

## Surprise Fraudsters Before They Surprise You: A South African Telecommunications Case Study

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**Abstract :** Every year the telecommunications industry suffers huge losses due to fraud. Mobile fraud, or generally, telecommunications fraud is the utilisation of telecommunication products or services to acquire money illegally from or failing to pay a telecommunication company. A South African telecommunication operator developed two internal fraud scorecards to mitigate future risks of application fraud events. The scorecards aim to predict the likelihood of an application being fraudulent and surprise fraudsters before they surprise the telecommunication operator by identifying fraud at the time of application. The scorecards are utilised in the vetting process to evaluate the applicant in terms of the fraud risk the applicant would present to the telecommunication operator. Telecommunication providers can utilise these scorecards to profile customers, as well as isolate fraudulent and/or high-risk applicants. We provide the complete methodology utilised in the development of the scorecards. Furthermore, a Determination and Discrimination (DD) ratio is provided in the methodology to select the most influential variables from a group of related variables. Throughout the development of these scorecards, the following was revealed regarding fraudulent cases and fraudster behaviour within the telecommunications industry: Fraudsters typically target high-value handsets. Furthermore, debit order dates scheduled for the end of the month have the highest fraud probability. The fraudsters target specific stores. Applicants who acquire an expensive package and receive a medium-income, as well as applicants who obtain an expensive package and receive a high income, have higher fraud percentages. If one month prior to application, the status of an account is already in arrears (two months or more), the applicant has a high probability of fraud. The applicants with the highest average spend on calls have a higher probability of fraud. If the amount collected changes from month to month, the likelihood of fraud is higher. Lastly, young and middle-aged applicants have an increased probability of being targeted by fraudsters than other ages.

**Keywords :** application fraud scorecard, predictive modeling, regression, telecommunications

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