Aplikasi classification model terhadap sistem fraud detection pada bisnis fixed broadband = Application of classification model for fraud detection system in fixed broadband business.

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Abstrak

Dalam menjalankan bisnisnya, perusahaan telekomunikasi di sektor fixed broadband seringkali mengalami kebocoran pendapatan signifikan. Diantara beberapa penyebab kebocoran pendapatan, fraud merupakan faktor kebocoran yang memiliki dampak terbesar terhadap finansial dan citra perusahaan. Salah satu upaya untuk meminimalkan fraud dengan mendeteksi fraud yang dilakukan oleh pelanggan. Oleh karena itu, tujuan penelitian ini merancang classification model menggunakan machine learning untuk diaplikasikan terhadap sistem fraud detection. Classification model akan dibangun menggunakan supervised machine learning yang bertujuan untuk memprediksi kelas tertentu berdasarkan data historis yang didapatkan. Dalam penelitian ini, beberapa beberapa algoritme machine learning akan dibandingkan diantaranya logistic regression, decision tree, random forest, dan backpropagation neural network. Selain itu, dalam kasus fraud detection, data historis yang didapatkan memiliki perbandingan antar kelas yang tidak seimbang sehingga dibutuhkan pra-proses data balancing. Pada penelitian ini, data balancing dilakukan dengan oversampling berbasis Adaptive Synthetic (ADASYN). Hasil penelitian ini menunjukkan backpropagation neural network memiliki performa terbaik diantara algoritma lainnya. Selain itu didapatkan seluruh algoritme memiliki indikator performa diatas 90% menunjukkan pada kasus fraud detection di sektor fixed broadband, machine learning bekerja dengan akurat.

.....In running their business, telecommunications companies in the fixed broadband sector often experience significant revenue leakage. Among several causes of revenue leakage, fraud is the leakage factor that has the most significant impact on finances and corporate image. One of the efforts to minimize fraud is to detect fraud committed by customers. Therefore, this study aims to design a classification model using machine learning to be applied to the fraud detection system. The classification model will be built using supervised machine learning, which aims to predict certain classes based on historical data. Several machine learning algorithms will be compared in this study, including logistic regression, decision tree, random forest, and backpropagation neural network. In addition, in fraud detection, the historical data obtained has an unbalanced comparison between classes, so pre-processing data balancing is needed. In this research, data balancing is done by using Adaptive Synthetic (ADASYN) based oversampling. The results of this study indicate that the backpropagation neural network has the best performance among other algorithms. In addition, it is found that all algorithms have performance indicators above 90%, indicating that in the case of fraud detection in fixed broadband sector, machine learning works accurately.