

Business Analytics

Implementing Business Analytics in Organizations

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Potential Factors Contributing to Increasing Customer Churn



Economic factors: High unemployment rates, economic downturns, or financial crises.

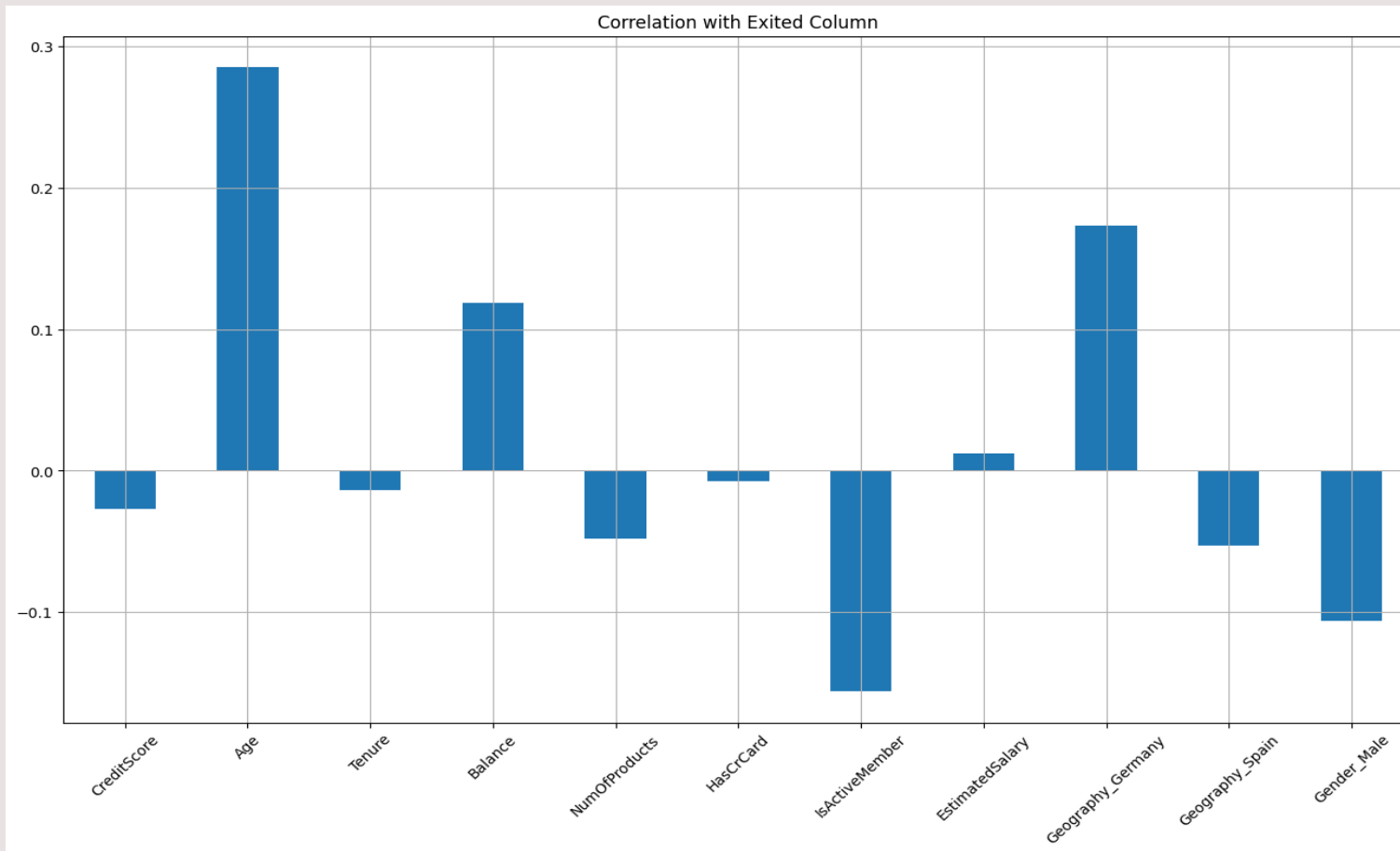
Poor Customer experience: Issues with responsiveness, resolution times, or overall customer satisfaction.

Stiff competition: competitors offer similar services at an affordable rates, offering more flexible products and more features they need.

