Chapter 10
Customer Churn Prediction for Financial Institutions Using Deep Learning Artificial Neural Networks in Zimbabwe

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ABSTRACT

The research was conducted to develop a customer churn predictive modelling using deep neural networks for financial institutions in Zimbabwe using a local leading financial institution. This was based on a need to perform a customer churn analysis and develop a very high accurate and reliable customer churn predictive model. In this era, every customer counts, hence once acquired a business should do everything in its power to keep that customer because the cost of acquiring a new customer is far greater than the cost of keeping an existing one. Therefore the need to ascertain customers who have churned and also be at a position to anticipate those who are churning or are about to churn then take corrective measures to keep such customers on board. The study followed one of the data science research methodologies called CRoss industry standard process for data mining (CRISP-DM) which involves understanding the business, understanding the data, data preparation, modelling, validating the model then deployment of the model.

1. INTRODUCTION

This section entails the problem statement and the aims of this study. Hence, the section covers the background of the study, problem statement, research objectives and questions

1.1 Background of the Study

According to Ahmed et al (2017), customer churn prediction models done through machine learning techniques gained massive popularity in just a few decades ago. Similarly, so as the trend in the financial industry where predictions have been done to predict dissatisfied customers who were likely to go for other service providers primarily using traditional machine learning techniques such as Support Vector Machine (SMV) and Decision Trees (DTs). Globally, Farquad, Vadlamani, Ravi, Bapi and Raju (2014) states that the Germany N26 Bank and American Express from America successfully implemented customer churn prediction. The American Express now relies on sophisticated predictive modelling that forecasts and prevents customer churn. This was achieved through the analysis of past customer transactions hence identification of customer accounts that are likely going to close and take preventive action to mitigate the problem. Amuda and Adeyemo (2019), argues that the cost of retaining existing customers is lower than the cost of acquiring new customers when they did a customer churn prediction using multi-layer perceptron for financial institutions in Nigeria. In the African continent, International Financial Corporation (IFC) World Bank (2018) states that Greenfield Microfinance in Sub-Sahara Africa is a business model to advanced financial inclusion which successfully implemented churn predictions. The following was its customer churn rate in the year of implementation.

Figure 1. Greenfield microfinance churn rate
(adopted from IFC World Bank (2018))
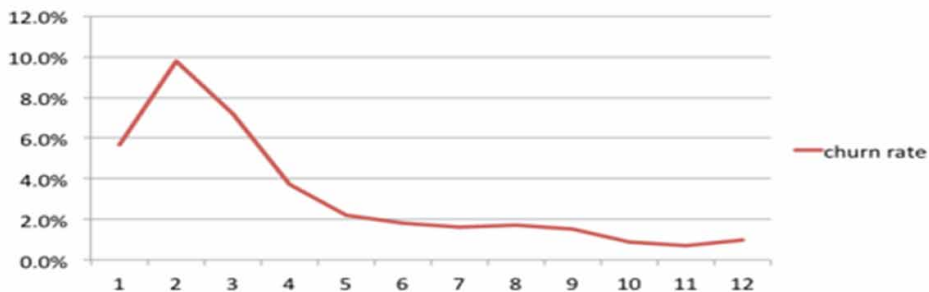
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