Delivering the promise of the digital world.
Making innovative lifestyles possible.

Leading Tomorrow with a Predictive Approach to Customer Defaults

Tactical Titans Consulting Company

Aashai Avadhani, Adela Cho, Mike Meissner, Jaelynn Kim, Roselyn Rozario

verizon

Delivering the promise of the digital world.
Making innovative lifestyles possible.

Understanding the Customer Default Challenge

Project Objective:

Predicting customer defaults based on historical data in order to:

- Minimize loss from default contracts
- Secure larger profits by being able to identify default or non-default customers

Team Solution to Challenge:

DEPO - the default/non-default prediction model based on live customer interactions

Navigating Tomorrow:
Empowering Verizon with Predictive Insights for Customer Success

- By identifying customers that have a high probability of defaulting
- By avoiding risks (profit loss, false positive, false negative, etc.) through identification of customers who are unable to complete payments

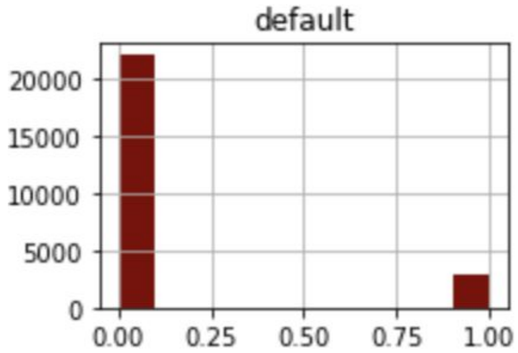
Goal: Develop a model that approves or rejects applications during live customer interactions

Introducing the Default-Prediction Model: DEPO

Model: Logistic Regression (Classification)

Output (Binary Result)

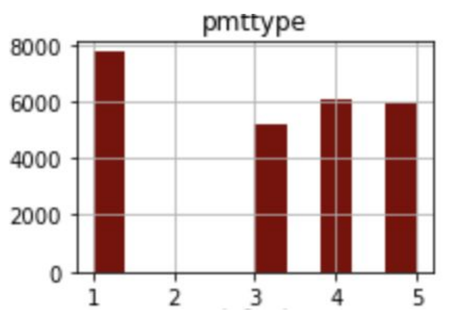
- Default (1)
- Not Default (0)



DEPO showed the highest accuracy in assessing whether a customer would not default on their contract.

Input Variables

- Categorical
  - Ex. Payment Type and Gender
- Non-Categorical
  - Ex. Downpayment, Credit Score, Price, etc.

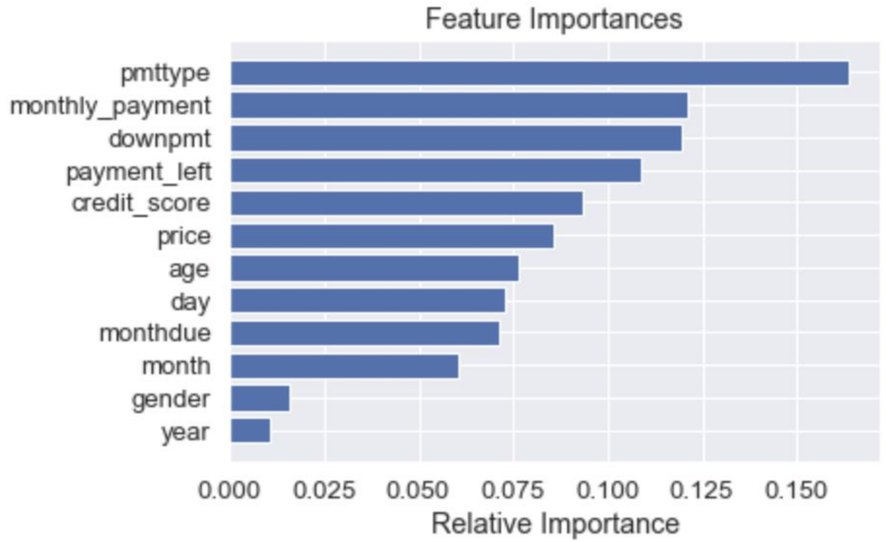


verizon

Methodology and Model Performance

Model Performance

Classification Report Snapshot			
	precision	recall	f1-score
0	0.94	0.97	0.93
1	0.67	0.50	0.59



Model Assessment

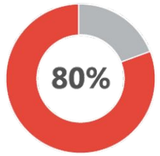
- The data predicts non-default well.
- Financial-related variables are important to the model:
  - Payment related variables (e.g., payment type, downpayment, etc.).
  - Credit Score
- Variables such as “age” and “day” could be correlated with variables not present in the model.
  - Ex. Certain age levels could signify more experienced individuals earning higher incomes compared to younger, less experienced customers.
- Informational variables (e.g., month, year, gender, etc.) are less important.

Quantifying Current Impact by Dollar Value

Current Business Landscape

Customer Base: 1 million applicants for a phone contract

80% are approved for contract



How many of those approved fail to keep their promise?

11.5%

Direct Average Loss: Roughly $1000 per default
(includes indirect loss)

How many are successfully making payments?

88.5%

Direct Average Profits: Roughly $250 over 36-month contract
(includes potential indirect profits from renewals and future purchases)

Current Business Without a Prediction Model:

Defaulted Customers: 92,000 (11.5% of 80% approved)

Direct Loss from Defaults: $92 million || Profit from Paying Customers: $175 million

Net Business Profit: $175 million - $92 million = $83 million

Estimating the Business Value of DEPO

- **Sales Reps** will use DEPO as a signal to decide whether to sell a new phone plan to the customer

- DEPO creates a **+18.4M profit lift per million customers**

- DEPO saves **half the time for sales pipeline conversion**, which is a **savings of ~6.54M**

- DEPO allows data driven decisions to be made for **finding qualified prospects for our new plan**

- DEPO brings in a **total lift** of **24.94M**

KPIs	Current System	With DEPO	Lift
Total Customer Base	1M	1M	0
Potential Customer Base	1M	500k	
Conversion Rate	20%	60%	40% cvr
Sale Conversion Time	50 hours	25 hours	+50% time = +6.54M
Total Addressable Prospects	200,000	300,000	+100k prospects
Expected Monetary Profit Lift	83M	101.4M	+18.4M
Total Lift	**83M**	**107.94**	**+24.94M**

verizon

Quantifying Impact by Dollar Value: Introducing DEPO to the Business

	Expected
Analytic Costs (2 Months)	
Databrick Costs Ex. DBUs Per Node Per Hour = 1 DBU $400/Week	-$3,200.00
Azure VM Cost $200/Week	-$1,600.00
Salary Data Scientist (4): $50/Hour Client Liaison (1): $40/Hour 35 Hours/Week	-$67,200.00

Analytic Benefits	
Reduction in Defaults	18,400
Direct Savings (Reduction of Losses) from Prediction Model	$18.4M
Total Lift	$24.94M

Net Business Profit with Prediction Model $175 million (Profit from Non-Default) - $73.6 million (Loss from Defaults) = $101.4 million.	
Net Present Value (NPV)	**+$24,868,000**

Estimated Impact of DEPO: Catching Risk

verizon

Questions?

verizon

Thank you.

Tactical Titans Consulting Company

verizon