K Daf : Convenience and user experience of online banking platforms.

Policy and personnel changes: Unfavorable policies which affects customer satisfaction and leadership styles may not go well with customers expectations

Real life Scenario: Correlation analysis on factors leading to increase in customer churn



- Age has a high positive correlation with the number of customers exiting the bank, followed by Geography
- Active member is highly negatively correlated with the exited customers

Gathering and Analyzing Data to Identify Key Drivers

Customer surveys: Collect feedback on customer satisfaction, preferences, and pain points experienced.

Transaction data: Analyze patterns and trends in account activity and financial behavior for different accounts.

Customer service logs: Identify common issues and provide a concrete solution to the problem.

Social media monitoring: Understand public sentiment and feedback. Run analysis on comments shared by customers.

Competitor analysis: Analyze and evaluate features of external competitors that are attracting customers.

Crucial Features for Churn Prediction Model

Frequency of transactions.

Customer service interactions and resolutions.

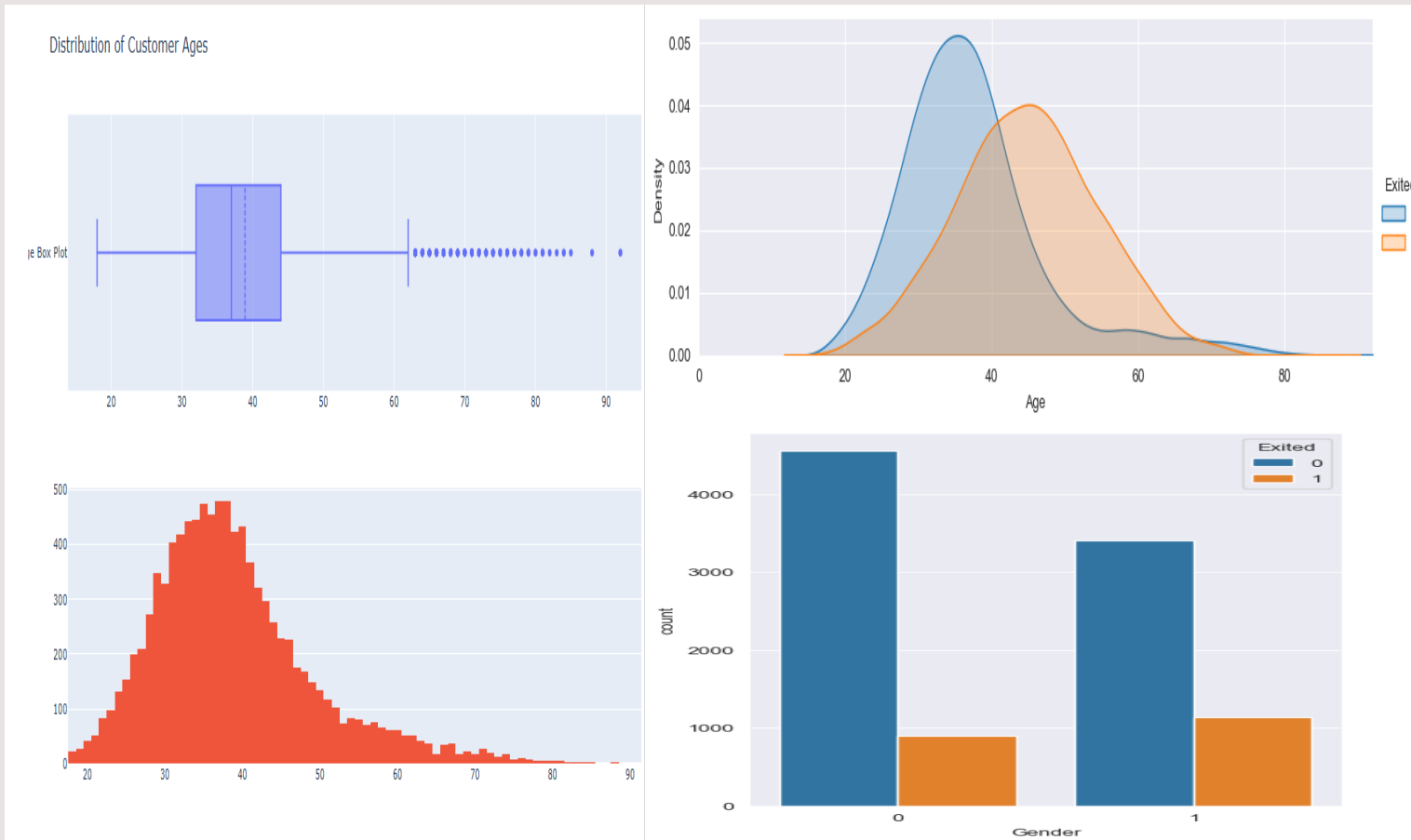
Changes in account balances and credit scores.

