PROJECT ON CREDIT BANKRUPTCY

Project Report

Submitted in partial fulfilment of the requirements for the award of the degree of

Masters

in

Information Technology and Analytics

by

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INTRODUCTION

- We are given a credit dataset to analyse using different models.
- The model that results in the best benefit is to be suggested.
- Models run:
    - Logistic
    - LDA
    - QDA
    - KNN
    - Tree

DATA CLEANING

- The data can be checked for any errors.
- The purpose column had car0 variables in 7 cases.
- This might be an error, so we changed into the car.

MODELS RUN

- 10 different models were run for each of the 5 models shown above.
- Two sets were run, one considering Recall & Accuracy and the other considering Recall & Precision.
- The 10 models:
    - default ~ checking_balance + months_loan_duration + credit_history + purpose + amount + savings_balance + employment_duration + percent_of_income + years_at_residence + age + other_credit + housing + existing_loans_count + job + dependents + phone
    - default ~ checking_balance + months_loan_duration + credit_history + amount + percent_of_income
    - default ~ checking_balance + months_loan_duration + credit_history + amount + factor(percent_of_income)
    - default ~ checking_balance + months_loan_duration + credit_history + percent_of_income
    - default ~ checking_balance + months_loan_duration + credit_history
    - default ~ months_loan_duration + credit_history
    - default ~ factor(months_loan_duration) + credit_history
    - default ~ checking_balance + factor(months_loan_duration) + credit_history
    - default ~ months_loan_duration
    - default ~ credit_history

INITIAL ASSUMPTIONS AND RESULTS

- Initially, a few assumptions were made to check for the best model.

Assumed Numbers	
Clients	3000
Default	8%
Average Default	250000
Payments	25000

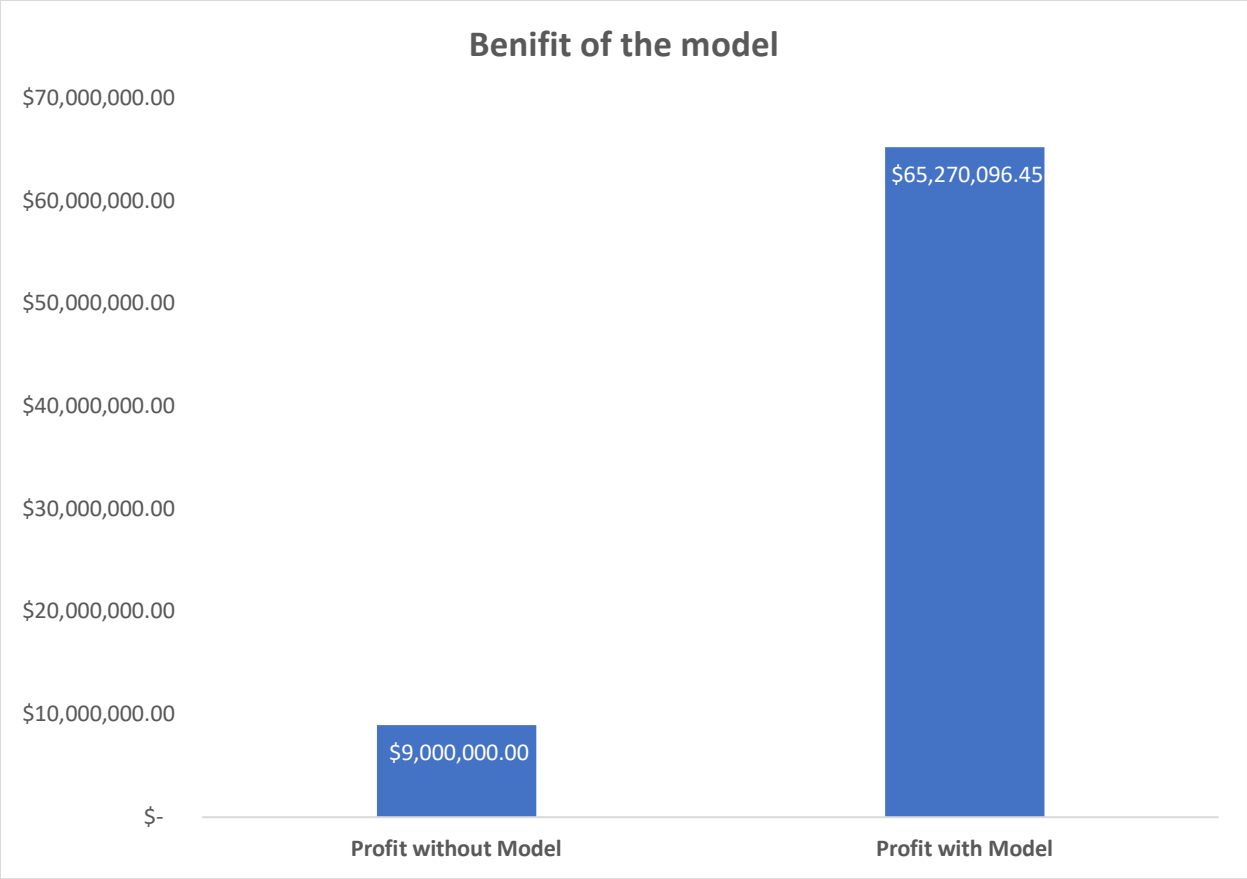
- Results for this model:

