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Course

Name ⇒ BCA Cyber security

Topic ⇒ Introduction to Data
Driven Decision making

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Assignment → 1

- 1) Explain the role and importance of data in modern decision making
- 2) A Data's role in modern decision-making is to provide objective insights and evidence that guide choices, moving beyond intuition to improve performance, optimize operations and drive growth.

Role of data in decision-making

- Provides objective insights :- Data allows for decision to be based on facts and analytics rather than gut feelings, leading to more informed and less biased outcomes.
- Enables performance optimization :- Business can analyze data to improve efficiency, reduce wasted resources, and fine-tune operations in areas like marketing, supply chain, and customer strategies.
- Quantifies intangible elements :- Data makes previously intangible aspects of a business, like customer satisfaction or employee engagement, quantifiable and measurable.

Importance of data-driven decision-making

- Drives business growth and profitability: Informed decisions based on data lead to sustainable growth and a strong bottom line.
- Increases competitive advantage: Companies that use data effectively can make faster, more strategic decisions, giving them a significant edge over competitors.
- Reduces risk: Data analysis helps identify potential risks and obstacles, allowing businesses to mitigate them before they become major problems.

2) Differentiate between descriptive, predictive, and prescriptive models.

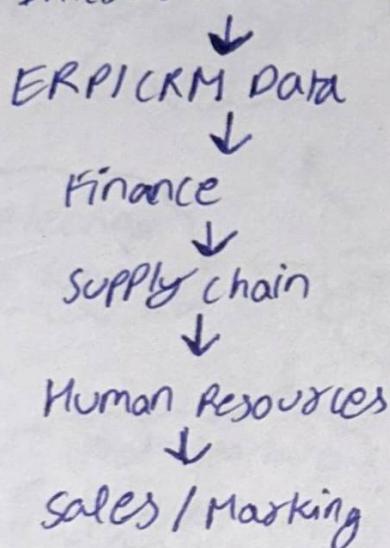
Descriptive analytics: Descriptive analytics looks at data statistically to tell you what happened in the past. Descriptive analytics helps a business understand how it is performing by providing context to help stakeholders interpret information.

Predictive analytics: Predictive analytics takes historical data and feeds it into a machine learning model that considers key trends and patterns. The model is then applied to current data to predict what will happen next.

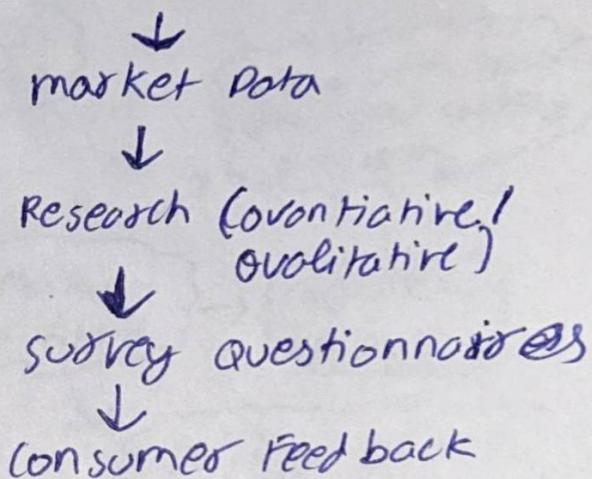
Prescriptive analytics ÷ Prescriptive analytics takes predictive data to the next level. Now that you have an idea of what will likely happen in the future, what steps should you do? It suggests various courses of action and outlines what the potential before each.

3) Recognize internal and external Data sources in an organization

Ans Internal Data sources



External Data sources



Internal Data ÷ Data generated and stored within the organization.

