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COURSE → Foundations of data driven decision making

SECTION → 'c'

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SEMESTER → 1st

FACULTY → Mr. SATINDER SINGH PAL.

ASSIGNMENT-1

Learning Objectives :-

- Explain the role and importance of data in modern decision-making.

- Differentiate between descriptive, predictive and prescriptive models.

- Recognize internal and external data sources in an organization.

- Develop a data-informed mindset for problem solving.

Task 1 → Describe a real-world sceneria
decision are made using data (eg → marketing
education, healthcare)

1) Marketing

A company launching a new product compaign
- Data used : customer demographics, purchase history,
  website clicks and social media engagement

- How data helps:
  Marketing team analyses customer data to
  identify which age group or region is most
  interested in their product.

They notice that 70% of the clicks or from
users aged 18-25 on Instagram.

Based on this, they allocate more budget to
Instagram ads and create youth-focused content.

- Decision Made:
  Invest more in social media ads targeted
to young audiences rather than traditional T
and newspaper ads.

2. Education

Impact student performance in a university

Data used:
Student attendance records, grades, participation in online learning platforms, and feedback surveys.

How data helps:
The faculty identifies student whose attendance drops below 60% and whose test scores are declining

Data analysis shows that these students often perform poorly in final exams.

The university launches an early intervention program — offering tutoring or counselling to those students.

Decision Made:
Use predictive data analytics to help at-risk students before exam.

3. Healthcare:
predicting and preventing readmissions.

- Data used:
Patient medical history, lab reports, medication records, and previous hospital visits.

- How data helps:
Hospitals use data analytics to identify patients with chronic diseases (like diabetes or heart failure) who are likely to be readmitted.

They then schedule follow-up calls and provide home-care support to those patients.

Decision Made:
Focus preventive care resources on high-risk patients, improving health outcomes and reducing cost

Task 2 → Compare and contrast decriptive predictive and prescriptive models using examples.

1) Descriptive Model
   purpose: To summarize and understand past data - what has already happend.

   Example:
   A retail company analyses last year's sales data to find which products sold the most during festive season.

   Use:
   It helps in identifying trends, patterns and relationships in historical data.

   Key question: "What happened"

2. predictive Model:
   purpose: To forecast future outcomes using historical data.

   Example:
   An e-commerce site uses customer purchase data to predict which products a customer might buy next.

   Use:
   It estimates what is likely to happen based o

pattern and statistical models.

question:
"What could happens"

scriptive Model.
purpose: To suggest the best course of action based on predictive insights.

Example:
A delivery company uses route data and traffic patterns to recommend the most efficient delivery path to drivers.

Use:
It only predicts outcomes but also recommends actions to achieve the desired result.

Key question:
"What should we do".

Task 3 → List and categorize atleast 5 internal and 5 external data sources for a company of your choice.

Internal data sources (within the company)

1) Sales Transaction
Records of all purchases made on Amazon's platform includes product details, price quantity, payment method.

2) Customer accounts
User profiles containing demographic data, prefer to browsing history and saved items.

3) Website analytics:
clickstream data showing how customers navigate through amazon's website on app.

4) Inventory and supply chain data.
Information on stock levels, ware house location and product delivery times.

5) Customer service Interactions
Emails, chats and call logs used to analyze customers satisfaction and common complaints.

Task - Reflect on how adapting a data-driven approach can improve decision quality in daily life or bussiness.

Adapting a data-driven approach means making decision based on facts, statistics and analysis rather than intution or guess work. In both daily life and business, it leads to more accurate, efficient and confident decisions.

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In daily life, data can guide personal choices tracking spending habits helps individual create better budgets and save more efficiently. Fitness apps collect health related data helps makes informed decision related to exercise and rest.

Overall using data ensures that decisions are based on evidence rather than assumptions.

Data driven approach turns information to Insights and insight into better actions.

External data sources (outside the company)

1) Social media data
Information from platform like Twitter, Instagram about customer opinions and trends.

Market research reports:

Industry data from external agencies about competitor performance, pricing and consumer behaviour.

Government data:
Public records such as economic indicators, tax regulations and import/export statistics.

Third party review sites:
Data from sources like trustpilot or consumer reports showing customer reviews and ratings.

Advertising platforms
Data from googles Ads or Meta Ads about ad performance, impressions, and click-through rates.