Customer demographics and location.

Utilization of digital banking services.

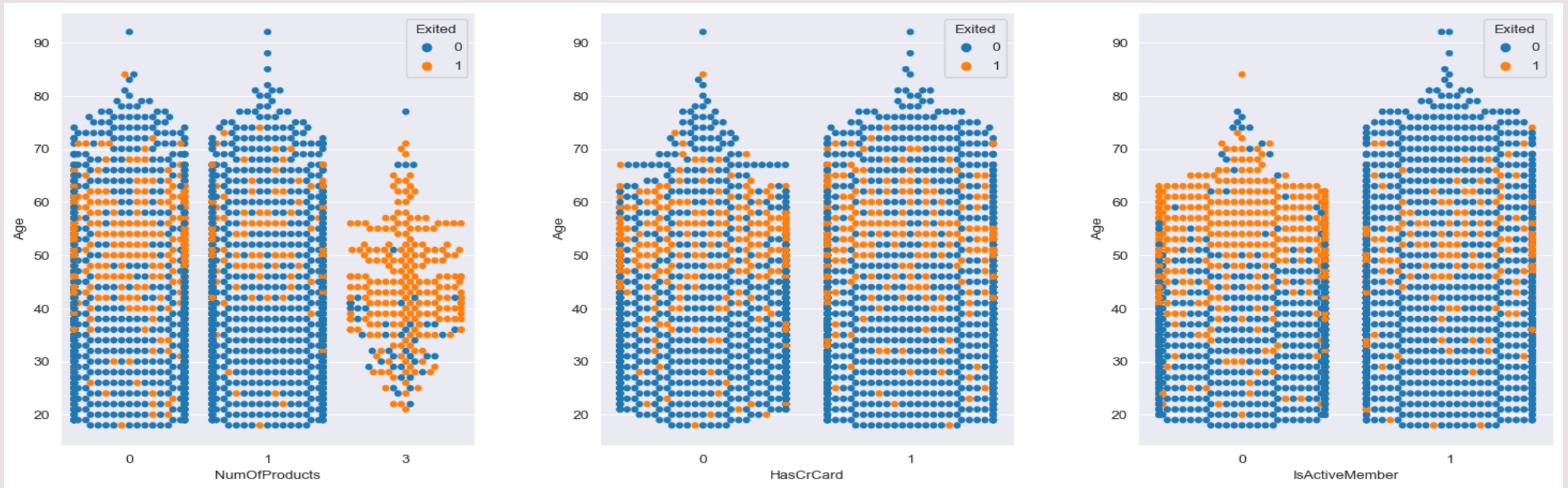
Feedback from surveys and social media.

Real life scenario Analysis of Crucial factors for churn model



- From analysis of different variables, as per the Box plot and the histogram plot, customer population are distributed with the age of between 33 to 45 years.
- Most of the customers who are in the bank are those below 45 years, and the aged population are the majority.
- Most of the customers are male, and female customers are less with high churn rate.

Real life Scenario: Analysis of customers with different product types



- Customers with 3 or 4 products have a higher chances of churn as per the swarm plot above.

