

Study customer churn analytics for the banking industry



Various segments of customers

Churned customer

| <i>COUNT of exited</i> | <i>age_category</i> | | | | |
|------------------------|---------------------|------------------|--------------|--------------|-------------|
| <i>geography</i> | Adolescents | Middle Age Adult | Older Adults | Young Adults | Grand Total |
| France | 0.07% | 34.35% | 0.95% | 6.25% | 41.62% |
| Germany | | 27.56% | 1.29% | 5.97% | 34.83% |
| Spain | 0.07% | 18.53% | 0.54% | 4.41% | 23.56% |
| Grand Total | 0.14% | 80.45% | 2.78% | 16.63% | 100.00% |

Not Churned customer

| <i>COUNTA of age_category</i> | <i>age_category</i> | | | | |
|-------------------------------|---------------------|------------------|--------------|--------------|-------------|
| <i>geography</i> | Adolescents | Middle Age Adult | Older Adults | Young Adults | Grand Total |
| France | 0.28% | 23.99% | 3.18% | 17.89% | 45.33% |
| Germany | 0.17% | 13.02% | 1.24% | 9.84% | 24.27% |
| Spain | 0.11% | 16.59% | 1.57% | 12.12% | 30.40% |
| Grand Total | 0.56% | 53.60% | 5.99% | 39.85% | 100.00% |

- The Maximum churn happened from France, followed by Germany and Spain
- The Age group churn happened is Middle Age Adults (Age 35 -64)
- Followed by Germany and Spain

Age :

- BETWEEN 12 AND 18 THEN 'Adolescents'
- BETWEEN 19 AND 34 THEN 'Young Adults'
- BETWEEN 35 AND 64 THEN 'Middle Age Adult'
- BETWEEN 65 AND 100 THEN 'Older Adults'

Various segments of customers



Churned customer

| COUNT | age_category | | | | |
|---------------|--------------|------------------|--------------|--------------|-------------|
| credit_rating | Adolescents | Middle Age Adult | Older Adults | Young Adults | Grand Total |
| Average | 2 | 669 | 23 | 140 | 834 |
| Good | | 397 | 15 | 85 | 497 |
| Poor | | 119 | 3 | 20 | 142 |
| Grand Total | 2 | 1185 | 41 | 245 | 1473 |

Un-churned customer

| COUNT | age_category | | | | |
|---------------|--------------|------------------|--------------|--------------|-------------|
| credit_rating | Adolescents | Middle Age Adult | Older Adults | Young Adults | Grand Total |
| Average | 11 | 1014 | 127 | 728 | 1880 |
| Good | 9 | 679 | 76 | 516 | 1280 |
| Poor | | 213 | 10 | 173 | 396 |
| Grand Total | 20 | 1906 | 213 | 1417 | 3556 |

Note:

Credit score

- Between 0 and 500 is POOR
- Between 501 AND 700 THEN Average
- BETWEEN 701 AND 900 THEN Good
- Above 901 is Excellent

Various segments of customers

Churned customer

| <i>COUNT of exited</i> | <i>age_category</i> | | | | |
|----------------------------------|---------------------|------------------|--------------|--------------|-------------|
| <i>estimated_salary_category</i> | Adolescents | Middle Age Adult | Older Adults | Young Adults | Grand Total |
| ENTRY_LEVEL | | 0.14% | | | 0.14% |
| EXECUTIVE_POSITIONS | | 38.70% | 1.56% | 8.76% | 49.02% |
| JUNIOR_POSITIONS | | 0.68% | | 0.07% | 0.75% |
| MID-LEVEL | | 4.75% | 0.20% | 0.81% | 5.77% |
| SENIOR_POSITIONS | 0.14% | 36.18% | 1.02% | 6.99% | 44.33% |
| Grand Total | 0.14% | 80.45% | 2.78% | 16.63% | 100.00% |

Present customer

| <i>COUNT of exited</i> | <i>age_category</i> | | | | |
|----------------------------------|---------------------|------------------|--------------|--------------|-------------|
| <i>estimated_salary_category</i> | Adolescents | Middle Age Adult | Older Adults | Young Adults | Grand Total |
| ENTRY_LEVEL | | 0.03% | | 0.03% | 0.06% |
| EXECUTIVE_POSITIONS | 0.25% | 25.06% | 3.04% | 18.05% | 46.40% |
| JUNIOR_POSITIONS | | 0.79% | 0.06% | 0.39% | 1.24% |
| MID-LEVEL | 0.06% | 4.25% | 0.25% | 4.08% | 8.63% |
| SENIOR_POSITIONS | 0.25% | 23.48% | 2.64% | 17.29% | 43.67% |
| Grand Total | 0.56% | 53.60% | 5.99% | 39.85% | 100.00% |

Estimated salary Between

- 11 AND 100 THEN 'ENTRY_LEVEL'
- 101 AND 1000 THEN 'JUNIOR_POSITIONS'
- 1001 AND 10000 THEN 'MID-LEVEL'
- 10001 AND 100000 THEN 'SENIOR_POSITIONS'

