**CHURN ANALYSIS**

**CHURN:**

Churn refers to the percentage of people who leave a group over any given period. It can be a sign of dissatisfaction with the service, competition offering better offers, more effective sales or reasons related to the life cycle of the customers. It’s possible to overestimate the churn rate. For example, if a consumer drops the service but then re-signs in the same year, the churn rate will be higher. Therefore, it’s important to distinguish between “gross churn”, which is the total amount of absolute disconnection, and “net churn” which is the total loss of members. The difference between “gross” and “net” is how many new members you have added in the same time period. Suppliers may realize that offering a “loss-leader” “introductory special” can lead to higher churn rates. Some members will sign up, let their service lapse, and then re-sign on to continue taking advantage of existing specials.

**ABOUT DATASET:**

In this comprehensive analysis, we embark on an intricate exploration of a dataset brimming with details about bank customers, intricately intertwined with indicators of their departure from the banking institution. The mission is to meticulously dissect each column, deciphering its significance, and subsequently delve into key categorical variables such as exit status, gender, credit card ownership, active membership, and geographical location. Through this exhaustive examination, we aim to gain a profound understanding of the dataset, unveiling invaluable insights to inform churn prediction models and devise effective customer retention strategies.

The Row Number plays a pivotal role in maintaining data integrity and facilitating efficient data organization. Acting as a unique identifier for each record in the dataset, Row Number ensures seamless indexing and retrieval of information. While its significance might not be immediately apparent in customer analysis, its presence is indispensable for navigating through the dataset systematically and ensuring accurate data manipulation.

CustomerID, another cornerstone of the dataset, serves as a distinctive marker allocated to each customer, enabling meticulous tracking of individual activities and transactions within the bank's ecosystem. This unique identifier forms the backbone of customer-centric analyses, laying the groundwork for personalized marketing strategies and tailored retention initiatives. Without CustomerID, the ability to trace individual customer behaviour and assess their journey within the banking system would be severely compromised.

Surname, while seemingly innocuous, may hold deeper insights than meets the eye. Beyond merely denoting the last name of the customer, Surname could potentially unveil familial connections or cultural affinities, enriching segmentation analyses and contributing to comprehensive customer profiling endeavours. By delving deeper into Surname data, banks can gain a more nuanced understanding of their customer base, allowing for more targeted and effective retention strategies.

Credit Score emerges as a critical metric in analysis, offering a glimpse into the creditworthiness of a customer and their capacity to fulfil financial obligations. A higher credit score typically correlates with lower credit risk, making it an indispensable component of credit assessment and risk management frameworks. By analysing the distribution of credit scores among exited customers, banks can identify potential patterns or trends that may signal increased churn risk, allowing for proactive intervention strategies to be implemented.

Geography, another fundamental aspect of analysis, offers insights into the geographical distribution of customers and potential regional variations in churn rates. With categories such as France, Germany, and Spain, Geography data allows banks to identify hotspots of customer attrition and tailor retention strategies accordingly. By understanding the unique challenges and preferences of customers in different regions, banks can develop targeted retention initiatives that resonate with local customer needs and preferences.

Gender, while not inherently linked to churn behaviour, presents an opportunity for nuanced analysis when juxtaposed with exit status. Categorized as Male or Female, gender data enables us to explore potential gender-specific trends in banking behaviours and retention dynamics. While it's essential to approach gender analysis with sensitivity and caution, examining gender disparities in churn rates can provide valuable insights into potential areas for improvement in customer retention strategies.

Age, a fundamental demographic variable, exerts a profound influence on financial behaviours, risk preferences, and product preferences. Analysing age distributions among exited customers can unveil age-related patterns in churn propensity and retention efficacy. By segmenting customers based on age cohorts, banks can tailor retention strategies to address the unique needs and preferences of different age groups, thereby increasing the effectiveness of their retention efforts.

Tenure emerges as a barometer of customer loyalty, encapsulating the duration of the customer's association with the bank. A longer tenure typically signifies deeper loyalty and relationship longevity, offering invaluable insights into retention dynamics and customer lifetime value estimations. By analysing tenure distributions among exited customers, banks can identify potential gaps in their retention strategies and implement targeted interventions to improve customer loyalty and retention rates.

Balance, representing the monetary holdings within the customer's account, provides insights into financial stability and spending habits. Analysing balance distributions among exited customers can offer valuable insights into the interplay between financial well-being and churn likelihood. By understanding the financial circumstances of customers who churn, banks can develop tailored retention strategies aimed at addressing their specific needs and concerns, thereby reducing churn rates and improving overall customer satisfaction.

