摘要

在当今的银行业中，客户交易数据的有效利用是预防金融欺诈和提升用户满意度的关键之一。洛伊兹银行集团（LBG）提供的模拟交易数据为本研究提供了一个机会，可以探索数据科学技术帮助银行优化决策和服务的可能性。本研究利用从LBG获得的数据集，包括交易时间、金额、账户信息等，经过数据预处理、可视化分析，进行客户交易金额的预测，为银行提供交易风险的判断依据。此外，基于用户交易行为的分类，本研究开发了一个个性化推荐系统，利用无监督机器学习技术，进一步细化了客户画像。进而根据用户的历史交易模式，向商户及持卡人进行双向推荐，为银行创造更大的利润空间。通过实际案例研究，本文展示了数据科学在现代银行业务中的实用性和创新性，预计将为行业的客户数据分析工作提供新的思路和方法。

Abstract

In today's banking industry, the effective use of customer transaction data is one of the keys to preventing financial fraud and improving user satisfaction. The simulated transaction data provided by Lloyd's Banking Group (LBG) provides an opportunity for this study to explore the possibilities of data science techniques to help banks optimize their decisions and services. This study uses the data set obtained from LBG, including transaction time, amount, account information, etc., through data pre-processing and visual analysis, to predict the customer's transaction amount and provide the basis for banks to judge the transaction risk. In addition, based on the classification of user transaction behavior, this research develops a personalized recommendation system, which uses unsupervised machine learning technology to further refine the customer portrait. According to the historical transaction mode of the user, two-way recommendations are made to merchants and cardholders to create greater profit space for the bank. Through practical case studies, this paper demonstrates the practicability and innovation of data science in modern banking business, which is expected to provide new ideas and methods for customer data analysis in the industry.