Age :

- BETWEEN 12 AND 18 THEN 'Adolescents'
- BETWEEN 19 AND 34 THEN 'Young Adults'
- BETWEEN 35 AND 64 THEN 'Middle Age Adult'
- BETWEEN 65 AND 100 THEN 'Older Adults'

Glance



| <i>COUNT of exited</i> | <i>exited</i> | <i>geography</i> | | | | | |
|------------------------|---------------|------------------|--------|--------|---------|-------|-------------|
| | 0 | | | 1 | | | Grand Total |
| <i>credit_rating</i> | France | Germany | Spain | France | Germany | Spain | |
| Average | 16.37% | 9.11% | 11.91% | 7.10% | 5.29% | 4.20% | 53.97% |
| Good | 11.73% | 6.12% | 7.60% | 3.88% | 3.82% | 2.19% | 35.34% |
| Poor | 3.96% | 1.93% | 1.99% | 1.21% | 1.09% | 0.52% | 10.70% |
| Grand Total | 32.05% | 17.16% | 21.50% | 12.19% | 10.20% | 6.90% | 100.00% |

| <i>COUNT of exited</i> | <i>exited</i> | | |
|------------------------|---------------|--------|-------------|
| <i>credit_rating</i> | 0 | 1 | Grand Total |
| Average | 37.38% | 16.58% | 53.97% |
| Good | 25.45% | 9.88% | 35.34% |
| Poor | 7.87% | 2.82% | 10.70% |
| Grand Total | 70.71% | 29.29% | 100.00% |

- 29% have churned
- 16.5 % Maximum have Average Credit rating

0 :Present Customer
1:Churned Customer

Where is the loss ?

| COUNT of exited | exited | estimated_salary_category | | | | | | | | | |
|-----------------|-------------|---------------------------|------------------|-----------|------------------|-------------|---------------------|------------------|-----------|------------------|-------------|
| | 0 | | | | | 1 | | | | | Grand Total |
| credit_rating | ENTRY_LEVEL | EXECUTIVE_POSITIONS | JUNIOR_POSITIONS | MID-LEVEL | SENIOR_POSITIONS | ENTRY_LEVEL | EXECUTIVE_POSITIONS | JUNIOR_POSITIONS | MID-LEVEL | SENIOR_POSITIONS | |
| Average | 0.02% | 17.16% | 0.54% | 3.66% | 16.01% | 0.02% | 8.11% | 0.14% | 1.15% | 7.16% | 53.97% |
| Good | 0.02% | 11.83% | 0.32% | 1.93% | 11.35% | 0.02% | 4.65% | 0.06% | 0.44% | 4.71% | 35.34% |
| Poor | | 3.82% | 0.02% | 0.52% | 3.52% | | 1.59% | 0.02% | 0.10% | 1.11% | 10.70% |
| Grand Total | 0.04% | 32.81% | 0.87% | 6.10% | 30.88% | 0.04% | 14.36% | 0.22% | 1.69% | 12.98% | 100.00% |

- The Max churn has happened with Executive Position, followed by Senior position
- Average rating credit score has maximum churn



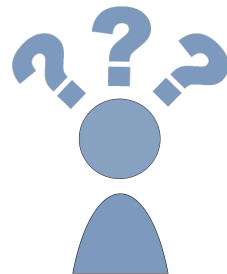
Final focus areas and ideas for each metric to combat churn

In the Final focus case area, the formula is designed to give more weight to the customer's credit score and age, which are considered more important in determining creditworthiness. The number of product categories a customer has is given less weight in the formula, as it is considered less important.

The specific values chosen for the weights are (0.5, 0.3, 0.2) .

In this context, it's possible that the weights for each feature were chosen to reflect their relative importance in predicting customer profitability.

The weight of 50% assigned to `avg_credit_score` suggests that creditworthiness is considered the most important factor in predicting customer profitability. The weight of 30% assigned to `max_age` suggests that age is also an important factor, but not as important as creditworthiness. Finally, the weight of 20% assigned to `num_product_categories` suggests that the number of product categories a customer uses is a relatively minor factor in predicting profitability, but still worth considering.



