

The background of the slide features a photograph of four business professionals in a meeting. A woman with glasses is seated on the left, looking at a laptop. A man is seated next to her, gesturing with his hand while speaking. Two other people are standing behind them, observing the discussion. The setting appears to be a modern office with a world map on the wall.

Virtual Internship Experience

 **Rakamin**
Academy

**HOME
CREDIT**
Anda Bisa!

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Tools



Problem Research

Home Credit strives to optimize the accuracy of customer credit assessment by utilizing machine learning and statistical methods. The primary goal of this effort is to ensure that each customer receives the appropriate type of loan based on their characteristics.

Tasks

To realize the plan, there are several tasks as follows :

1. Data Pre-Processing
2. Data Visualization and Business Insight
3. Machine Learning Implementation and Evaluation
4. Business Recommendation

Data Pre-Processing



1 Handling Missing Values

- Fills the missing values with the median for the numeric columns.
- Fills the missing values with the median for the categorical column.
- Deletes columns with excessive missing values.

2 Resolving Outliers

One way to handle outliers is by using the IQR (Interquartile Range) method

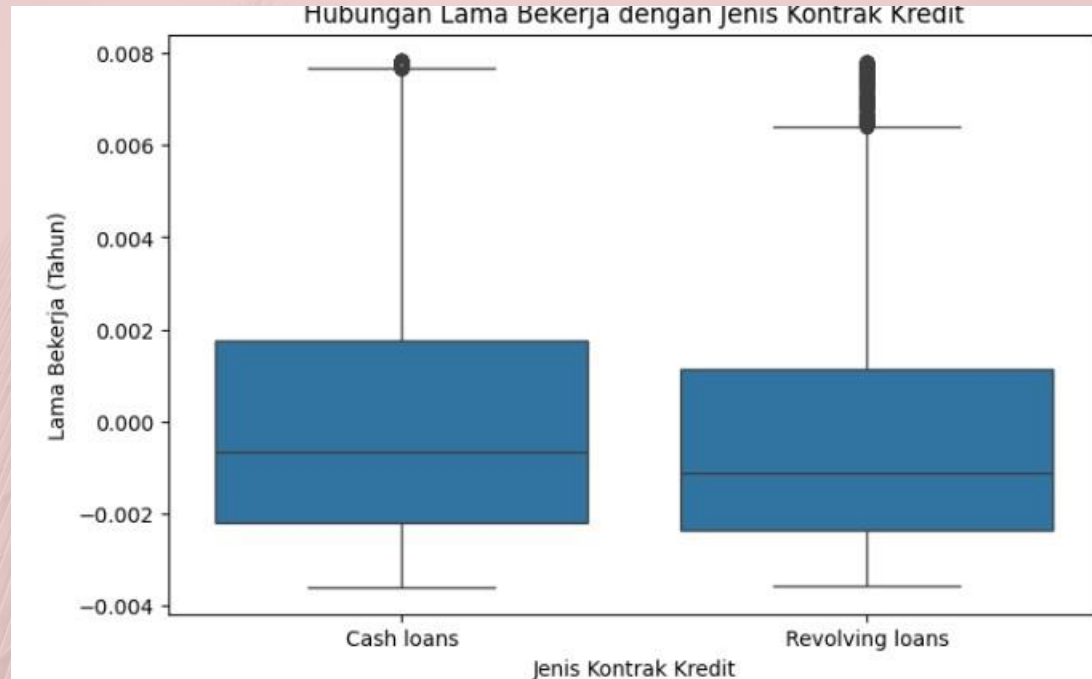
3 Normalization and Standardization of Data

- Normalization: converts data into the range $[0, 1]$, making it ideal for distance-based models and non-normally distributed data.
- Standardization: transforms the data so that the mean is approximately 0 and the standard deviation is 1.

