data, Data Mining is the next step to look

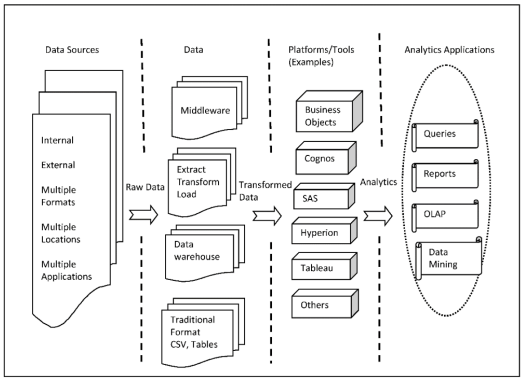
for unknown patterns and trends. For this, one must mine through a huge amount of data by creating mining models. Various statistics models are used. One of those models is classification demographics and other such parameters are used for sorting data[2].

- **Association & Sequence Identification**: These components are a pattern of consumer behavior. In the association part of the behavior, consumers buy products that are associated with each other like toothpaste and toothbrush or shampoo and conditioner.
  This form of analytics components makes it easier to understand what the consumer is going to buy next and understand their buying patterns and behavior[2].
- **Text Mining**: What consumer types or comments in blogs and other social media comments or their interaction with customer service call centers are a part of the text mining component. This data is crucial in improving customer service, it can help in the development of new products based on the data collected and help monitor competition and the developments they are making[2].
- **Forecasting**: A famous saying goes that history repeats itself, and this saying is quite true when it comes to the forecasting components. It has been observed that consumers resort to a certain behavior, specific seasons or a period. This repetitive behavior can be observed and planned for by forecasting[2].
- **Predictive Analytics**: Helps know when there is going to be a failure or wear and tear in equipment if it has been subjected to harsh conditions or has been used for a certain amount of time. It also helps classify customers in detail and make decisions based on future trend[2].
- **Optimization**: They can anticipate surges in demand and step production to maintain supply. They can competitively price their products when there is supposed to be a peak or shortage. Businesses can also create sales, offers, and discounts based on business analytics[2].
- **Data Visualization**: Data visualization is one of the most effective ways of presenting data, and business analytics are quite helpful. This visual form of data helps companies make reports and sets new goals. The visual format is a lot easier to explore, model and analyze[2].

vii. Phases

- **Descriptive Analytics**: Involves gathering, organizing, and describing the characteristics of the data being studied. Traditionally, this is known as "reporting." It is useful in describing what has happened, but it doesn't reveal why something happened or what results might happen in the future. Sales and revenue reports are examples of descriptive analytics[1].
- **Predictive Analytics**: It is concerned with predicting the future by using data from the past. Patterns and associations are established among certain variables. The likelihood of an event taking place is then predicted based on those patterns and associations. An example is credit card fraud detection. By analyzing commonalities in previous fraudulent transactions, credit card companies can detect irregularities and halt suspicious transactions before they are completed[1].
- **Prescriptive Analytics**: It anticipates what event will happen, when it will happen, and - most importantly - why it will happen. The third phase of business analytics is concerned with suggesting a decision or providing options for a course of action - much like a doctor would prescribe a specific medicine to treat an ailment. Oil and gas companies use prescriptive analytics to decide where to drill, optimize resource extraction, and minimize the impact the extraction process has on the environment[1].

viii. Architecture



III. Conclusions

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