Business Case Study: Enhancing Risk Management and Customer Intelligence with AI at FINBANK

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Company Profile

FINBANK is a mid-sized retail and commercial bank operating in southern Europe, with 120 branches and a growing digital banking platform. With a strong base of SME and consumer clients, FINBANK generated 510 million in total revenue last year.

Departmental Focus: Risk Management and Customer Intelligence

The Risk Management division is responsible for assessing credit risk, detecting fraud, and monitoring compliance. However, siloed data systems and outdated rule-based methods hinder effective prediction and decision-making. Additionally, the Customer Intelligence team struggles to generate accurate behavior-based segmentation.

Challenge

The executive board has mandated the use of AI and machine learning to improve early warning systems, reduce non-performing loans, and personalize offerings based on predicted customer behavior.

Proposed AI Integration

The bank plans to launch an AI initiative covering two fronts:

- **Credit Risk Scoring:** Use machine learning to build dynamic credit scoring models for SMEs and individuals, based on financial history, macroeconomic data, and behavioral patterns.
- **Customer Insights:** Apply clustering and classification models to develop advanced customer personas and predict cross-selling opportunities.

Implementation Plan

- **Q1:** Merge legacy datasets; define risk KPIs; pilot segmentation model
- **Q2:** Deploy risk scoring model for consumer loans; test fraud detection via anomaly detection
- **Q3:** Integrate models with CRM and lending platform; train staff
- **Q4:** Evaluate outcomes and prepare for regulatory audit integration

Expected Impact

- Reduce credit default rate by 15%
- Identify 5 new customer segments with high growth potential
- Improve fraud detection accuracy by 30%

Fictional Financials

Balance Sheet – End of Year (in millions)

Assets	**Current Year**	**Previous Year**
Cash and Reserves	4,500	4,200
Loans to Customers	26,000	24,000
Securities Portfolio	7,800	8,100
Fixed Assets	1,200	1,100
Total Assets	**39,500**	**37,400**
Liabilities & Equity		
Customer Deposits	28,000	27,000
Debt Securities Issued	4,000	3,800
Other Liabilities	2,200	2,000
Shareholder Equity	5,300	4,600
Total Liabilities & Equity	**39,500**	**37,400**

Profit and Loss Statement (in millions)

Item	Current Year	Previous Year
Net Interest Income	340	320
Net Fees and Commissions	120	115
Trading Income	30	25
Gross Income	**490**	**460**
Operating Expenses	290	280
Operating Profit	**200**	**180**
Provisions for Loan Losses	45	50
Taxes	42	38
Net Profit	**113**	**92**

Data Challenge: Predictive Banking with AI

FINBANK wants to leverage a combination of structured and unstructured data to develop models that improve risk forecasting and customer targeting.

Available data includes:

- **Structured:** Customer account data, transaction histories, credit bureau scores
- **Text:** Customer feedback from surveys, support tickets
- **Audio:** Phone call recordings with lending officers
- **Time Series:** Macroeconomic indicators, loan repayment trends

Objectives: Students are asked to:

1. Select a specific use case: e.g., default prediction, fraud detection, customer churn modeling, loan approval automation
2. Choose appropriate models: e.g., logistic regression, XGBoost, k-means clustering, RNNs for time series, sentiment analysis
3. Justify preprocessing methods for each data type
4. Identify and justify relevant Python libraries (`pandas`, `xgboost`, `nltk`, `librosa`, `statsmodels`, `lightgbm`, etc.)
5. Evaluate performance and suggest visualization tools or dashboards for bank executives

Bonus: Build a prototype scoring card or risk matrix that a loan officer could use in a decision support system.

Discussion Questions

1. What are the regulatory and ethical risks of using AI in credit risk scoring?
2. How can FINBANK ensure transparency and fairness in its AI models?
3. What data governance practices should the bank adopt before deploying such systems?
4. What could be unintended consequences of algorithmic customer profiling?

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