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K.R. Mangalam University

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Subject : foundation of Data-Driven Decision-Making

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Assignment Task 1

1. Task1: describe a real-world scenario where decision are made using data (eg, marketing, education, healthcare)

In the healthcare industry, data plays a vital role in improving patient care and hospital efficiency. Hospital and clinics collect large volumes of data such as patient demographics, medical history, lab test results, and treatment outcomes By analyzing this data, healthcare professionals can make informed decision about diagnosis, treatment and resource management.

for Example, hospitals use predictive analytics to identify patients at risk of developing chronic diseases such as diabetes or heart disease. By examining previous medical records and life-style data, algorithms can predict which patients are more likely to require medical attention Doctors then design personalized treatment plans or preventive measure for these patients.

This use of data improves patient outcomes, reduces unnecessary hospital readmissions, and lowers healthcare costs.

Benefits.

* Improved patient care and safety.
* Efficient resource allocation.
* Early detection and prevention of diseases.

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★ Cost reduction and improved hospital management.

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

(a) Descriptive models.

★ It analyze past data to understand what has happened.

★ They summarize and describe the characteristics of a dataset.

★ Purpose - Answer the question "What happened"

★ Key features - Uses reports, dashboards, and data visualization.

★ Example - Monthly sales reports showing which products performed best.

(b) Predictive model.

★ It use historical data to forecast future outcomes.

★ They identify patterns and relationship in the data to make predictions.

★ Purpose - Answer the question "What is likely to happen?"

★ Key features - Uses regression, forecasting and data mining techniques

★ Example - A bank predicting which customers are likely to default on loans based on their past data.

(c) Prescriptive model

★ It go a step further by recommending actions to achieve a desired outcome.

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★ They use optimization and simulation to suggest the best course of actions.

★ Purpose - Answre the question. "What should we do?"

★ Key features - Uses optimization and simulation algorithms to recommend action.

★ Example - A ride-sharing app like uber recommending the best route or surge pricing during high demand.

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

Example company: Amazon

(a) Internal data sources

★ Sales Transactions - Data from customer purchases showing what products are sold and when.

★ Customer profiles - information from users accounts such as age, gender, and purchase preferences

★ Inventory management system - Tracks stock levels, supply chain, and product availability.

★ Customer feedback and reciews - Helps understand customer satisfaction and areas for improvement.

★ Websites clickstream data - Captures how users interact with the websites, including searches and clicks.

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(5) External data sources.

★ Social Media Platforms - Customer opinions, brand mentions and senti-ment data from platfor-ms like X (Twitter) and instagram.

★ Market research reports - Industry trends and competitor performance reports from external research firms.

★ Competitor pricing data - Price comparisons from e-commerce rivals such as flipkart or walmart.

★ Economic data - Government statistics on inflation, GDP growth, and consumer spending behavior.

★ Third-party delivery and logistics data - Information from external partners that affects shipping times and costs.

4 Task 4: Reflect on how adopting a data-driven approach can improve decision quality in daily life or business.

★ In Business:
Companies that analyze data gain insights into customer behavior, market trends and operational performance for example, a retail company can use customer purchase data to identify which products are most popular.

★ In daily life:
Individuals can use data from mobile health apps or budgeting tools to track fitness