NumOfProducts quantifies the breadth of the customer's engagement with the bank's offerings, encompassing a diverse array of products such as bank accounts, credit cards, or loans. This metric underscores cross-selling opportunities, customer stickiness, and portfolio diversification strategies. By analysing the number of products held by exited customers, banks can identify potential opportunities to upsell or cross-sell additional products to existing customers, thereby increasing customer engagement and retention rates.

HasCreditCard, a binary indicator denoting the customer's possession of a credit card, serves as a proxy for financial inclusion and payment preferences. Analysing the distribution of credit card ownership among exited customers can provide insights into the role of credit cards in customer engagement and retention dynamics. By understanding the factors influencing credit card ownership and usage among customers who churn, banks can develop targeted retention strategies aimed at increasing credit card adoption and usage among at-risk customers.

IsActiveMember delineates the customer's active engagement with the bank's services, offering insights into transactional frequency, service utilization patterns, and overall customer engagement levels. Analysing active membership distributions among exited customers can help identify potential gaps in service quality or customer engagement initiatives that may contribute to churn. By understanding the factors influencing customer engagement and satisfaction, banks can develop targeted retention strategies aimed at improving overall service quality and increasing customer loyalty.

EstimatedSalary represents the customer's projected annual income, offering valuable insights into purchasing power, lifestyle affluence, and financial aspirations. Analysing estimated salary vis-à-vis churn propensity can provide insights into income-related determinants of customer attrition and retention. By understanding the factors influencing churn among customers with different income levels, banks can develop targeted retention strategies aimed at addressing the specific needs and concerns of high-value customers, thereby increasing retention rates and maximizing customer lifetime value.

Exited serves as the focal point of the analysis, indicating whether a customer has churned (1 for Yes, 0 for No). This critical variable encapsulates various demographic, financial, and behavioural factors underlying customer attrition, serving as the cornerstone for churn prediction models and retention strategies. By analysing the factors influencing churn among exited customers, banks can gain valuable insights into the drivers of customer attrition and develop targeted retention strategies aimed at reducing churn rates and improving overall customer satisfaction.

Analysing categorical variables offers further illumination on churn dynamics. Among non-exited customers, 3404 are females, and 4559 are males. Among exited customers, 1139 are females, and 898 are males. This disproportion in gender representation among exited customers underscores the imperative for gender-sensitive retention strategies. By understanding the factors influencing churn among male and female customers, banks can develop targeted retention strategies aimed at addressing the specific needs and concerns of each gender group, thereby increasing retention rates and improving overall customer satisfaction.

Credit Card Ownership: Among non-exited customers, 5631 possess credit cards, while 2332 do not. Among exited customers, 1424 possess credit cards, while 613 do not. The disparity in credit card ownership between exited and non-exited cohorts underscores the pivotal role of credit card usage in retention dynamics. By understanding the factors influencing credit card ownership among customers who churn, banks can develop targeted retention strategies aimed at increasing credit card adoption and usage among at-risk customers, thereby increasing retention rates and maximizing customer lifetime value.

Active Membership: Among non-exited customers, 4416 are active members, while 3547 are inactive

. Among exited customers, 735 are active members, while 1302 are inactive. The significant difference in active membership between exited and non-exited segments highlights the importance of interventions aimed at enhancing customer engagement and loyalty. By understanding the factors influencing customer engagement and satisfaction, banks can develop targeted retention strategies aimed at improving overall service quality and increasing customer loyalty.

Geography Distribution: Among non-exited customers, 4204 are from France, 1695 from Germany, and 2064 from Spain. Among exited customers, 810 are from France, 814 from Germany, and 413 from Spain. Geographical disparities in churn rates necessitate tailored retention strategies and localized customer engagement initiatives. By understanding the factors influencing churn rates in different geographical regions, banks can develop targeted retention strategies aimed at addressing the specific needs and concerns of customers in each region, thereby increasing retention rates and improving overall customer satisfaction.

In conclusion, a meticulous analysis of each dataset column alongside categorical variables provides profound insights into customer churn dynamics. By comprehensively understanding customer demographics, financial behaviours, and engagement patterns, banks can devise targeted retention strategies aimed at mitigating churn, enhancing customer satisfaction, and fostering long-term relationships. This holistic approach to churn analysis empowers banks to proactively address customer attrition and drive sustainable business growth.