

Telecom Technology and Reducing Customer Churn

Nour Amous



The slide features a large light blue hexagon in the center. To its left is a large orange hexagon and a smaller blue hexagon. To its right is a large light blue hexagon and a smaller orange hexagon. At the bottom right is a blue hexagon. On the left side, there are two parallel yellow lines. On the right side, there are two parallel orange lines.

Business question

Will 5G technology reduce
customer churn in the
Telecommunication industry's
and represent a potentially
sizeable additional revenue
source?

Raj: Delivery Partner in my current company




**Business Manager
Service Manager
Network Manager**

Business problem overview



Customer churn, is the loss of clients or customers.



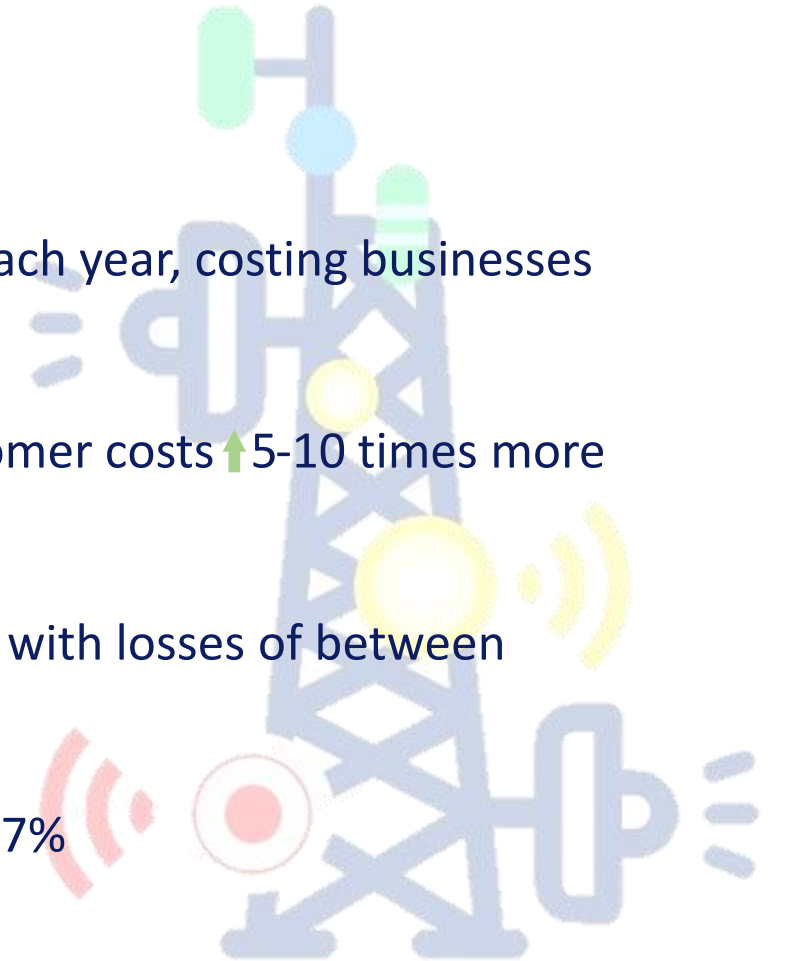
In Australia, businesses lose between ↓6-8 % of their customers each year, costing businesses more than ↓\$1.5 billion a year.

Customer churn is a critical metric because attracting a new customer costs ↑5-10 times more than retaining an existing one.*

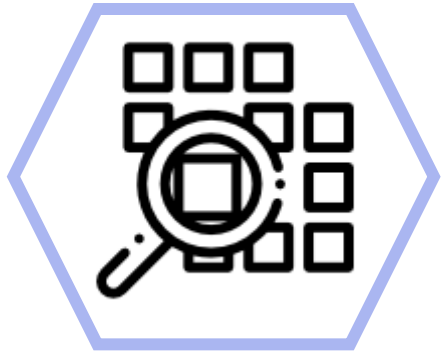
Utilities and telecommunications sectors take the biggest beating with losses of between ↓20-25% out of the business loss.

