LITERATURE REVIEW

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The project "Identifying key predictors of loan defaults", investigates the different factors that can predict loan repayment difficulties that can help lenders identify key variables that can detect signs of future loan defaults. This literature review aims to collect informative articles to deepen the understanding of factors predicting loan defaults and the intricate connections between these factors and default occurrences. The selected articles provide meaningful insights and explore multiple variables, examining the ways in which these elements influence loan default scenarios.

Who Experiences Default?: During the year 2021, a survey conducted by The Pew Charitable Trusts highlights some factors that might affect the likelihood of loan defaults. The article explores various academic, financial, and demographic aspects that can lead to default. The study shows that defaults are more common among specific groups, including Black and Hispanic borrowers, women, middle-aged adults (ages 45-59), those with disabilities, and people who are widowed, divorced, or separated. Financial vulnerabilities, such as lower earnings, lack of assets, and unstable employment, also increase the likelihood of default. Educational background is influential as well—borrowers who left college without completing their degree, studied part-time, or attended exclusively online are at higher risk. This data emphasizes the importance of focused support for groups most likely to experience repayment challenges.

Loan Default Prediction with Machine Learning: The study investigates machine learning's role in predicting loan defaults, focusing on the potential of various algorithms to improve credit risk assessment. Key factors analyzed include demographic and financial characteristics, such as income and employment status, alongside loan attributes like interest rates and repayment schedules. Four machine learning models—Logistic Regression, Decision Tree, Random Forest, and XGBoost—were tested, with XGBoost emerging as the most accurate for predicting defaults. Himberg found that the five most important variables in predicting loan defaults, ranked by importance, are the years worked, loan-to-value ratio (LTV), years since phone was changed, the goods that were purchased with the loan, and loan annuity. The study emphasizes the importance of using data-driven approaches in financial decisions, suggesting that incorporating borrower profiles and credit history can enhance risk management.

Determinants of Mortgage Default and Consume Credit Use: The Effects of Foreclosure Laws and Foreclosure Del: The article examines factors influencing mortgage default and their effects on other credit types. High loan-to-value (LTV) ratios are strongly linked to increased default risk, particularly for underwater borrowers. Borrowers with nonrecourse loans, where lenders cannot claim other assets, are more likely to default as the financial repercussions are lower. Additionally, borrowers under financial stress prioritize credit card and auto loan payments over housing debt to preserve access to essential credit and maintain liquidity. This behavior reflects strategic decision-making to manage credit during times of financial hardship. The findings highlight how borrowers' repayment priorities and loan structures influence default risks, offering insights for lenders to refine credit assessment strategies.

Effects of Geographical Location on MFI Lending Behaviour in Developing Countries: The thesis explores the impact of geographical factors on microfinance institutions' (MFIs) lending strategies in developing nations, using data from 443 MFIs in 81 countries. It highlights how regional and national differences, such as economic conditions and institutional frameworks, influence lending practices and loan performance. In areas with better institutional quality, MFIs successfully reach low-income borrowers, reducing default risks. Meanwhile, rural growth and technological advancements, like mobile phone use, enhance access to credit and borrower communication. However, regions like Eastern Europe and Central Asia exhibit stricter lending practices, possibly due to higher perceived risks. This study emphasizes the importance of location and institutional support in shaping MFI operations and managing credit risk, offering valuable insights for improving financial outreach and minimizing defaults.

Efficacy of Industry Factors for Corporate Default Prediction: In this article, Khushbu Agrawal and Yogesh Maheshwari examine the role of industry-specific risks in predicting corporate defaults using data from publicly listed Indian firms. By introducing an "industry beta" metric—calculated from the relationship between a firm's stock returns and its industry index—the study reveals that firms with higher sensitivity to industry fluctuations are at greater risk of default. Logistic regression and discriminant analysis confirm industry beta as a significant predictor, capturing risks beyond traditional firm-specific financial ratios. The findings highlight that firms are uniquely impacted by their industry's volatility, emphasizing the importance of accounting for industry dynamics in credit risk assessments. This approach broadens default prediction models, offering valuable insights for lenders and investors to better evaluate risks associated with specific sectors.

In summary, this literature review provides a solid basis for understanding loan default metrics and explores key factors linked to predicting payment difficulties among borrowers. By looking at different variables that are related to borrowers' history and background, we can establish patterns that will help predict future default occurrences. By using data from the aforementioned variables, our goal is to train our model to effectively identify and predict borrowers' future payment defaults, preempting lenders from granting loans to potential default borrowers.

References:

Who Experiences Default? (2024, March). https://www.pewtrusts.org/en/research-and-analysis/data-visualizations/2024/who-experiences-default

Himberg, T., Wang, X. (2021, March 12). *Loan Default Prediction with Machine Learning*. https://www.doria.fi/bitstream/handle/10024/182846/himberg_tomi.pdf

Chan, S., Haughwout, A., Hayashi, A., & Van Der Klaauw, W. (2016, March). Determinants of Mortgage Default and Consumer Credit Use: The Effects of Foreclosure Laws and Foreclosure Delays. Journal of Money, Credit and Banking, Vol. 48 (2/3), 393–413. https://www.jstor.org/stable/pdf/43862617?saml_data=eyJzYW1sVG9rZW4iOiI1ZDA0NTc2My03MjM5LTQ1Y2YtYjBmOS02Mzg4MDMwMjZjM2YiLCJpbnN0aXR1dGlvbklkcyI6WyIxODg0NWVhNS1jNmU0LTQzY2ItODdkMy03MzMwMmJlNjUwYjEiXX0

Akomas. (2018, June). Effects of Geographical Location on MFI Lending Behaviour in Developing Countries. Doctoral thesis, University of Huddersfield. http://eprints.hud.ac.uk/id/eprint/34683/

Agrawal, K., & Maheshwari, Y. (2018, September 10). Efficacy of Industry Factors for Corporate Default Prediction. IIMB Management Review, 31(1), 71–77. https://doi.org/10.1016/j.iimb.2018.08.007