

Credit Card Analysis of Czech Bank

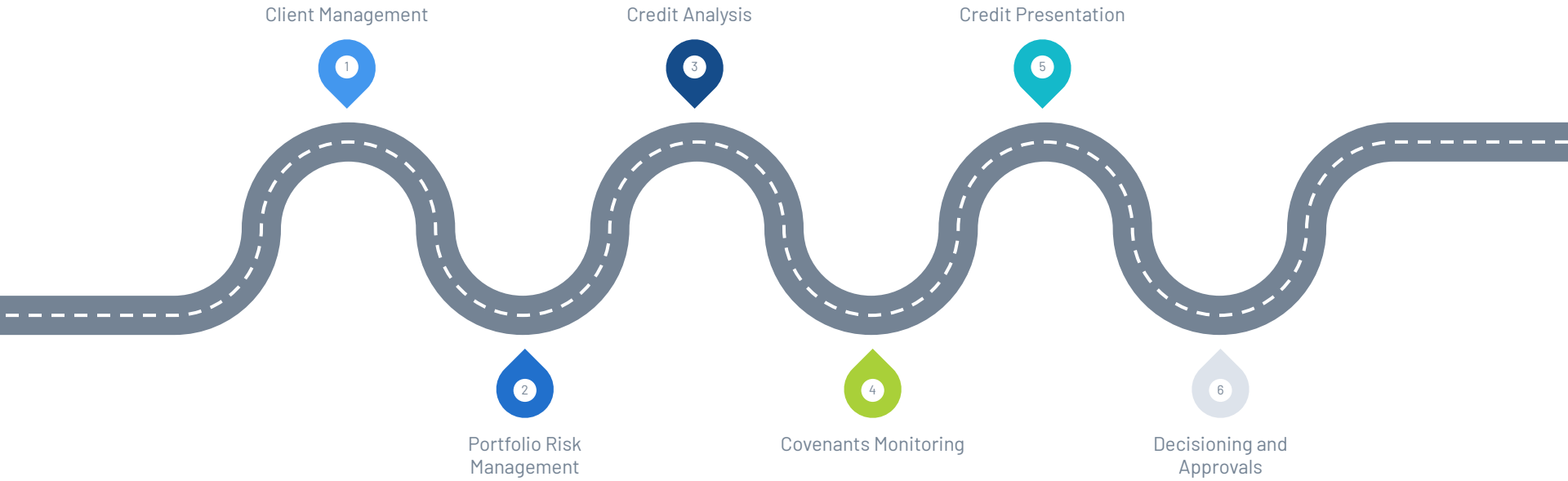


Czech Bank

The central bank and financial market supervisor in the Czech Republic with its headquarters in Prague, and a member of the European System of Central Banks



Business Process





Problem Identification

- ▶ The bank managers want to know, who is a good client (whom to offer some additional services) and who is a bad client (whom to watch carefully to minimize the bank losses).
- ▶ Fortunately, the bank stores data about their clients, the accounts (transactions within several months), the loans already granted, the credit cards issued
- ▶ The bank managers hope to improve their understanding of customers and seek specific actions to improve services.