According to IBISWorld, Telecom industry growth 2016–2021: ↓-2.7%

* computerworld.com.au



Workflow



Get Data



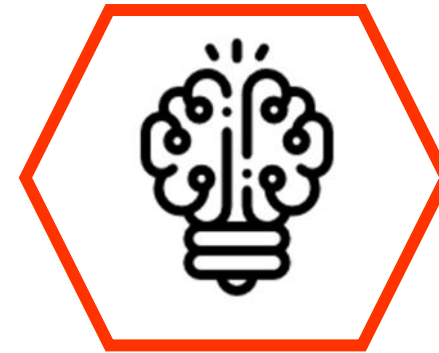
EDA



Train Model



Test Data



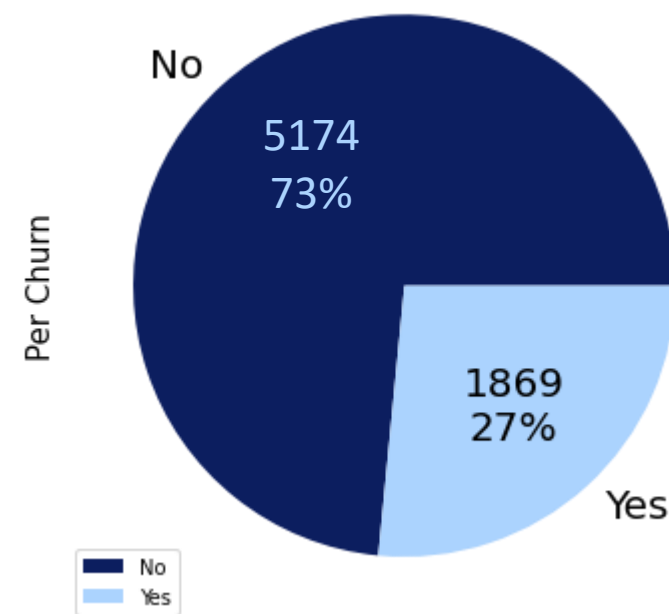
Results



One of the big **reasons behind customer churn** is that Businesses are struggling to get a clear picture of their customers, leading to a loss of revenue.

To understand this challenge and to find a solution, telecom customer churn data is used in this project obtained from a data module in [IBM Accelerator Catalog](#).

The original module contains five data tables, but only three will be considered for analysis: Demographics, Services, and Status, There are 7043 rows \times 56 columns, each representing a unique customer.



Feature set selection and consideration.



The top features that have correlation with Churn Label:

positive Correlations:

Paperless Billing
Unlimited Data
Senior Citizen
Streaming TV
Streaming Movies
Multiple Lines

Negative Correlations:

Under 30
Device Protection Plan
Online Backup
Married
Premium Tech Support
Online Security
Dependents

Why Does Churn Happen?

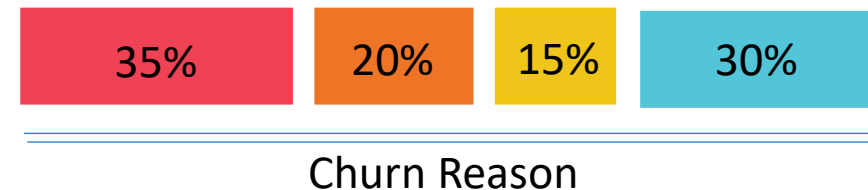


Businesses cannot make ALL of their customers happy .

churn will always be a constant challenge in any services business' life.

The top reasons behind customer churn and move to another provider in this data sample :

- 35% churn for Competitor made a better offer or had better devices.
- 20% churn for better data offer and network reliability.
- 13% churn because of The attitude of the support person.