4 Converting Data Types

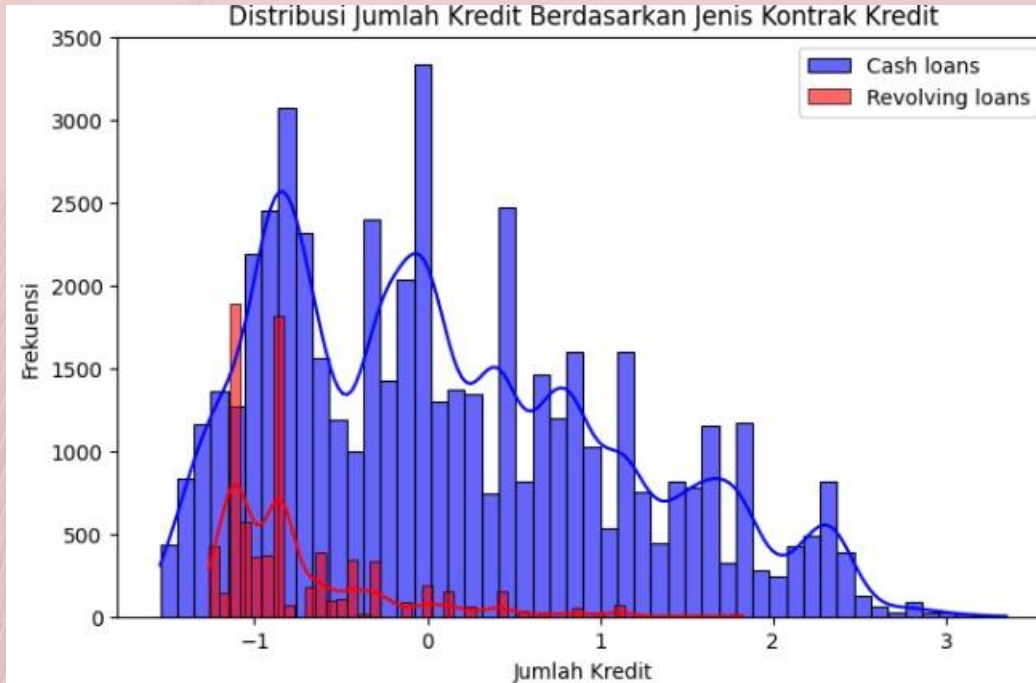
- One-Hot Encoding: Converts each category into a separate binary column with a value of 0 or 1 (or True or False).
- Label Encoding: Assigns a numerical label to each category, although this method is only suitable for ordinal categorical data.

Data Visualization and Business Insight



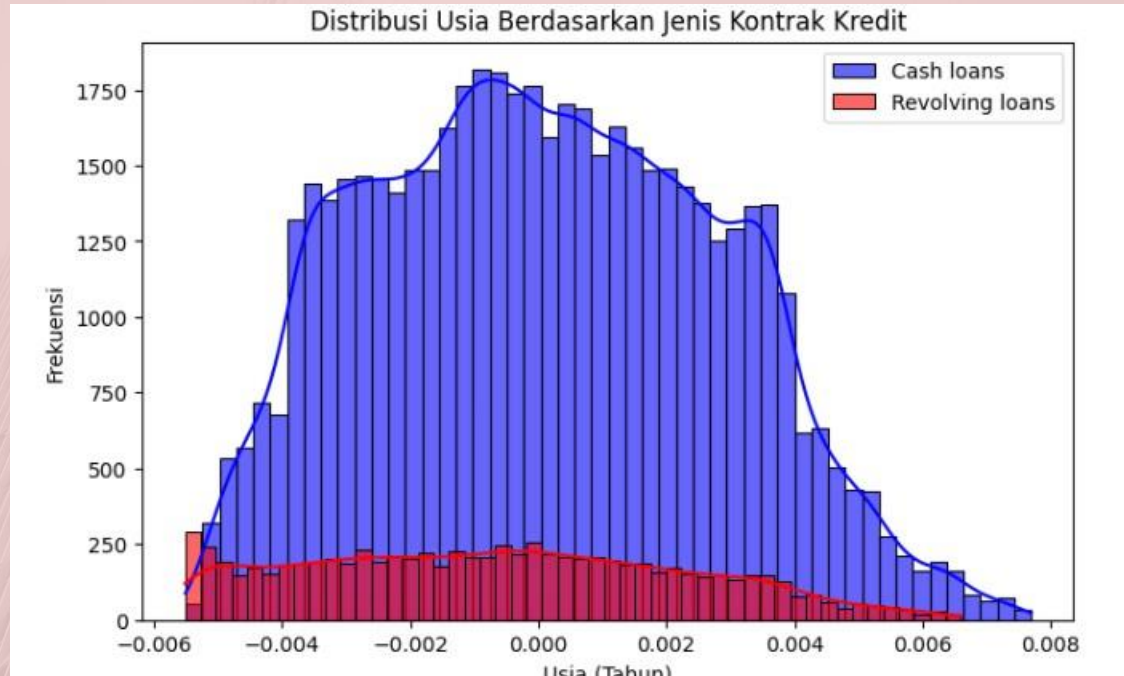
Revolving loans appear to be more frequently applied for by applicants with varying levels of work experience, including those who are new to the workforce.