Objectives



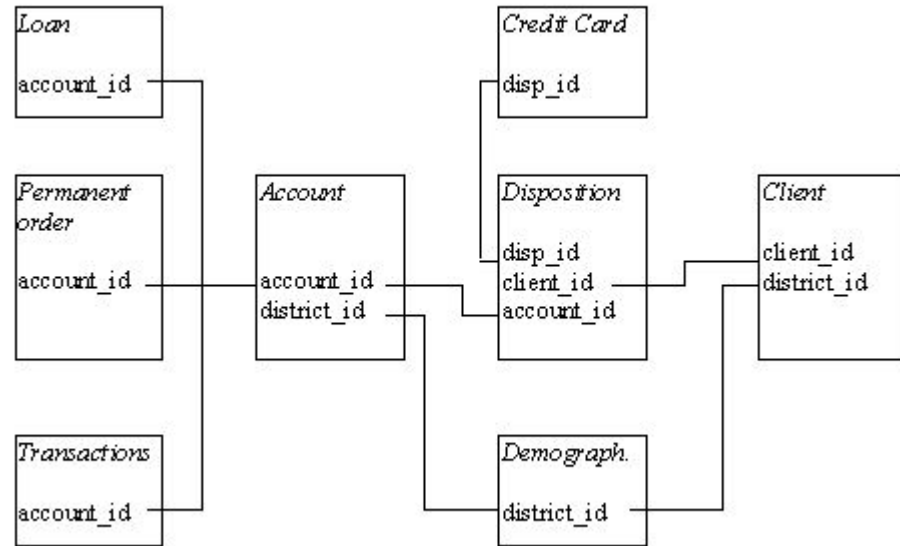
- ▶ Using agglomerative and k-means clustering algorithms to analyse the bank data in order to extrapolate from it the type of customer who makes a good candidate for a credit card.



Dataset Overview

DATASET

The Berka dataset, from the 1999 PKDD Discovery Challenge, provides information on the clients, accounts, and transactions of a Czech bank.