Company challenge could cause customer churn

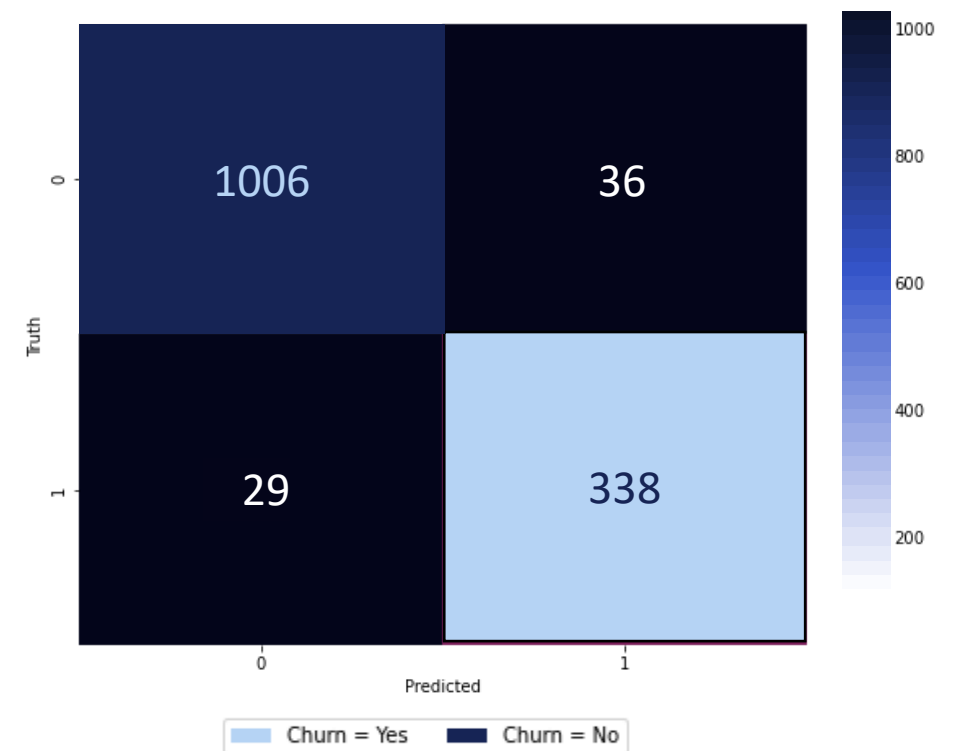
- Shortages in the resources to monitor and assign incidents due to high cost.
- Delay in resolving customer issue due to poor communications between systems.

	Model	Accuracy	Precision	Recall	F1 Score	F2 Score
0	Random Forest	0.960256	0.981818	0.86631	0.920455	0.887185
1	SVM (Linear)	0.957417	0.938547	0.898396	0.918033	0.906149
2	Logistic Regression	0.955997	0.933333	0.898396	0.915531	0.905172
3	Decision Tree	0.943222	0.876923	0.914439	0.895288	0.906681
4	K-Nearest Neighbours	0.900639	0.844118	0.76738	0.803922	0.78159
5	Naive Byes	0.867991	0.691837	0.906417	0.784722	0.853474

6	ANN 0	0.9553	0.95	0.99	0.97	
7	ANN 1	0.9553	0.98	0.87	0.92	

The Artificial Neural Network model is the most well-performing in terms of overall accuracy, Precision and recall for predicting class 1 (Churn = Yes).

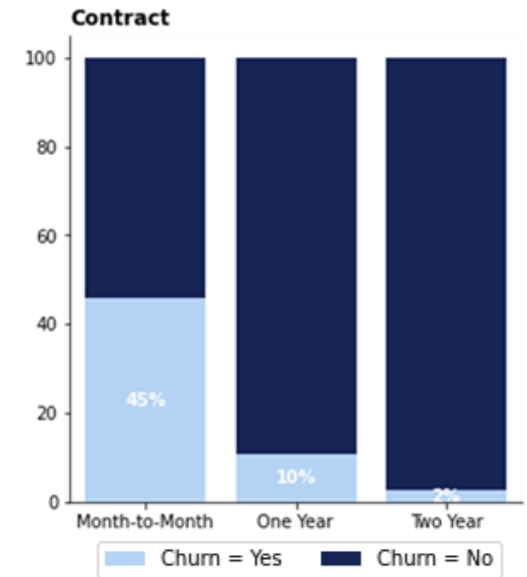
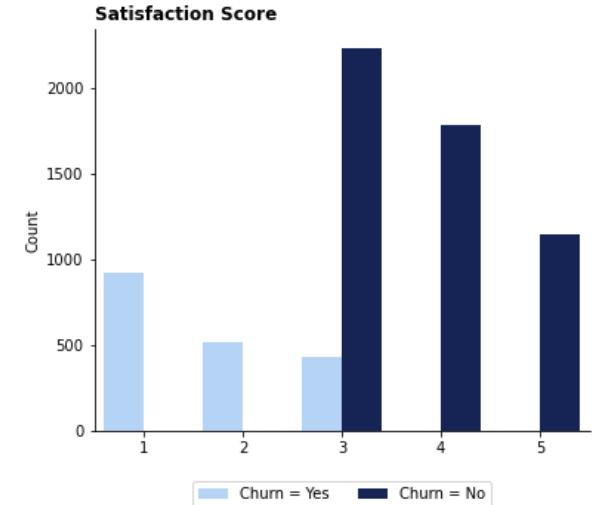
Classifier Accuracy: 93 % - 97 %