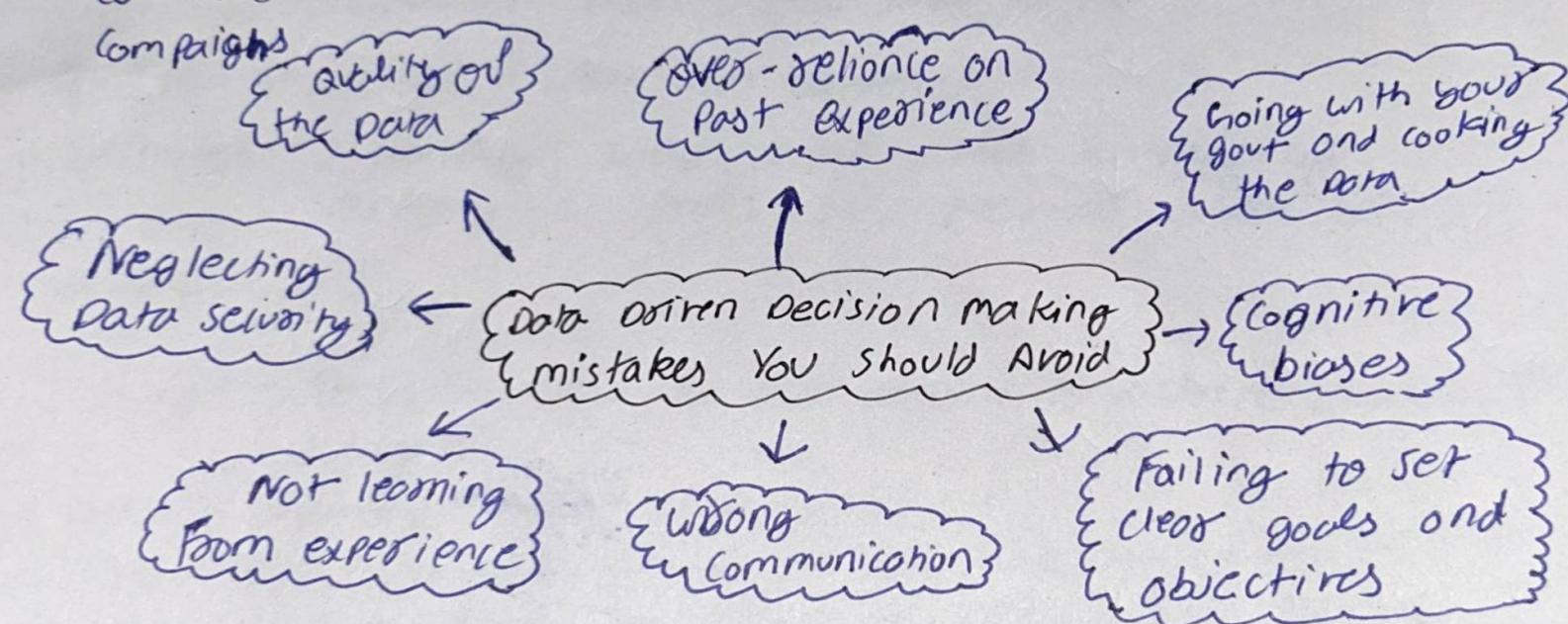
External Data ÷ Information collected from sources outside the organizations

4) Develop a data-informed mindset for problem-solving
Developing data-informed mindset for problem-solving involves cultivating specific personal traits and adopting a structured, evidence-based process. This approach shifts decision-making from intuition and assumptions to being rooted in facts and evidence.

Assignment Tasks

Task 1: - Describe a real-world scenario where decision are made using data (e.g. marketing, education, health care)

In a real world scenario, a retail company used sales data to decide on its marketing strategy. By analyzing which products sells well and in which regions, the company can segment its customer base and create targeted campaigns.



Task 2: Compare and contrast descriptive, predictive, and prescriptive models using examples.

Descriptive models explain what happened, predictive models forecast what might happen, and prescriptive models recommend what to do. Descriptive models use past data for reports and dashboards, predictive models use historical data to forecast future outcomes, and prescriptive models use optimization to suggest the best courses of action.

Predictive models

Goals :- To Forecast future outcomes based on historical Data
Question answered :- "What could happen?"
Examples :- Estimating market demand for a product during the upcoming holiday season

Descriptive models

Goals :- To understand past events and trends

Question answered :- "What has happened?"

Examples :- A monthly sales report that summarizes performance from the previous month

