

# **Customer Engagement & Product Utilization Analytics for Retention Strategy**

**PROJECT REPORT**

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## Introduction

Customer retention is a critical performance driver in the banking sector. While traditional retention strategies often emphasize financial indicators such as account balance and salary, emerging evidence suggests that behavioural engagement and product utilization play a more significant role in determining long-term loyalty.

This study evaluates customer churn from a behavioural and relationship-strength perspective using a dataset of 10,000 European bank customers. The objective is to identify how engagement level and product depth influence retention outcomes and to design data-driven retention strategies.

## Problem Statement

Despite access to customer engagement and product usage data, financial institutions often lack:

- Quantitative insight into behavioural drivers of churn
- Clarity on whether product depth reduces churn
- Evidence on whether premium customers are inherently loyal

As a result, retention initiatives may be misaligned with actual customer risk patterns.

## Dataset Overview

The dataset consists of 10,000 customers and 14 attributes, including:

- Demographics (Age, Gender, Geography)
- Financial indicators (Balance, Estimated Salary, Credit Score)
- Behavioural variables (IsActiveMember, NumOfProducts, HasCrCard)
- Target variable: Exited (Churn Indicator)

Overall churn rate in the dataset is 20.37%, indicating that approximately one in five customers leaves the bank.

## Key Analytical Findings

- **Engagement vs Churn**
  - Active Customer Churn: **14.27%**
  - Inactive Customer Churn: **26.85%**

Inactive customers churn at nearly double the rate of active customers. This confirms that engagement level is a primary retention driver.

- **Product Utilization Impact**

- Customers with 2 products show the lowest churn (~8%).
- Customers with 3+ products exhibit extremely high churn rates.

This suggests that moderate product depth enhances retention, while excessive product stacking may increase dissatisfaction and churn risk.

- **Premium Customer Risk**

- Premium Customer Churn: 23.68%
- Silent Premium (High-Balance + Inactive) Churn: 30.47%
- High-Balance Disengagement Rate: 49.88%

Nearly half of premium customers are inactive, and inactive premium customers churn significantly more than the overall population.

This indicates that financial value alone does not guarantee loyalty.

- **Relationship Strength Index (RSI)**

A composite index combining engagement, product depth, and credit card ownership was developed to measure relationship strength.

Findings:

- Sticky Customers (Score  $\geq 4$ ): **15.40% churn**
- Non-Sticky Customers (Score  $< 4$ ): **24.44% churn**

Churn decreases as relationship strength increases, validating RSI as a meaningful retention indicator.

- **Engagement × Product Interaction**

The most stable customer segment:

- Active + 2 Products → 5.56% churn

The most vulnerable core segment:

- Inactive + 1 Product → 36.65% churn

This interaction confirms that both engagement and optimal product depth are essential for retention.

## **Strategic Recommendations**

- **Engagement-Driven Retention**

- Target inactive customers with re-engagement campaigns
- Incentivize app usage and transaction activity

- Monitor activity drops alerts
- **Optimal Product Bundling**
  - Encourage transition from 1 → 2 products
  - Avoid aggressive cross-selling beyond 2 products
  - Monitor churn risk in customers with 3+ products
- **Silent Premium Protection**
  - Identify high-balance inactive customers
  - Assign relationship managers
  - Offer personalized financial advisory programs\
- **Relationship Strength Monitoring**
  - Deploy RSI scoring in dashboards
  - Flag customers with low scores
  - Automate retention outreach for non-sticky customers

## Conclusion

This study demonstrates that engagement and relationship depth are stronger predictors of customer retention than financial indicators alone. While premium customers hold higher balances, disengagement significantly elevates their churn risk. The findings emphasize the importance of behavioural analytics in designing effective retention strategies.

The implementation of a Relationship Strength Index and targeted engagement initiatives can substantially improve customer loyalty and reduce churn in the banking sector.