**Case Study: Predicting Company Bankruptcy Using Financial Data**

**Objective:** To perform an in-depth analysis of a financial dataset to predict the likelihood of a company going bankrupt. The analysis involves data preprocessing, exploratory data analysis (EDA), hypothesis testing, feature engineering and selection, and applying machine learning techniques for classification.

**Tasks:**

1. **Data Understanding and Preprocessing:**
   * Load and inspect the dataset.
   * Handle missing values appropriately.
   * Detect and handle outliers.
2. **Exploratory Data Analysis (EDA):**
   * Generate descriptive statistics.
   * Visualize feature distributions and target variable.
   * Analyze relationships between features and the target variable.
3. **Hypothesis Testing:**
   * Perform hypothesis testing to identify significant features influencing bankruptcy.
4. **Feature Engineering and Selection:** 
   * Create new features to enhance predictive power.
   * Use dimensionality reduction techniques if necessary.
   * Select relevant features using methods like RFE or feature importance.
5. **Modeling:**
   * Split the data into training and testing sets.
   * Apply Logistic Regression for classification.
   * Evaluate model performance using appropriate metrics.
6. **Model Interpretation and Insights:**
   * Interpret model coefficients to understand feature impact.
   * Summarize key insights and discuss implications for financial risk management.
   * Provide actionable recommendations.

**Deliverables:**

* Detailed report of the analysis.
* Python code used.
* Supporting visualizations and tables.
* Presentation summarizing findings and recommendations.

**Dataset:**

* Provided financial dataset with 96 columns (95 features and 1 target variable).
* Target variable: Bankrupt? (1 for bankruptcy, 0 for non-bankruptcy).