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Data Mining: Business Intelligence, Data Integration: Different Data Analysis Methods

Vrushali A. Chavan[1]
Asst. Professor, MCA Dept.

Abstract: ***Data analysis helps for obtaining raw data and converting it into information useful for decision-making by users. Data is collected and analyzed to answer questions, test hypotheses or disprove theories. There are different technique of data Analysis which may be used for Prediction and Identification. However, many business users want to apply data analysis to business data to understand the trends, to make predictions and to improve their business decisions. It is important to know which data analysis technique should be applied when and to which kind of data.The paper provides an explanation and study on different common data analysis techniques use today in day to day life and business predictions, business decision making.***
Keywords: Data mining, Business Intelligence, Data Integration.

I. INTRODUCTION

Data Analysis is the process of extracting, compiling, and modeling raw data for purposes of obtaining constructive information that can be applied to formulating conclusions, predicting outcomes or supporting decisions in business, scientific and social science settings. Data mining is data analysis technique which involves computational process of large data sets' patterns discovery. The goal of this advanced analysis process is to extract information from a data set and transform it into an understandable structure for furtheruse.

Business intelligence covers data analysis that relies heavily on aggregation, focusing on business information. In statistical applications, some people divide data analysis into descriptive statistics, exploratory data analysis (EDA), and confirmatory data analysis (CDA). EDA focuses on discovering new features in the data and CDA on confirming or falsifying existing hypotheses. Predictive analytics focuses on application of statistical models for predictive forecasting or classification, while text analytics applies statistical, linguistic, and structural techniques to extract and classify information from textual sources, a species of unstructured data. All are varieties of data analysis. Data integration is a precursor to data analysis, and data analysis is closely linked to data visualization and data dissemination. The term *data analysis* is sometimes used as a synonym for data modeling.[1][2]

II. TECHNIQUE OR METHOD OF DATA ANALYSIS

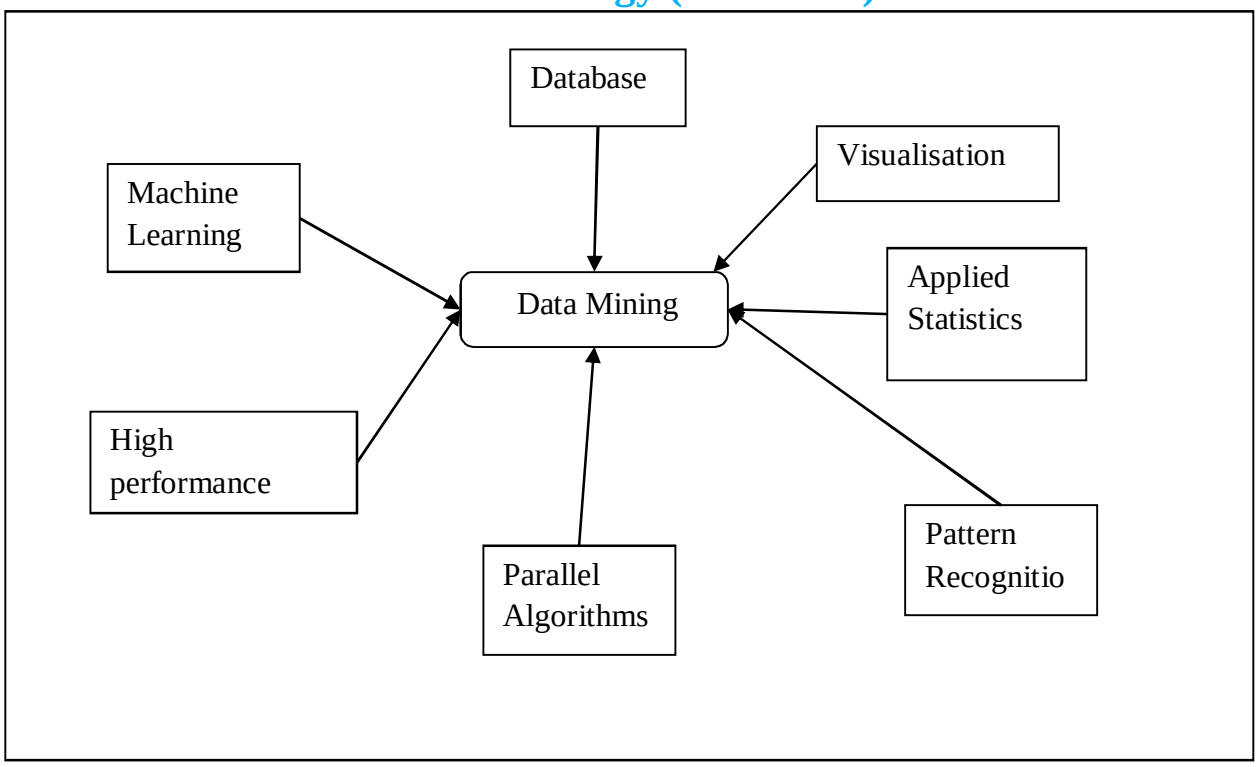
A. Data mining

Data mining, the extraction of hidden predictive information from large databases, is a powerful new technology with great potential to help companies focus on the most important information in their data warehouses. Data mining tools predict future trends and behaviors, allowing businesses to make proactive, knowledge-driven decisions. The automated, prospective analyses offered by data mining move beyond the analyses of past events provided by retrospective tools typical of decision support systems. Data mining tools can answer business questions that traditionally were too time consuming to resolve. They scour databases for hidden patterns, finding predictive information that experts may miss because it lies outside their expectations.[3]

