Data Mining for Credit Risk Patterns

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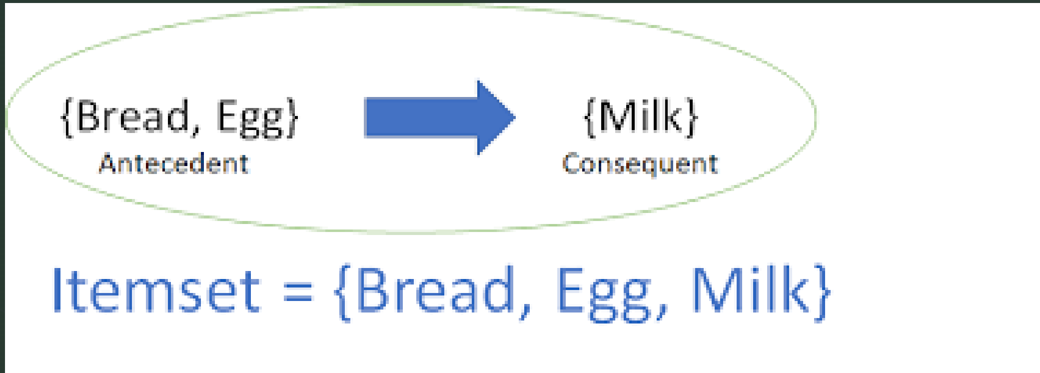
Data Mining Technique used: Association Rule Analysis

- Consists of evaluating series of if-then logical statements to find patterns and make predictions.
- Support: Proportion of all transactions that an itemset appears in, how often the if-then hypothesis shows up in the dataset
- Confidence: Probability of an antecedent leading to the consequent.
- Ex: if consumer buys bread and eggs, then they will likely also buy milk.



Credit Standing Pattern #1

Foreign & Credit History; All Paid or Bank Paid	44		
Foreign & Credit History; All Paid or Bank Paid => bad	39	9.18%	88.64%
Foreign & Credit History; All Paid or Bank Paid & Woman	18		
Foreign & Credit History; All Paid or Bank Paid => bad	17	4.00%	94.44%

Clients accounted for: 44/425 = 10.35%

Support: 39/425 = 9.18%

Confidence: 39/44 = 88.64%

But if they are also a woman:

Clients accounted for: 18/425 = 4.24%

Support: 17/425 = 4.00%

Confidence: 17/18 = 94.44%

Credit Standing Pattern #2

No Acct Checking & Purpose; Car Used, Education, Furniture,or Small Appliance	96		
No Acct Checking & Purpose; Car Used, Education, Furniture,or Small Appliance=> good	81	19.06%	84.38%

Clients accounted for: 96/425 = 22.59%

Support: 81/425 = 19.06%

Confidence: 81/96 = 84.38%

Credit Standing Pattern #2

<u>Age 18-24 & Low or MedLow</u>	66		
Age 18-24 & Low or MedLow => bad	49	11.53%	74.24%
<u>Age 18-24 & Low or MedLow & Rent</u>	27		
Age 18-24 & Low or MedLow & Rent => bad	23	5.41%	85.19%

Clients accounted for: 66/425 = 15.53%

Support: 49/425 = 11.53%

Confidence: 49/66 = 74.24%

But if they also rent:

Clients accounted for: 27/425 = 6.35%

Support: 23/425 = 5.4%

Confidence: 23/27 = 85.18%

Call to Action

- Investing in the continuance of Association Rule analysis will allow us to discover hidden patterns within our clientele to help us better understand their circumstances.
- Using these patterns, we can implement a system to flag clients as possible business prospects or as possible risks to the company.
- This system will not only support the maximization of profits and minimization of costs but will also allow banking loan requests to be accepted or denied faster.
- Faster decision making could reduce labor costs and/or allow more time from productivity in other areas.