On the other hand, cash loans do not show significant differences in terms of applicants' work experience. However, a deeper analysis of the data may reveal a trend where applicants with longer work experience tend to prefer this type of loan.

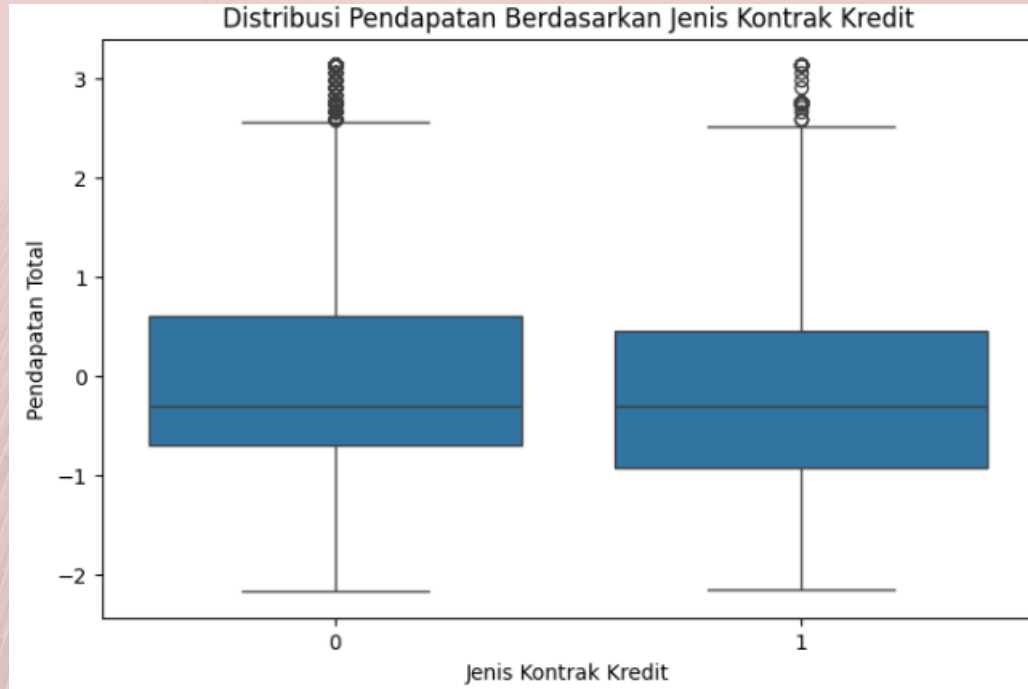


HOME
CREDIT

A strategy to offer products with lower credit limits by adjusting loan terms and benefits based on different customer segments to enhance product appeal.



Cash loans have a much wider distribution compared to revolving loans, indicating that more customers choose cash loans across various age groups. The majority of customers taking out cash loans are between 30 and 50 years old. Therefore, offerings can be tailored to the financial needs of this age group, such as loans for business capital, home purchases, or family expenses.