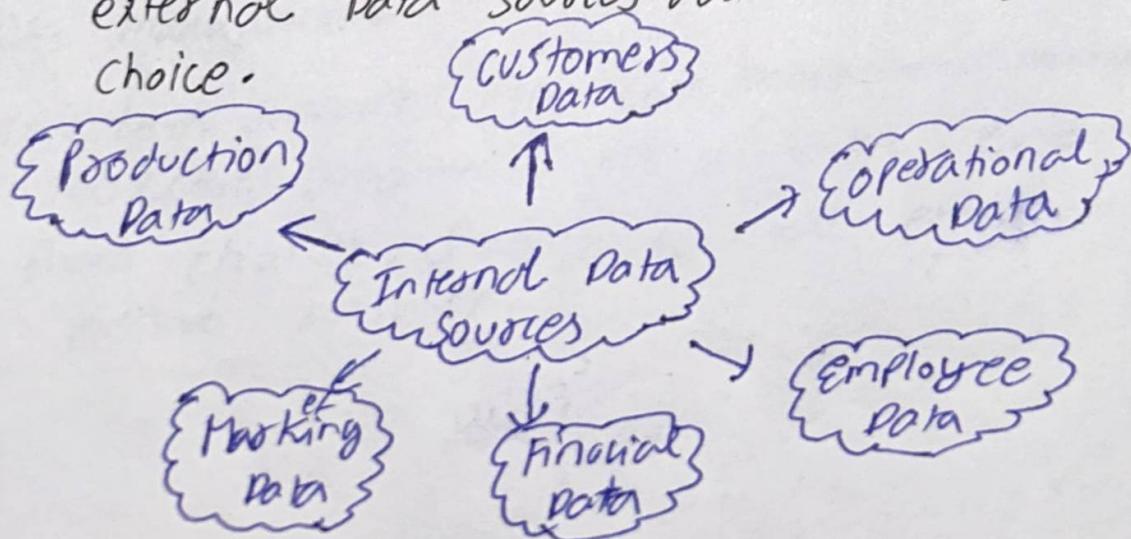
Prescriptive models

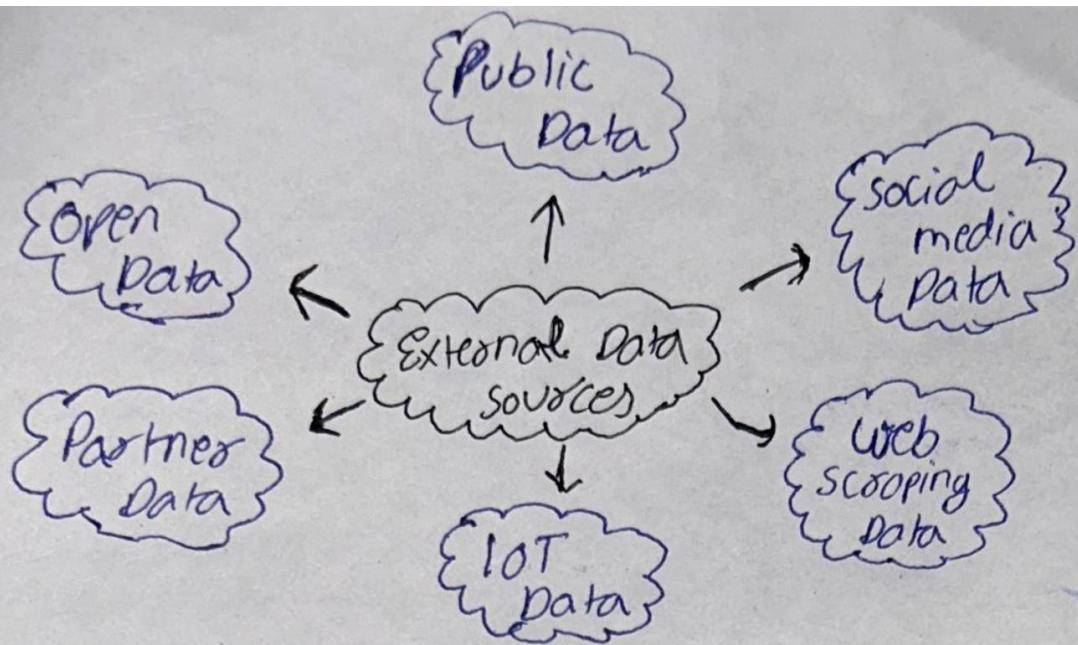
Goals :- To recommend the best actions to achieve a desired outcome

Question answered :- "What should we do?"

Example :- Recommending the optimal inventory levels for a store to minimize costs while meeting predicted demand.

Task 3:- List and categorize at least 5 internal and 5 external data sources for a company of your choice.





Impact on Daily life

In daily life, a data-driven approach involves using personal data (e.g., fitness tracking, financial records, time management logs) to make informed choices.

- Personal Finance,
- Health and wellness.
- Time management

Impact on Business.

- Strategic decision making
- Optimized operations
- Enhanced customer experience
- Risk management

In both scenarios, the core benefit is moving from subjective judgements to objective, evidence-based choices, leading to more predictable and positive outcomes.