Parameters	Precision & Recall	
Model	KNN	
Model No:		4
Accuracy		74.50%
Precision		74.32%
Recall		97.14%
Profit without Model	$	9,000,000.00
Profit with Model	$	65,270,096.45

- Benefit & Increase %

BENEFIT
$ 56,270,096.45

% INCREASE
625%



FUTURE PREDICTION

- Future assumptions were made to check for the best model.

Assumed Numbers	
Clients	5000
Default	10%
Average Default	250000
Payments	25000

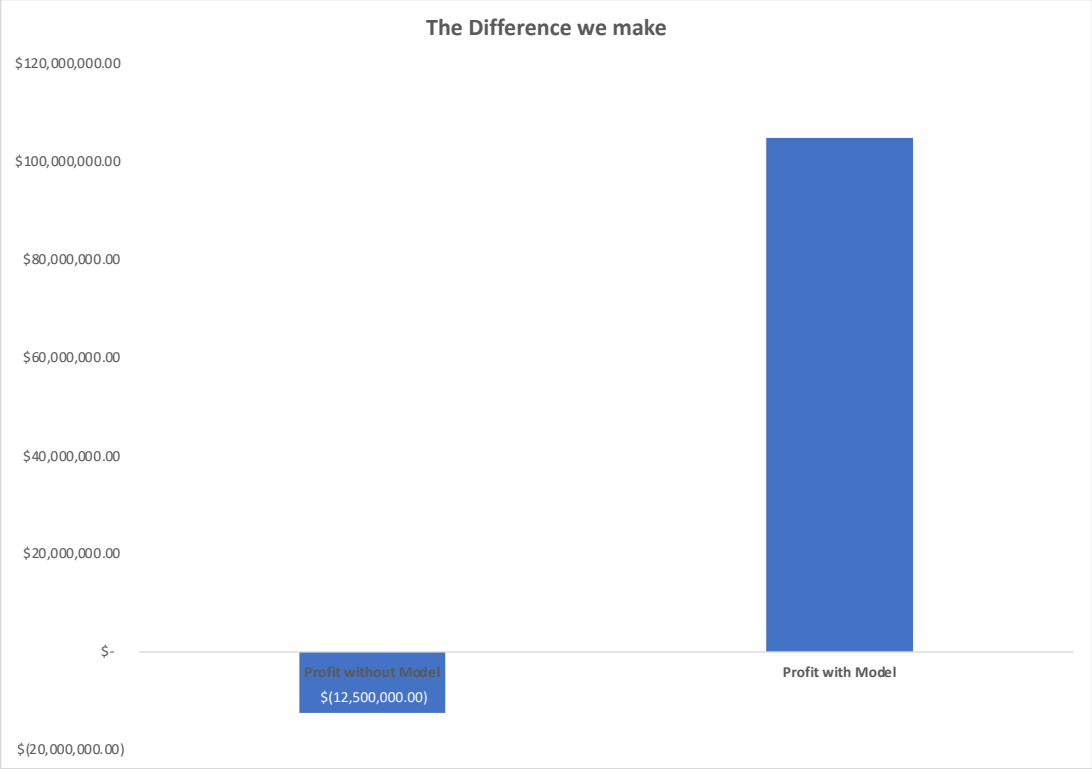
- Results for this model:

Parameters	Precision & Recall
Model	KNN
Model No:	4
Accuracy	74.50%
Precision	74.32%
Recall	97.14%
Profit without Model	$ (12,500,000.00)
Profit with Model	$ 104,729,367.60