A number of variables have driven customers to be more likely to churn in the past quarter:

- expressing low satisfaction score (esp. score 1 and 2).
- Month to month contract.
- paying higher monthly charge
- purchasing offer E
- senior citizen.
- not subscribing to online security service.
- not having dependents.
- having recently joined (low tenure length).

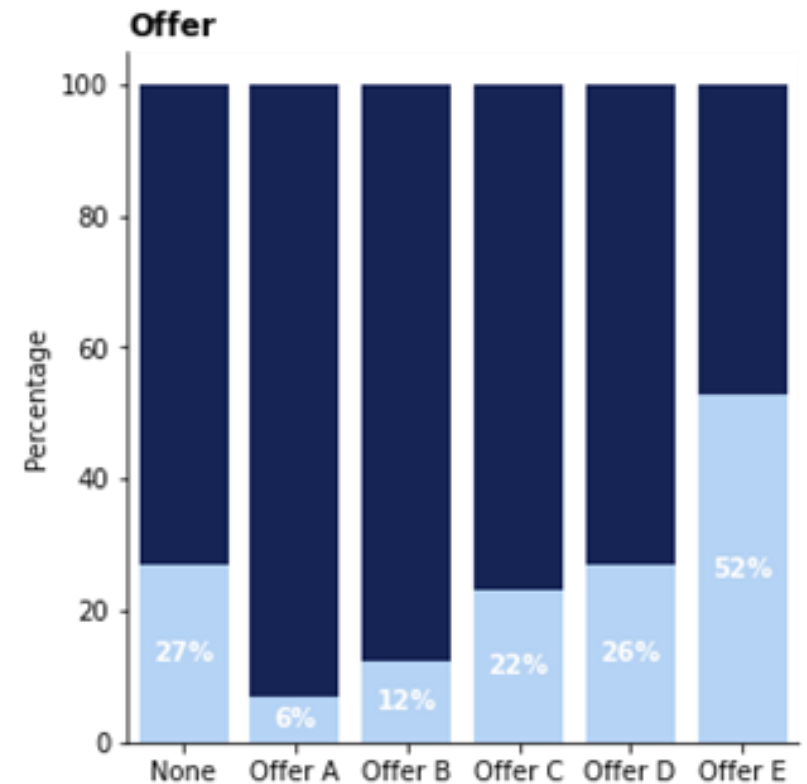


5G offers the speed, capacity, reliability, and ultra-low latency all at a practical cost

more than 60% of the offer A customers have Contract one to two Year, Streaming TV, streaming Movies, Unlimited Data , Online Security , Device Protection Plan ,and Premium Tech Support

In conclusion offering 5G service the customer churn can be reduced from ↓ 27% to 8% , and reduce company loss from ↓ \$65 million to \$20 million / month.*

*Bain & Co.



BILLING INFORMATION



AUDITING + RECONCILIATION



CUSTOMER INFORMATION



References:

EDA and Module notebook:

<https://github.com/NourAmous/5G-and-Customer-Churn.git>

www.IBISWorld.com

www.computerworld.com.au

www.billview.com.au

www.Infosys.com

www.bain.com



Thank you!