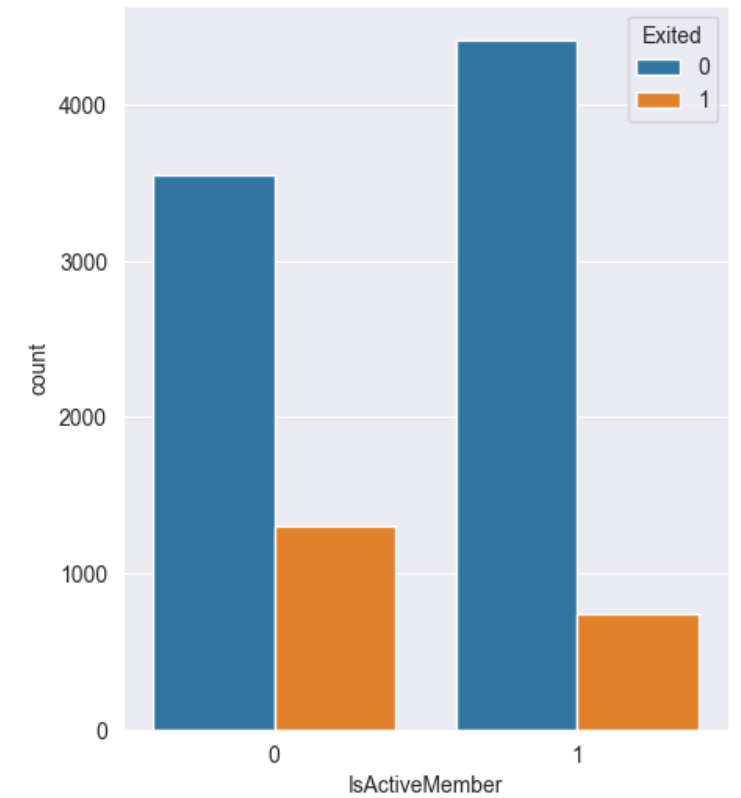
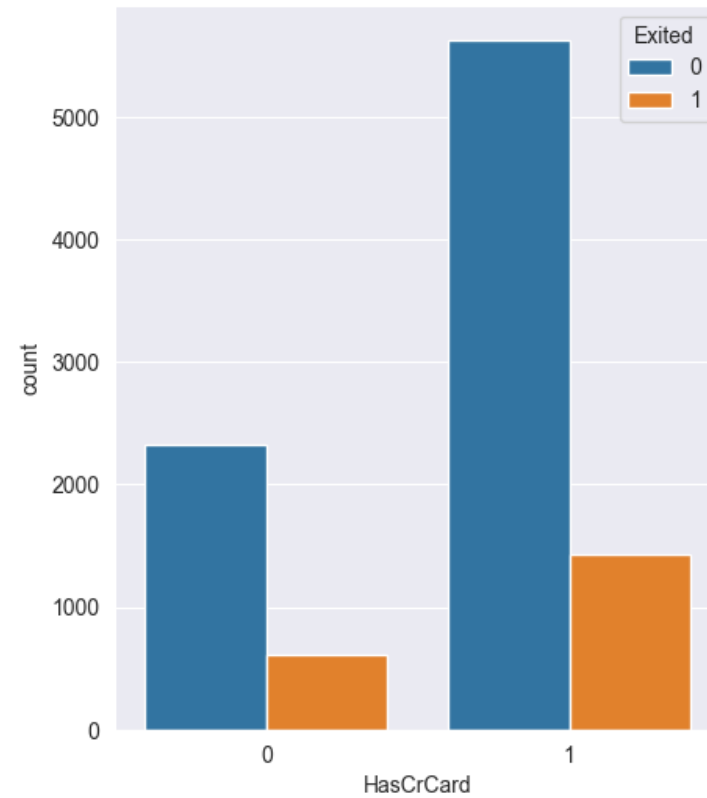
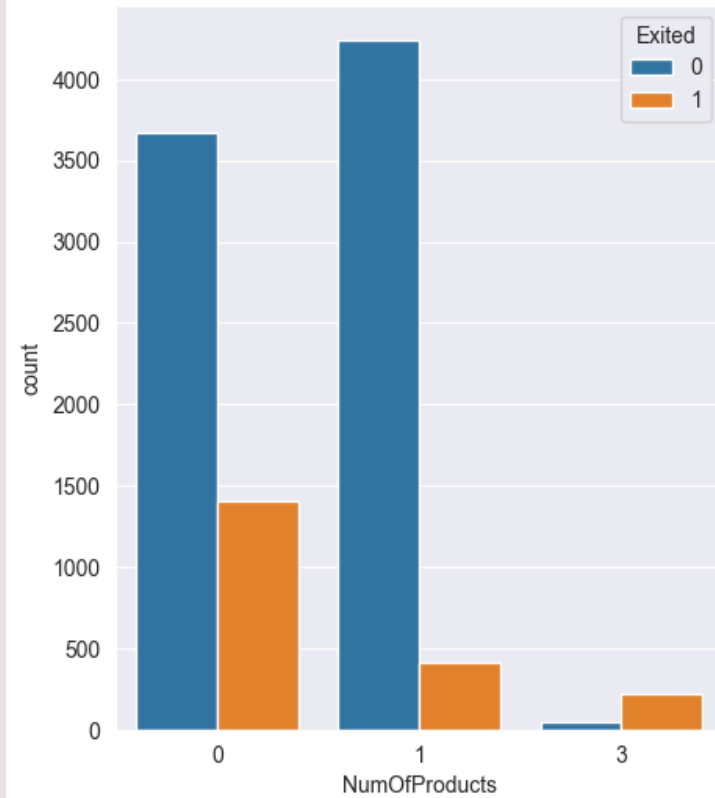
Using Insights for Targeted Retention Strategies

