

PREDICTION OF BANK CUSTOMER TELEMARKETING SUCCESS USING MACHINE LEARNING : A CASE STUDY

BACKGROUND

Targeted consumer marketing efforts in banking industry is essential as it is a challenge to acquire new customer while retaining the existing ones in this competitive sector. Predicting consumer behavior is not an easy task however challenge can be tackled with precise use of data and intense analysis. Digesting huge amount of data and identifying interesting patterns out of it are best to be executed with the aid of machine learning. It is also highly impossible to be achieved through a manual analysis by a human. There are various machine learning techniques and methods. Therefore, this research is to identify the best approach for predicting the success of telemarketing through machine learning model.

METHODOLOGY

Literature study was conducted in determine the most suitable features to cater the class imbalance issue in banking sector. Figure 1 shows the operational framework of this research.

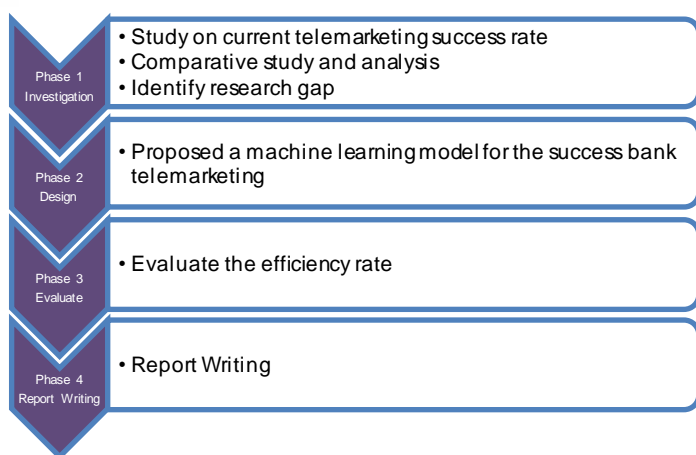


Figure 1: Operation framework



CATEGORY : MASTERS
NAME : MOGENESWARI JAI SANKAR
STUDENT ID : MANB201028
CONTACT NO : +6010 929 2305
EMAIL : mogeneswari@graduate.utm.my
SUPERVISOR : DR. NORZIHA MEGAT MOHD ZAINUDDIN

FINDINGS

Table 1 shows the in prediction of bank customer telemarketing success using machine learning including Decision Tree, Naïve Bayes, Neural Network, Random Forest (50 Tress) and Random Forest (100 Trees).

Table 1: Feature Prediction of Bank Customer Telemarketing Success Using Machine Learning

Machine Learning Technique	Accuracy Rate Study1 (2015) Shama et al	Accuracy Rate Study2 (2016) Apampa	Accuracy Rate Study3 (2017) Justice and Manoj	Accuracy Rate Study4 (2018) Yijan Jiyang
Decision Tree	0.66	0.90	0.847	0.91
Naïve Bayes	0.70	0.885	-	0.86
Neural Network	0.63	-	0.829	0.89
Random Forest (50 Trees)	-	0.893	0.868	-
Random Forest (100 Trees)	-	0.868	-	-

PROJECT SIGNIFICANCE

Benefits to bank, in understanding their customer through machine learning technique related to telemarketing in subscribing any services including term deposit, loan or credit card.

CONCLUSION

To develop a most precise machine learning model for the prediction of the customers in the banking sector focus on bank products and services. A dataset from the banking sector which was comprised upon the factors related to the socio-demographics of the customers were used. The obtained dataset was inclined towards the class imbalance issue.