

# Study on the Applications and Impact of Data Analysis in Real-World Decision- Making Systems

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**Abstract:** *This research paper focuses on how data analysis helps turn raw and unorganized data into useful information that supports better decision-making. It explains how data is used in different areas like business, healthcare, education, and online shopping (e-commerce). The paper covers popular techniques such as Exploratory Data Analysis (EDA), basic statistics, and predictive models to find patterns and trends in data. The study uses real-world datasets and Python tools like Pandas, NumPy, Matplotlib, and Scikit-learn to perform the analysis. These tools help in cleaning the data, visualizing it, and building models to make future predictions. We also discuss some common problems in data analysis, like dealing with missing or incorrect data, privacy issues, and the need for human judgment when reading the results. Overall, the findings show that data analysis saves time, improves planning, and helps in making smarter decisions. However, it still needs skilled students or analysts to check the results properly and make sure they are accurate and useful.*

**Keywords:** Data Analysis, Decision Making, Predictive Analytics, EDA, Data Science, Python, Business Intelligence

