VYTAUTO DIDŽIOJO UNIVERSITETAS
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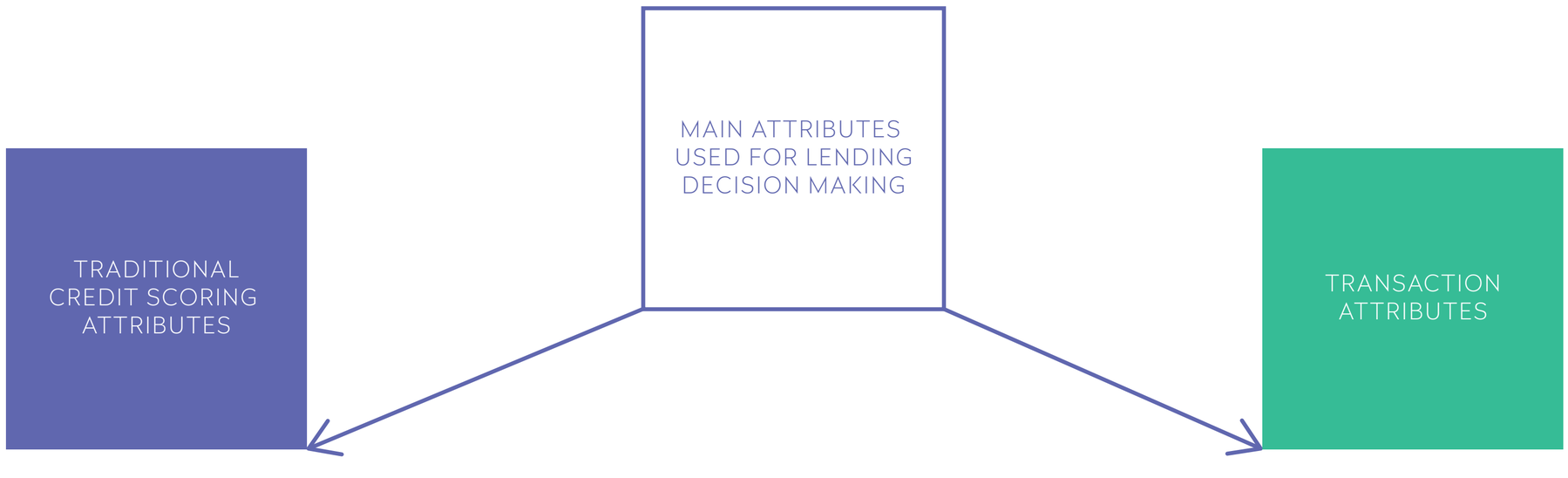
APPLICATION OF ARTIFICIAL INTELLIGENCE FOR AUTOMATIC LENDING DECISION MAKING USING TRANSACTIONS DATA

Obtaining a loan for SMEs is often a complicated and delayed process that requires time and human resources from both the financial institution and the borrower. Automatization by incorporating machine learning techniques used will not only expedite the lending process but save costs and provide more affordable borrowing opportunities for SMEs. We are creating an automated model that incorporates transaction information that allows SMEs to quickly borrow money up to a certain amount of risk that is appropriate for financial institutions.

The literature analyses have shown that the main attributes used for lending decision making using transaction data, could be divided:



a

SME owners or requesting persons information, such as: Gender, age, marital status, level of education, ethnicity, seniority, working capacity status, driving license, citizenship, postal code, number of family members, family income, income, assets, credit card status, debt amount, debt repayment period, credit rating, credit history.

b

SME Financial statement or additional firms information: Assets, liabilities, income, costs, taxes, loan-to-equity ratio, company size, sector, EBIT, profit margin, inventory turnover, credit history, business plan, debt size, debt repayment period, credit rating.

a

Statistical information:
Average, min, max transaction size or number of transactions

b

Cash flow data:
Late payments, average cash balance, seasonality, account balance, cash flow trends, recurring liabilities, cost sources

c

Behavior data:
Zero profit, positive/negative shocks

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The data source used in the analysis is confidential, but it is about 3-5 million transactional data records, of 20 – 170 thousand SMEs.

MACHINE LEARNING METHODS:

Logistic regression, decision tree, random forest, support vector classifier, neural network, XGBoost, multilayer perceptron, Adaboost, information retrieval, Bayesian, correlation analysis, scorecard, rough sets, bootstrap aggregation.

EVALUATION METRICS:

K-S statistics, F estimate, ROC area, AUC metric, PCC index.