- Personalized offers and promotions to different customers.
 - Implementation of enhanced customer service initiatives.
 - Tailored communication addressing specific concerns raised by customers.
 - Introduction of loyalty programs and rewards.
 - Use of proactive communication during live events and on open days
 - Introduction of customer education session, on specific targeted customers like youths on topics such as savings strategies.
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Interventions for Improved Customer Satisfaction and Reduced Churn

- Customer service training and improvement.
 - Fee and policy adjustments based on customer feedback.
 - Introduction of new and competitive products.
 - Streamlined digital services and user-friendly interfaces.
 - Transparent communication regarding changes.
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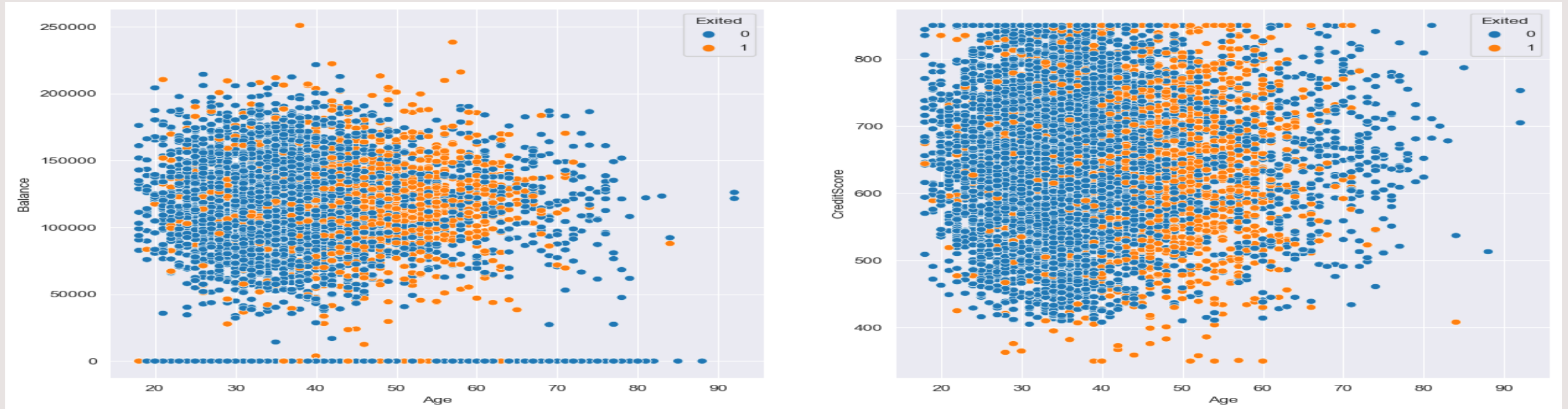
Interventions for Improved Customer Satisfaction and Reduced Churn



Monitoring and Evaluating Retention Strategy Effectiveness

- Regularly tracking churn rates.
 - Analyzing customer feedback and sentiment.
 - Conducting post-implementation surveys.
 - Comparing customer satisfaction scores.
 - Monitoring customer usage patterns and account activity.
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Real life scenario: Monitoring and evaluating Bank balance and credit score on customers Exiting.



