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Term Project Outline

Loan Default Risk Predictor –
A Machine Learning-Based Approach

MSBA 307

1. Literature Review
    a. *Modeling Money Attitudes to Predict Loan Default* by Sunil Bhardwaj* and Kaushik Bhattacharjee**
        i. Classifies loan defaulters and non-defaulters according to personality traits
        ii. Sought to understand root cause of defaulters' behavior
        iii. Used attitude and perceptions of defaulters as independent variables
        iv. Survey occurred among two metropolitan MNC banks in India
        v. Results and model used to assist loan processing decision making
2. Problem
    a. '21 Bank card default rate ~3.1%
    b. '22 Bank card default rate ~2%
    c. 10-Year bank card default rate ~2-4.5%
    d. Organizations such as Fitch Ratings attempt to forecast defaults
    e. How do we create a mechanism that enables creditors to assess creditworthiness in an objective manner?
    f. US Consumer protection laws
        i. Fair Credit Reporting Act
        ii. Equal Credit Opportunity Act
3. Abstract
    a. Machine Learning Implementation Use Case
    b. Develop machine learning model that enables creditors to objectively assess credit risk
4. Dataset
    a. Dataset derived from www.kaggle.com
    b. Contains 850 observations
    c. The model will use sterilized personal financial data
    d. 8 independent variables
        i. Age
        ii. Education
        iii. Employed Years
        iv. Years at Address
        v. Income
        vi. Debt-to-Income Ration
        vii. Credit-to-Debt Ratio
        viii. Other Debt Ratio
    e. 1 binary dependent variable
        i. Default
5. Methodology
    a. Perform exploratory data analysis
    b. Cleanse Data as needed
    c. Outcome will be binary, 1 if default, 0 if no default
    d. Perform Logistic Regression
        i. Create train_test_split variables

    e. Conduct performance evaluation
        i. Implement Confusion Matrix
6. Results
    a. Accuracy
    b. Precision
    c. Recall
    d. True Positives
    e. False Positives
    f. True Negative
    g. False Negative
7. Conclusion
    a. Recommendations
    b. Approvals

References

Bhardwaj, S., & Bhattacharjee, K. (2010). Modeling Money Attitudes to Predict Loan Default. IUP Journal of Bank Management, 9(1/2), 12–20.

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