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Data-driven Classification of Credit Card User Types

Abstract

By the end of 2016 total UK credit card borrowing was around £66.6 billion and accounted for Credit Cards are widely used across the UK and account for 4.4% of total consumer debt (based on the UK Cards Association report on UK Card Payments 2017). Credit cards offer flexible lending but although around 80% of credit cards are repaid in full every month (or have a promotional rate that means no interest is paid) poor management can lead to financial difficulties. Therefore, even without having granular detail around transaction data credit cards can provide very powerful insight into a consumer's credit risk and attitude to credit.

Traditionally, the key data relating to credit card performance that is used within scorecards relates to limit utilization and payment to balance ratios. Whilst this information provides powerful discrimination within models when considered across a broad portfolio some of the power of this data can be lost. The complexity of how credit cards are used by consumers means that there are many factors which influence the level of risk associated with a given customer and it is not always clear from summary characteristics what the most relevant factors are or their cumulative influence on behaviour in complex interactions.

In this study, we adopt an unsupervised clustering approach to incorporate a wider range of factors, including criteria such as how customers use their credit, how likely they are to take out new credit, or how likely they are to have financial difficulties.

This study uses k-means clustering method to classify credit card users in a data-driven way. It provides insight into how credit card data can be clustered and what new information those clusters bring. Incorporating different types of credit card data, such as customer details, credit limit utilisation, payments and balance data within the classification enables clusters to be optimised and helped to understand what new information the clusters provided.

This presentation covers the approach adopted, results, conclusions, implementation and operational considerations from the study.

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