- Customers aged 40-70 years have a high chances of churn. Swarm plot is a great tool to monitor the trends on customers who are exiting the bank.
- Intervention strategies can be employed targeting the population of ages between 40 and 70 years.
- Customized surveys can be shared to the identified age with high chances of churn.

Ensuring Model Accuracy and reflecting customer behavior



- Regular update of the model with new data.
- Use different models to do prediction and select the most performing model to do prediction
- Monitor and incorporate feedback from model predictions and customers.
- Staying informed about industry trends and technological advancements.
- Collaborating with Business Analysts and industry experts for continuous improvement.

Real Life Scenario: Prediction Accuracy from Different Models

KNear Classification

-----Classification Report-----				
	precision	recall	f1-score	support
0	0.86	0.93	0.90	1595
1	0.61	0.41	0.49	405
accuracy			0.83	2000
macro avg	0.73	0.67	0.69	2000
weighted avg	0.81	0.83	0.81	2000
-----More Specific Classification Report-----				
Accuracy:- 0.827				
Sensitivity :- 0.10157194679564692				
Specificity :- 0.9316614420062695				
F1-Score :- 0.49266862170087977				

Random Forest

-----Classification Report-----				
	precision	recall	f1-score	support
0	0.88	0.95	0.91	1595
1	0.71	0.48	0.58	405
accuracy			0.86	2000
macro avg	0.80	0.72	0.74	2000
weighted avg	0.85	0.86	0.85	2000
-----More Specific Classification Report-----				
Accuracy:- 0.856				
Sensitivity :- 0.11448598130841121				
Specificity :- 0.9504702194357367				
F1-Score :- 0.5764705882352941				

Decision Tree

-----Classification Report-----				
	precision	recall	f1-score	support
0	0.88	0.94	0.91	1595
1	0.67	0.48	0.56	405
accuracy			0.85	2000
macro avg	0.77	0.71	0.73	2000
weighted avg	0.84	0.85	0.84	2000
-----More Specific Classification Report-----				
Accuracy:- 0.847				
Sensitivity :- 0.11570247933884298				
Specificity :- 0.9391849529780564				
F1-Score :- 0.5616045845272206				

XG Boost Model

-----Classification Report-----				
	precision	recall	f1-score	support
0	0.89	0.93	0.91	1595
1	0.66	0.53	0.59	405
accuracy			0.85	2000
macro avg	0.77	0.73	0.75	2000
weighted avg	0.84	0.85	0.84	2000
-----More Specific Classification Report-----				
Accuracy:- 0.8495				
Sensitivity :- 0.125956444967628				
Specificity :- 0.9310344827586207				
F1-Score :- 0.5871056241426612				

Logistic Regression

-----Classification Report-----				
	precision	recall	f1-score	support
0	0.83	0.97	0.89	1595
1	0.62	0.19	0.29	405
accuracy			0.81	2000
macro avg	0.72	0.58	0.59	2000
weighted avg	0.78	0.81	0.77	2000
-----More Specific Classification Report-----				
Accuracy:- 0.812				
Sensitivity :- 0.04741379310344827				
Specificity :- 0.9699059561128527				
F1-Score :- 0.29056603773584905				

The best performing model for our prediction is random forest with an accuracy score of 86%, followed by decision tree and XG Boost models at 85%

Ethical Considerations



Ensuring data privacy and compliance with regulations.



Obtaining explicit customer consent for data usage.



Anonymizing and aggregating data to protect individual privacy.



Transparent communication about data usage and retention.

Communicating Benefits of Retention Strategies

- Clear, timely and honest communication with customers.
 - Highlighting personalized benefits available to customers.
 - Showcasing success stories and testimonials.
 - Implementing a feedback and complaints mechanisms.
 - Share with customers clear and concise strategic plan and how customers will play a pivotal role in the entire process.
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Potential Challenges

- Quality and availability of Data to perform model prediction
 - Balancing personalized approaches with privacy concerns.
 - Integrating diverse data sources.
 - Feature selection to be used in prediction.
 - Imbalanced datasets.
 - Adapting to rapidly changing market dynamics.
 - Overcoming resistance to change within the organization.
 - Stiff competition from other banking institutions
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References

Bharti Prasad. 2021. Customer Churn Prediction. Kaggle Dataset.

<https://www.kaggle.com/code/bhartiprasad17/customer-churn-prediction>
