Business Intelligence

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DATA MINING AND WAREHOUSING

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What even is
Business Intelligence ?

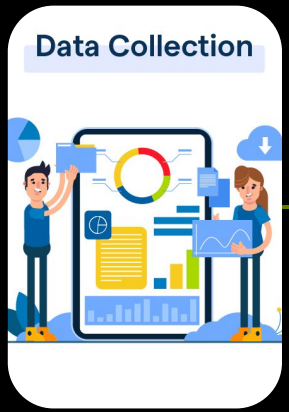
What it is:

Business Intelligence (BI) refers to the process of collecting, storing, and analyzing data from business operations to support decision-making.

It integrates data mining, data warehousing, and analytics to provide actionable insights.

What its not:

It’s not a particular tool or software but rather a process, where said process can involve usage of certain tools or software.



Data Collection

Gathering raw data from multiple sources.

Data Integration

Cleaning, transforming, and consolidating data.

Data Analysis

Applying techniques like data mining and statistical modeling.

Data Visualization

Presenting insights in visual formats.

Decision Making

Using insights for strategic and operational decisions.

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Components of BI

Data Sources

- Data sources are systems like ERP (Enterprise Resource Planning), CRM (Customer Relationship Management), IoT devices, and external databases that generate raw data.

- These diverse sources provide the foundation for BI, capturing information from operational, transactional, and external environments.

Data Warehouse

- A data warehouse is a centralized repository where data from multiple sources is stored and organized for analysis.
- It enables historical data storage, ensuring a "single source of truth" for consistent and accurate reporting.

ETL Process

- The ETL process involves **Extracting** data from sources, **Transforming** it into a usable format, and **Loading** it into a data warehouse.
- It ensures clean, accurate, and structured data for meaningful analysis.

Data visualization

- BI tools like Tableau, Power BI, and QlikView help analyze, visualize, and report data insights effectively.
- They offer user-friendly interfaces to explore data, create dashboards, and generate actionable reports.

Analysis and Decision Making

- Analytics in BI includes **Descriptive Analytics** (what happened?), **Predictive Analytics** (what will happen?), and **Prescriptive Analytics** (what should be done?).

- These methods turn data into insights, supporting informed and strategic decision-making.

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Importance Of BI

Thought Experiment

You are a top level exec at a franchisee.

Dal-Dhatini Supermarket Chain

Outlet 1:
Location = Dhobighat
Infrastructure within 1km radius =
[
  3 schools,
  2 Hospital,
  3 Gym,
 ...
]
Population within 1km radius = 100,0 00
Population ratio (M:F) within 1km radius = 55000: 45000 = 1.2

Customer x: [Ram, 23 years ...]
Purchase history:
[
  Sun: 1dzn banana,
  Mon: x,
  Tue: 1dzn banana
  Wed: x,
  Thur: 1dzn banana,
  Frid: x,
  Sat: Peanut Butte
]

Similar buying pattern for 500 other customer.

What is the likelihood, that Ram hits the gym 💪 ?

Would it be a profitable decision to sell protein powder in that outlet?

Would it be a profitable decision to sell protein powder all outlets?

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Importance Of BI

- **Data-Driven Decisions**: BI empowers businesses to make informed, strategic decisions based on accurate and real-time data.
- **Improved Efficiency**: Automates data analysis and reporting, saving time and reducing manual errors.
- **Performance Monitoring**: Tracks key performance indicators (KPIs) to evaluate and improve business performance.

- **Cost Optimization**: Highlights inefficiencies and areas for cost reduction, optimizing resource utilization.
- **Enhanced Customer Insights**: Analyzes customer behavior and preferences to improve services and build stronger relationships.
- **Competitive Advantage**: Identifies market trends and business opportunities, helping companies stay ahead of competitors.

Dhanyabadd