Unit 6

Computer Tools in Data Processing and Application

https://github.com/sanjeevlcc/notes_2081/tree/main

6.1. Basics of Data Analysis (Spreadsheets, Power BI)

6.2. Data Visualization (Charts, Graphs, Scatter Plots)

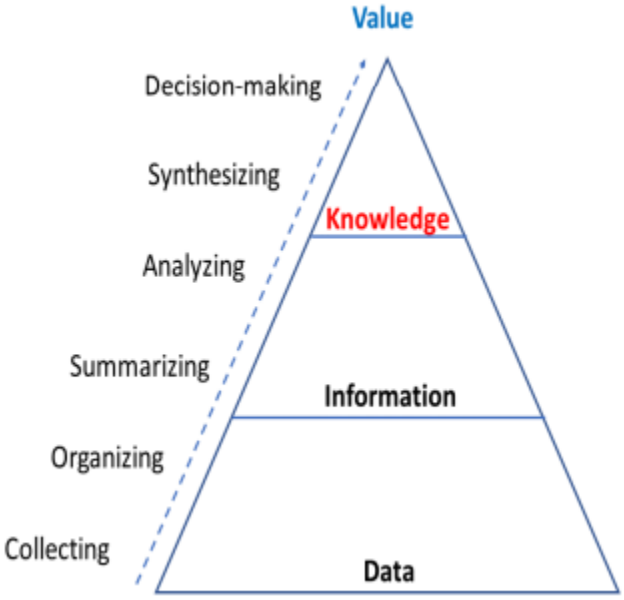
6.3. Collaboration Tools (Google Workspace, Microsoft Teams)

6.4. Using Computer Tools for Business Scenarios (Report writing, data extraction and presentation)

* *Tools for creating business reports and summaries*
* *Tools for financial data analysis and business analytic*
* *Tools for Market Trends analysis and visualization*
* *Tools for scheduling and monitoring*

6.1. Basics of Data Analysis (Spreadsheets, Power BI)

Data and Knowledge Management



- Data and knowledge management involve the processes and systems used to organize, store, and retrieve information, enabling organizations to make data-driven decisions and leverage knowledge effectively.
- Data and knowledge management (DKM) systems collect, manage, and provide controlled access to data and knowledge resources.
- These systems may also provide critical analytical and visualization capabilities to support research and decision processes.
- Data within the DKM may be at any stage of its lifecycle.
- https://github.com/sanjeevlcc/cnlabs/tree/main/Mphil-ICT/Mphil-ICT/RM/Maha%20Kumbh%20Mela%202025

    - **Data**: Raw facts and figures without context
        - (e.g., 100, "John").
    - **Information**: Processed data with meaning
        - (e.g., "John scored 100 in mathematics").
    - **Knowledge**: Insights derived from information to guide decisions.

        - **Example:**

            - **Data: "500 units sold."**

            - **Information: "500 units of product X were sold in region Y last quarter."**

            - **Knowledge: "Product X has high demand in region Y during the summer."**

What is Data Analysis?

Data analysis is the process of inspecting, cleaning, transforming, and modeling data to extract meaningful insights, support decision-making, and identify patterns or trends. It involves using statistical, mathematical, and computational techniques to interpret and derive conclusions from data.

Example of Data Analysis

https://github.com/sanjeevlcc/notes_2081/blob/main/BBA_1_Information_Technology_For_Business/Assignment/Data_Analysis_Tool.ipynb

Scenario:
A retail company wants to understand customer buying patterns to improve sales. They analyze customer purchase data from the last year.

Steps in Data Analysis:

1. **Data Collection:** Gathering data from sales transactions, customer demographics, and online shopping behaviors.
2. **Data Cleaning:** Removing duplicate records, handling missing values, and correcting errors.
3. **Exploratory Data Analysis (EDA):** Identifying patterns, trends, and outliers using summary statistics and visualizations (e.g., bar charts for best-selling products).
4. **Data Transformation:** Creating new metrics, such as customer lifetime value (CLV) or average purchase frequency.
5. **Modeling & Interpretation:** Using statistical models or machine learning to predict future sales or segment customers into groups.
6. **Decision Making:** Based on insights, the company offers personalized discounts, adjusts inventory, or improves marketing strategies.

Meaningful Insight
From the analysis, the company discovers that:

- **Peak Sales Time:** Most purchases happen between 6-9 PM.
- **Top Customers:** 20% of customers contribute to 80% of revenue (Pareto principle).
- **Product Trends:** Seasonal products (e.g., winter jackets) see a sales spike in October-December.
- **Marketing Strategy:** Personalized email campaigns increase customer retention by 15%.

By leveraging these insights, the company can optimize marketing, manage inventory better, and boost sales.

- **Spreadsheets (Excel, Google Sheets)**
    - Used for organizing, analyzing, and storing data.
    - Features: Formulas, Pivot Tables, Data Validation, Conditional Formatting.

- Applications: Financial analysis, budgeting, sales tracking.

- **Power BI**
  - A business analytics tool for interactive visualizations and business intelligence.
  - Features: Dashboards, Data Modeling, AI-Powered Insights.
  - Applications: Real-time reporting, predictive analytics, KPI monitoring.

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Q/A

Fill in the Blanks

Multiple Choice Questions (MCQ)

Short Questions

Comprehensive Questions

Answers

Fill in the Blanks

Multiple Choice Questions (MCQ)