<https://webpages.charlotte.edu/mirsad/itcs6265/group1/domain.html>

Customer Segmentation

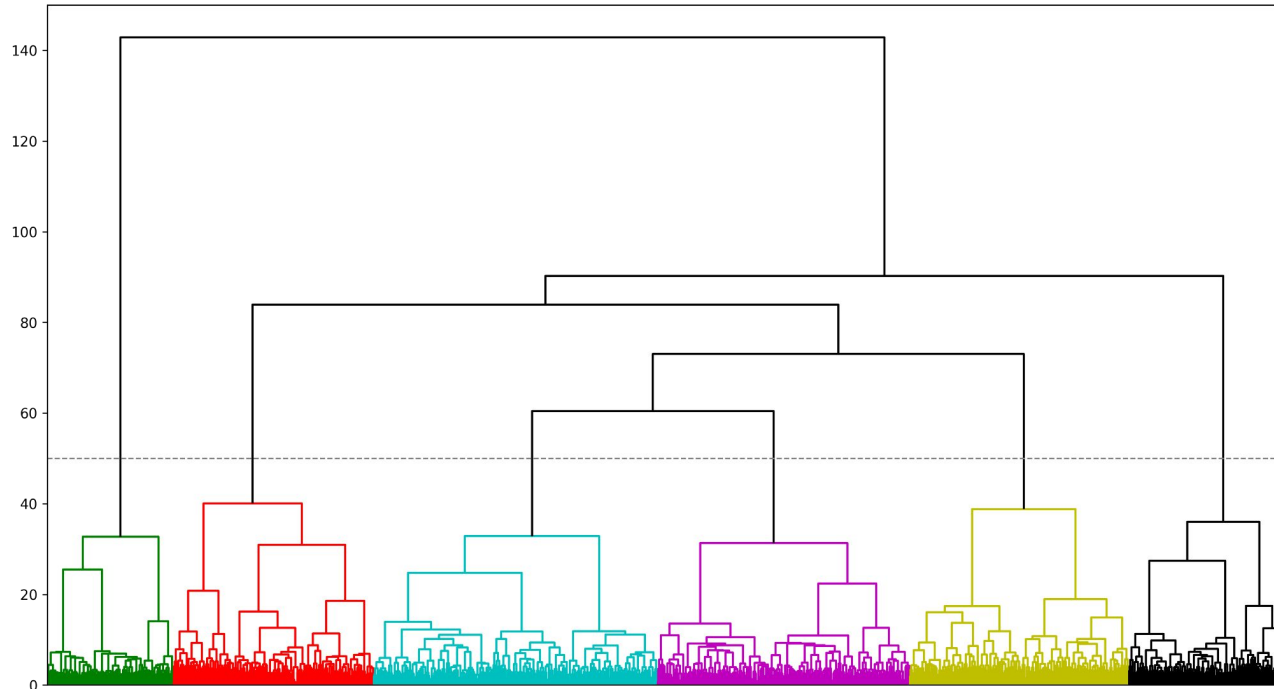
Agglomerative Clustering and K-means

1



Determine Cluster Number

Agglomerative Clustering

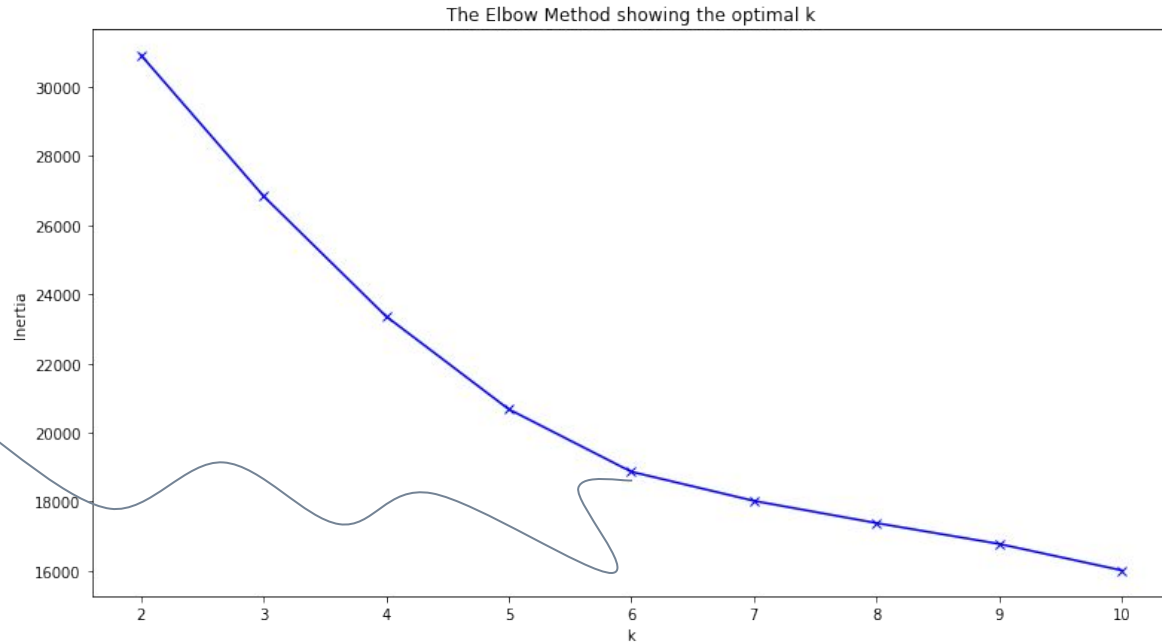


- There are 6 clusters



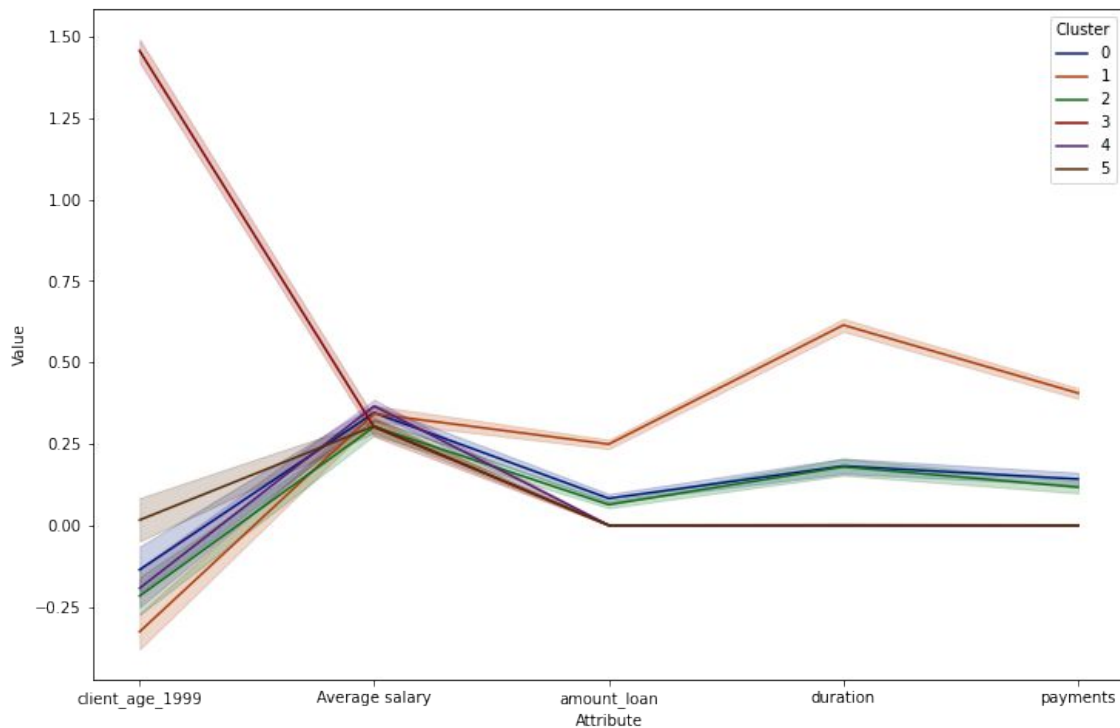
Determine Cluster Number

K-means (elbow method)



- There are 6 clusters

Interprete The Segment



Interprete The Segment



cluster 0: ***Insufficient credit history***

- ▶ young age
- ▶ moderate loan amount
- ▶ moderate duration
- ▶ all gender
- ▶ mostly non-cc holders
- ▶ the majority of loan statuses are 'no loan', 'no problems', and 'OK thus far'
- ▶ withdrawal
- ▶ mostly household and insurance payments

cluster 1: ***student loans***

- ▶ the youngest age
- ▶ the largest loan amount
- ▶ long duration
- ▶ all gender
- ▶ mostly non-cc and junior card
- ▶ the majority of loan statuses are 'no problems', 'OK thus-far', and 'loan not paid'
- ▶ withdrawal
- ▶ mostly household and loan payment

cluster 2: ***secured debt holders***

- ▶ young age
- ▶ moderate loan amount
- ▶ moderate duration
- ▶ all gender
- ▶ mostly classic and gold card