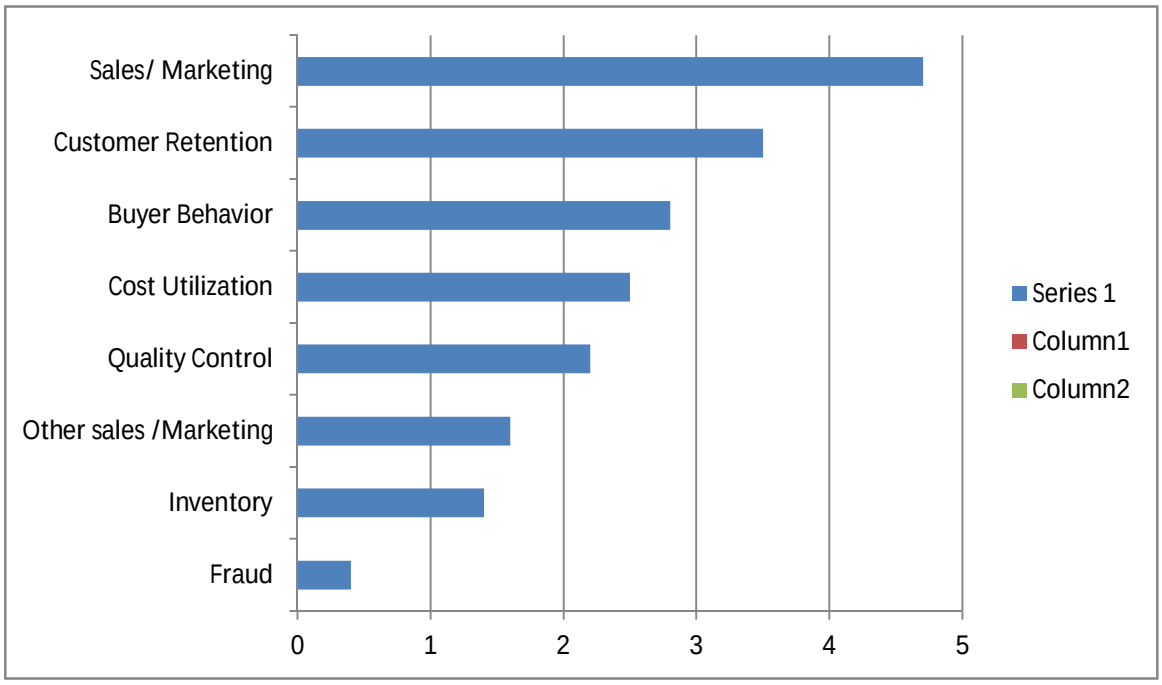
And Where Has it Come From?[5]

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Typical Applications of Data Mining [5]



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1) *Sales/Marketing*
   a) Provide better customer service
   b) Improve cross-selling opportunities (beer and nappies) – Increase direct mail response rates
2) *Customer Retention*
   a) Identify patterns of defection
   b) Predict likely defections Risk Assessment and Fraud
   c) Identify inappropriate or unusual behavior [5]

B. Business Intelligence

It is model of data analysis. Business intelligence can be beneficial for analysing internal raw data, such as turnover by department or product, and identify inefficient business processes that can be re-engineered to better suit your business needs. However, you have to ensure that your data is clean, trustworthy and of good quality for those who will use it.This business intelligence covers data management, data analysis, business data usage and business analytics. Business intelligence (BI) is an all-encompassing category of applications and technologies for gathering, storing, analysing, and providing access to data to support enterprise users in making better informed business decisions. Business intelligence applications include the activities of decision support systems, query and reporting, online analytical processing (OLAP), data management, statistical analysis, forecasting, data analytics and data mining.[4]

1) *Application of Business Intelligence*

a) *Single version of the truth*: It provides consistent information in real time across the enterprise, thereby eliminating debates on the validity of data. It also visualises information through meaningful dashboards to allow for coordinated decision-making.

b) *Metric trees:* Business performance metrics are related to KPIs and are computed at various levels within the enterprise. Metrics are linked to each other to create a metric tree, which connects the low-level performance metrics with high-level outcome measures.

c) *The golden triangle (budget, time and quality):* One can foresee impact of changes in specifications and business case. This helps to manage the trade-off between budget, time and quality.

d) *Business modeling:* It captures business dynamics in robust and transparent models.These are useful for sensitivity analysis, simulation and scenario-based decision-making.