Good credit score

| credit_rating | ag_credit_score | max_age | num_product_categories | hascard | geography | customer_id | count_customers | exited | user_category | age_category | balance_category | estimated_salary_category |
|---------------|-----------------|---------|------------------------|---------|-----------|-------------|-----------------|--------|---------------|--------------|------------------|---------------------------|
| Good | 850 | 81 | 1 | 1 | France | 15731569 | 1 | 0 | USER2 | Older Adults | MINIMUM_BALANCE | SENIOR_POSITIONS |
| Good | 850 | 81 | 1 | 1 | France | 15800554 | 1 | 0 | USER2 | Older Adults | MINIMUM_BALANCE | SENIOR_POSITIONS |
| Good | 850 | 71 | 1 | 1 | Spain | 15603111 | 1 | 1 | USER1 | Older Adults | GRADE_A | SENIOR_POSITIONS |
| Good | 850 | 71 | 1 | 1 | France | 15728542 | 1 | 0 | USER2 | Older Adults | MINIMUM_BALANCE | EXECUTIVE_POSITIONS |
| Good | 850 | 70 | 1 | 1 | Spain | 15571816 | 1 | 0 | USER1 | Older Adults | MINIMUM_BALANCE | JUNIOR_POSITIONS |
| Good | 850 | 70 | 1 | 1 | Germany | 15778975 | 1 | 1 | USER2 | Older Adults | GRADE_A | SENIOR_POSITIONS |
| Good | 850 | 68 | 1 | 1 | France | 15730579 | 1 | 0 | USER1 | Older Adults | Premium_customer | EXECUTIVE_POSITIONS |
| Good | 849 | 69 | 1 | 1 | France | 15650545 | 1 | 0 | USER1 | Older Adults | GRADE_A | EXECUTIVE_POSITIONS |
| Good | 850 | 66 | 1 | 0 | France | 15590320 | 1 | 0 | USER2 | Older Adults | MINIMUM_BALANCE | SENIOR_POSITIONS |
| Good | 850 | 66 | 1 | 0 | Germany | 15587647 | 1 | 1 | USER1 | Older Adults | Premium_customer | EXECUTIVE_POSITIONS |

Poor credit score

| credit_rating | ag_credit_score | max_age | num_product_categories | hascard | geography | customerid | count_customers | exited | user_category | age_category | balance_category | estimated_salary_category |
|---------------|-----------------|---------|------------------------|---------|-----------|------------|-----------------|--------|---------------|------------------|-------------------|---------------------------|
| Poor | 350 | 39 | 1 | 0 | Germany | 15758813 | 1 | 1 | USER2 | Middle Age Adult | Premieum_customer | EXECUTIVE_POSITIONS |
| Poor | 350 | 40 | 1 | 1 | France | 15668309 | 1 | 1 | USER1 | Middle Age Adult | Premieum_customer | EXECUTIVE_POSITIONS |
| Poor | 363 | 28 | 1 | 1 | Spain | 15779947 | 1 | 1 | USER2 | Young Adults | Premieum_customer | EXECUTIVE_POSITIONS |
| Poor | 350 | 51 | 1 | 1 | France | 15803202 | 1 | 1 | USER1 | Middle Age Adult | MINIMUM_BALANCE | EXECUTIVE_POSITIONS |
| Poor | 350 | 54 | 1 | 1 | Spain | 15685372 | 1 | 1 | USER1 | Middle Age Adult | Premieum_customer | EXECUTIVE_POSITIONS |
| Poor | 365 | 30 | 1 | 1 | Germany | 15597896 | 1 | 1 | USER1 | Young Adults | Premieum_customer | SENIOR_POSITIONS |
| Poor | 351 | 57 | 1 | 1 | Germany | 15679249 | 1 | 1 | USER1 | Middle Age Adult | Premieum_customer | EXECUTIVE_POSITIONS |
| Poor | 359 | 44 | 1 | 1 | France | 15612494 | 1 | 1 | USER1 | Middle Age Adult | Premieum_customer | EXECUTIVE_POSITIONS |
| Poor | 350 | 60 | 1 | 0 | France | 15765173 | 1 | 1 | USER1 | Middle Age Adult | MINIMUM_BALANCE | EXECUTIVE_POSITIONS |
| Poor | 358 | 52 | 1 | 1 | Spain | 15692416 | 1 | 1 | USER2 | Middle Age Adult | Premieum_customer | EXECUTIVE_POSITIONS |



Interpretation:

- Premium customer has maximum churn
- Minimum balance holder are continuing as customer
- Since the minimum balance holder have Good credit_rating
- Customers with a high credit score are generally considered to be a lower risk and may be more likely to pay back loans, so offering them a reduced interest rate could be a way to incentivize them to take out a loan or credit product with the bank.
- Executive positions have more churn compared to Senior position
- Purchase of products is more in senior position buyers
- Customers who regularly use multiple products and services offered by the bank could be good candidates for a reduced interest rate offer. This could help to increase their loyalty and encourage them to use even more of the bank's products and services.

Account Balance Between :

- 0 AND 100 Then 'MINIMUM_BALANCE'
- 101 AND 1000 Then 'GRADE_C'
- 1001 AND 10000 Then 'GRADE_B'
- 10001 AND 100000 Then 'GRADE_A'
- More than 100000+ Then 'Premium_customer'

Note: Credit Score

- Between 0 And 500 Is Poor
- Between 501 And 700 Then Average
- Between 701 And 900 Then Good
- Above 901 Is Excellent

Estimated salary Between

- 11 And 100 Then 'entry_level'
- 101 And 1000 Then 'junior_positions'
- 1001 And 10000 Then 'mid-Level'
- 10001 And 100000 Then 'senior_positions'
- More Than 100000+ Then Executive Positions