- ▶ the majority of loan statuses are 'no problems' and 'OK thus-far'
- ▶ withdrawal
- ▶ mostly household and insurance payments

Interprete The Segment



cluster 3: ***fall behind on payments***

- ▶ oldest age
- ▶ the lowest loan amount
- ▶ short duration
- ▶ all gender
- ▶ mostly non cc
- ▶ no loan status
- ▶ collection from another bank
- ▶ credit
- ▶ pension

cluster 4: ***young debtor women***

- ▶ young age
- ▶ the lowest loan amount
- ▶ short duration
- ▶ women
- ▶ mostly non cc and junior card
- ▶ no loan status
- ▶ withdrawal
- ▶ mostly household

cluster 5: ***young debtor men***

- ▶ young age
- ▶ the lowest loan amount
- ▶ short duration
- ▶ men
- ▶ mostly non cc and junior card
- ▶ no loan status
- ▶ withdrawal
- ▶ mostly household

Business Recommendation



01	cluster 0: Insufficient credit history	✓ ✓	Good candidates Ask to use credit card
02	cluster 1: Student loans	✓	Need to watch carefully
03	cluster 2: Secured debt holders	✓ ✓	Good clients Ask to add credit card

Business Recommendation



04	cluster 3: Fall behind on payments	✓	Offer to help with financial planning
05	cluster 4: Young debtor women	✓	Offer some additional services
06	cluster 5: Young debtor men	✓	Offer some additional services

Thanks!

Any questions?