C. *Data integration:* Data integration is the process of combining data from many different sources into an application. You need to deliver the right data in the right format at the right timeframe to fuel great analytics and business processes. That's why business Integration is an term of data analysis. A data integration usually involves the following steps:

   1) Accessing data from all its sources and locations, whether those are on premises or in the cloud or some combination of both.
   2) Integrating data, so that records from one data source map to records in another (e.g., even if one dataset uses "lastname, firstname" and another uses "fname, lname," the integrated set will make sure both end up in the right place). This type of data preparation is essential for analytics or other applications to be able to use the data with any success.
   3) Delivering integrated data to the business exactly when the business needs it, whether it is in batch, near real time, or real time.
   4) Data integration is generally implemented in data warehouses (DW) through specialized software that hosts large data repositories from internal and external resources. Data is extracted, amalgamated and presented as a unified form. For example, a user's complete data set may include extracted and combined data from marketing, sales and operations, which is combined to form a complete report.

      An example of data integration in a smaller paradigm is spreadsheet integration in a Microsoft Word document.

III. CONCLUSIONS

Today, most enterprises are actively collecting and storing data in large databases. Many of them have recognized the potential value of these data as an information source for making business decisions. This paper conclusion that data mining, Business Intelligence, Data integration are the most use data analysis technique or method that are use in day today life for data prediction, decision making process. (eg.Business prediction,Business decision making)This paper performs data analysis techniques or

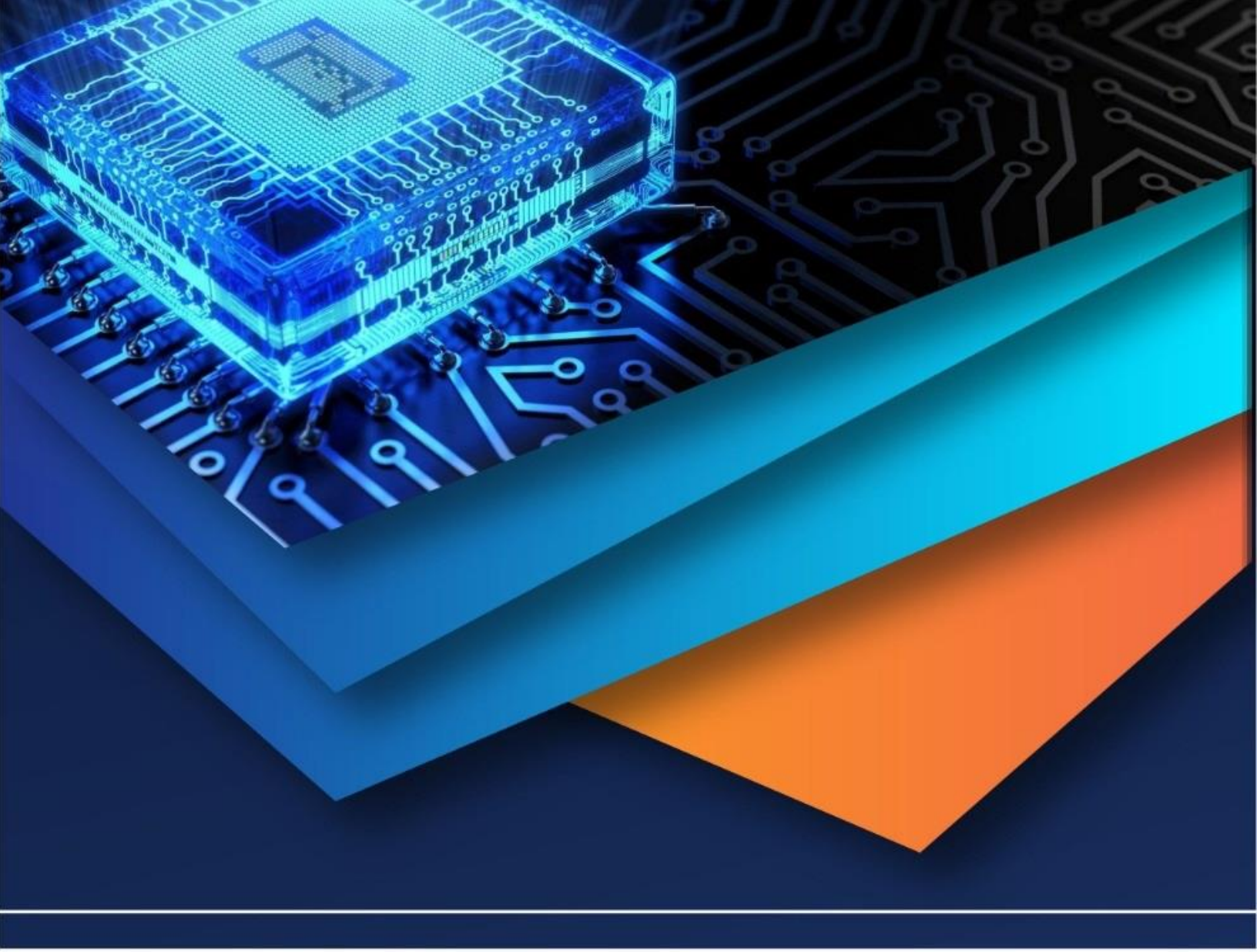
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method and highlights the application of technique or method which proofs that which data analysis technique should be applied when and to which kind of data

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