- Benefit & Increase %

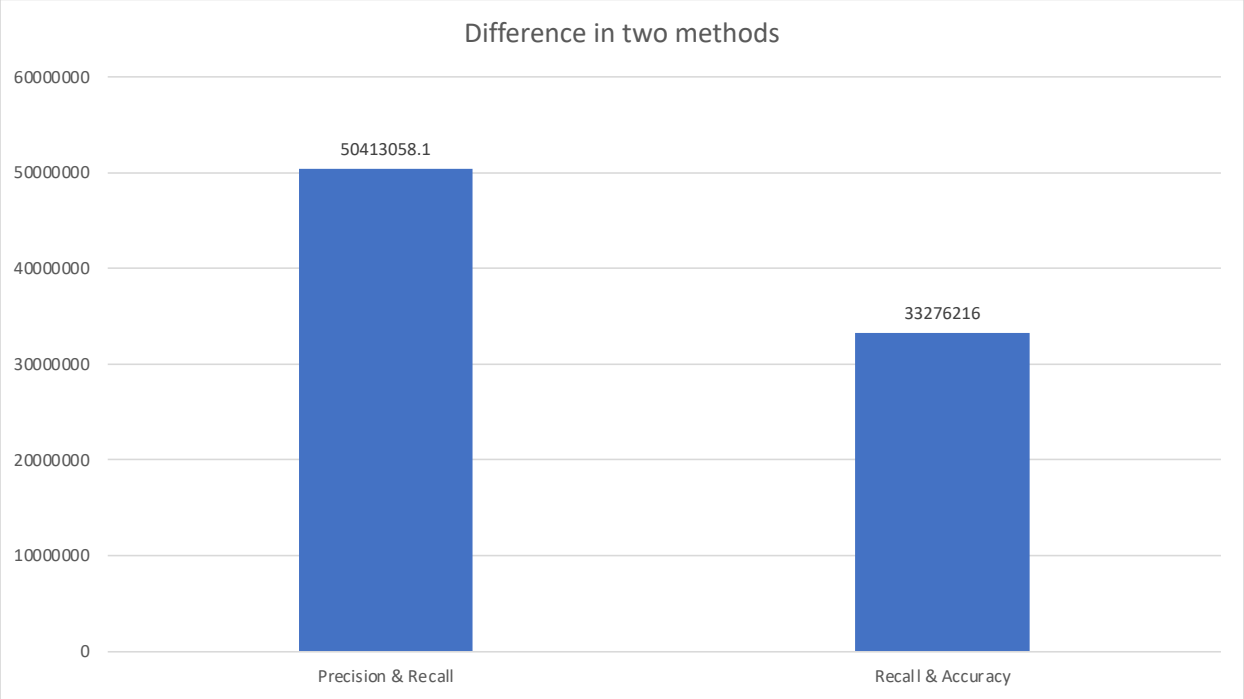
BENEFIT
$ 117,229,367.60

% INCREASE
938%

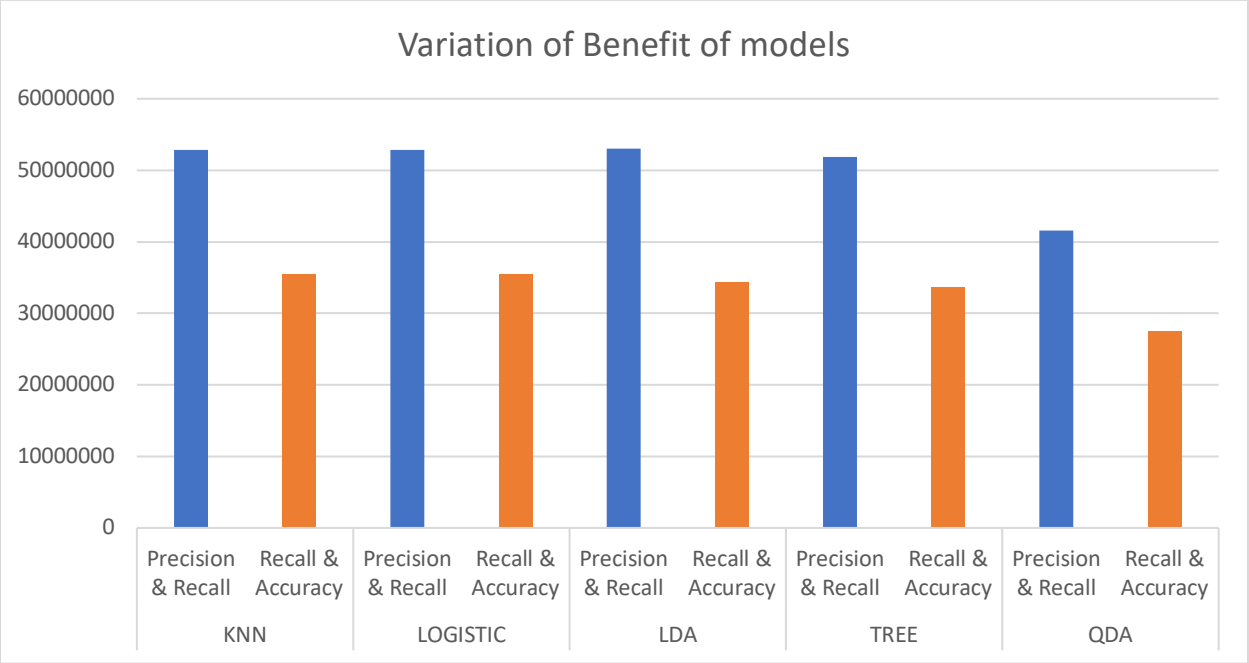


MORE ANALYSIS

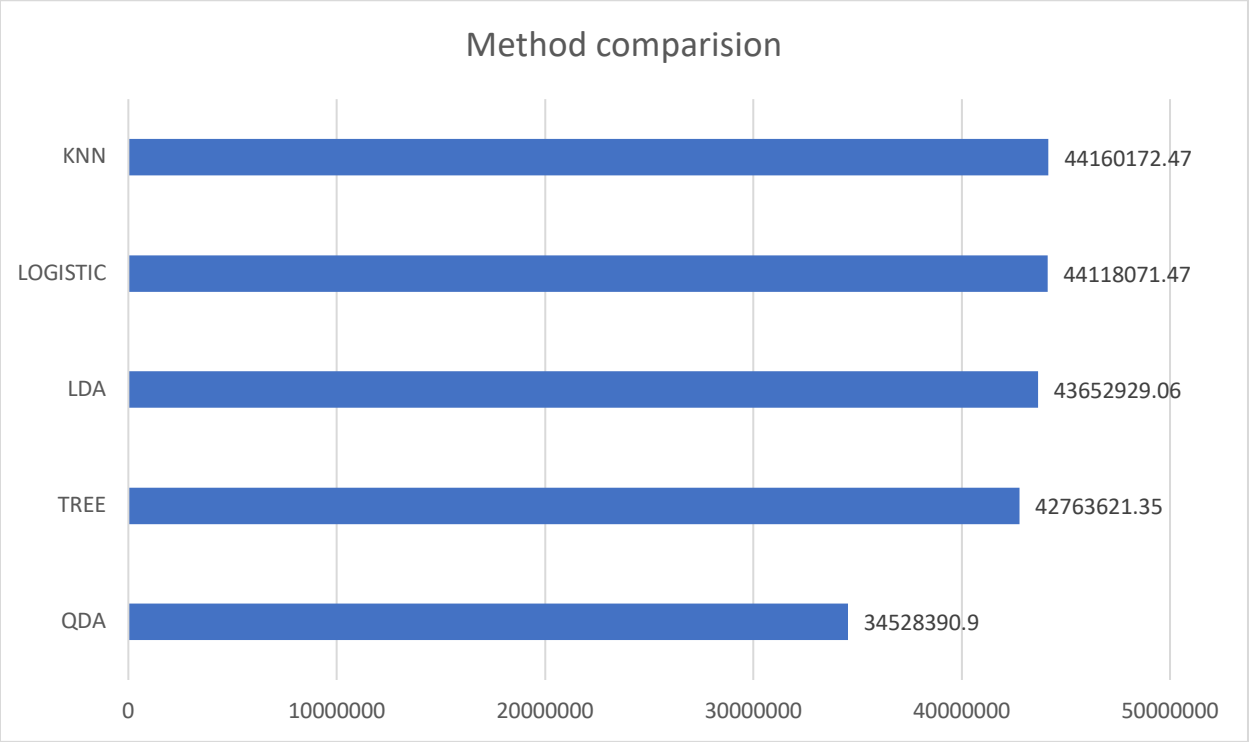
- Checked the average benefit from the two methods



- Difference between methods and models



- Difference between the models



CONCLUSION

- In most cases, KNN gives the best model.
- Recall & Precision have been selected from the models to develop the benefit.
- BEST MODEL: default ~ checking_balance + months_loan_duration + credit_history + percent_of_income
- Considering the following 4 variables gave the best outcome in a KNN model:
    - Checking balance
    - Months loan duration
    - Credit History
    - Present of Income