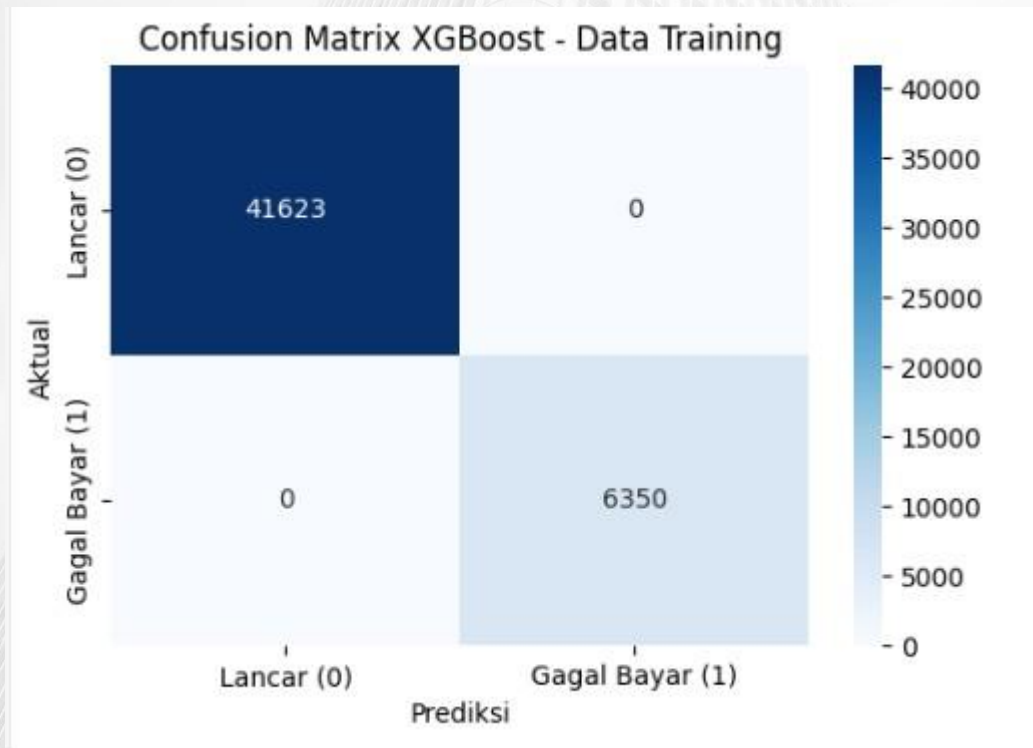


Both types of loans have a similar income distribution. However, the income range for Revolving Loans is wider, indicating that this type of loan is more commonly used by various income groups, including both low- and high-income customers. Therefore, marketing strategies can focus on promoting Revolving Loans to customer segments that require short-term credit with greater flexibility.

Machine Learning Modelling

Model	Accuracy	Precision	Recall	AUC - ROC
Logistic Regression	98,82%	94,90%	96,48%	97,83%
Random Forest	99,34%	97,53%	97,65%	98,63%
XGBoost	99,84%	99,44%	99,44%	99,67%

Confusion matrix based on the best model.



The XGBoost model demonstrates high accuracy (99.85%) and effectively distinguishes between current and defaulting customers. However, it needs to be validated on testing data to ensure that the model does not merely memorize patterns from the training data.

Business Recommendations

Business Recommendations

There are several strategies that can be implemented to enhance the effectiveness of credit products:

1. Product Segmentation Based on Customer Characteristics

- ❖ Revolving loans are suitable for customers with diverse work experience, including those who are new to the workforce.
- ❖ Cash loans are more preferred by experienced customers and can be tailored for business, home, or family purposes.

2. Credit Limit Adjustment to Improve Product Appeal

- ❖ The revolving loan offering can be customized with lower credit limits to attract more customers who need quick loans with short tenures.

Business Recommendations

3. Optimization of Product Offerings Based on Customer Age

- ❖ The majority of cash loan customers fall within the 30-50 age range. Therefore, these loan products can be tailored to meet the financial needs of this age group, such as business capital, home purchases, or family expenses.
- ❖ Revolving loans can be promoted to younger age groups who require flexibility in managing their daily finances.

4. Revenue-Based Marketing Strategy

- ❖ Marketing strategies for revolving loans can be targeted at customers who need short-term credit with greater flexibility, such as through campaigns that emphasize ease of access and favorable terms.

5. Application of Machine Learning Models for Credit Risk Assessment

- ❖ The application of this machine learning model can assist Home Credit in enhancing the accuracy of credit risk assessments and offering more tailored credit recommendations for each customer.

Thank You



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