Deel - Globepay Acceptance Report

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Summary

Introduction

Deel has connectivity into Globepay using their API. Deel clients provide their credit and debit details within the Deel web application, Deel systems pass those credentials along with any relevant transaction details to Globepay for processing.

Problem

Deel is experiencing a decline in the acceptance rate of credit and debit card payments processed by Globepay in the recent period.

Key Facts of Input Data

Globepay Acceptance Report.csv

- **5430** rows and **11** columns
- There are no missing values

Index

- **external_ref** as a key column

Date Time

- date_time column

Categorical / boolean:

- state (ACCEPTED, DECLINED)
- cvv_provided (True, False)
- country ['US' 'MX' 'UK' 'FR' 'CA' 'AE']
- currency ['USD' 'MXN' 'GBP' 'EUR' 'CAD']

Numerical

- amount

Rates

- daily rate in JSON format

Globepay Chargeback Report.csv

5430 rows and **11** columns

There are no missing values

external_ref as a key column (foreign key to Acceptance Report)

chargeback(True, False)

Task #1

1. Outlines the volume (in USD) of the declined payments

The total number accepted payments: **3777**

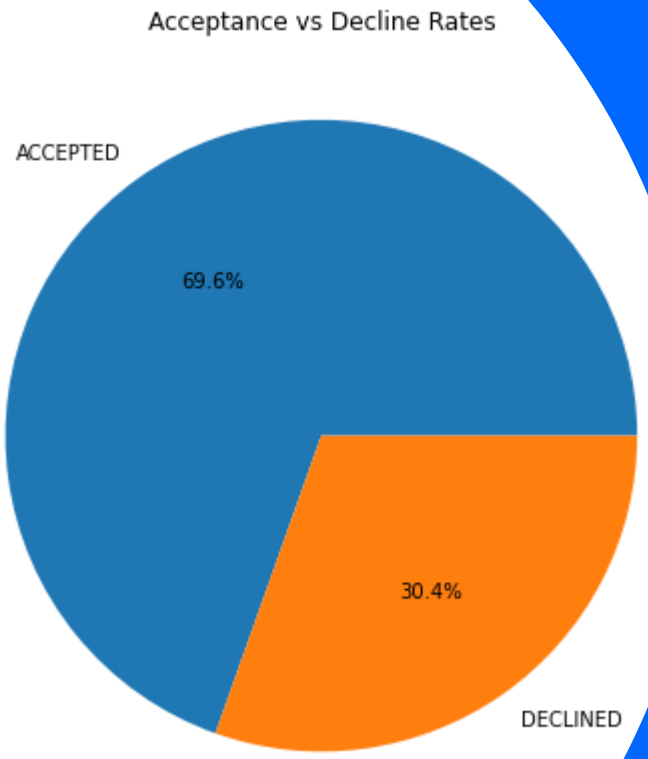
The total number declined payments: **1653**

The total volume in USD of the accepted payments: **$299,393,932.42**

The total volume in USD of the declined payments: **$ $130,877,578.83**

Acceptance rate is: **69.6%**

Declining rate is**: 30.4%**



*** ConvertToUsd** function is created to convert the amount to USD using rates column for each transaction

Task #1

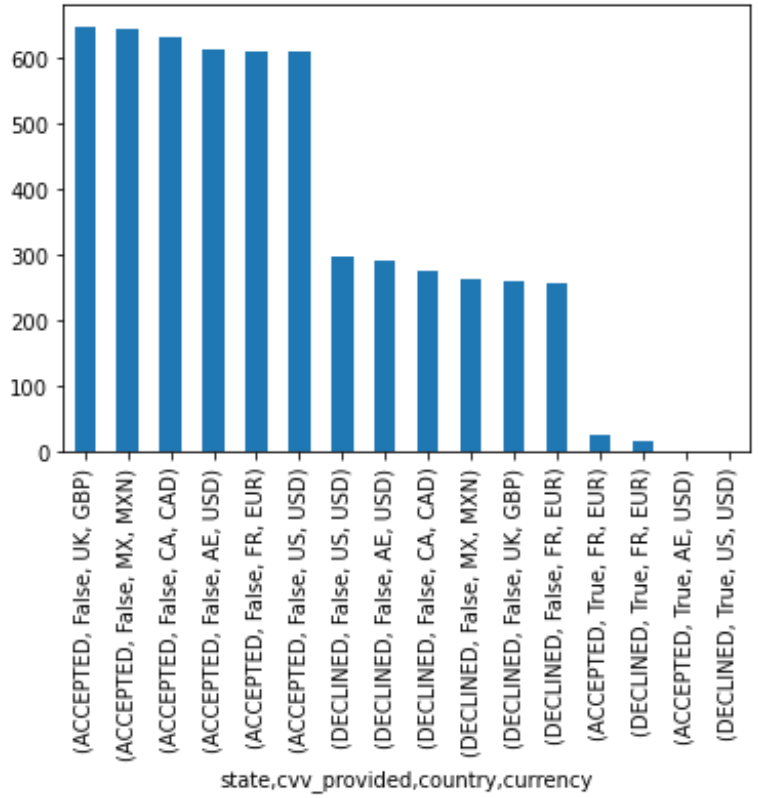
2. Analyses the problem root causes

We run a group summary statistics by:

- state
- cvv_provided
- Country
- currency.

Here are the findings:

- There is a large amount declined transactions that don't have provided CVV. This could be serious root cause.
- CVV not provided in US with USD currency have a large amount of failed transaction.
- Most accepted transaction are from UK with GBP currency and without CVV provided.



Task #1

3. Lists further next steps (hypothesis / analysis) you would do as a next steps having more time and business knowledge

- If CVV is provided will the increasing in the acceptance rate be significant
- Does changing the currency/country combination will significant decrease failure rate
- Is there is any specific time/date where transactions are more successfully
- Is there is any specific amount range where transactions are more successfully
- Implement ML Classification Algorithm (BinaryClasification, Decision Tree, SVM, XGBoost etc) that will predict if the transaction will be declined or approved
- Transaction segmentation by amount range. What amount range have more successfully transactions
- Run time-series analysis and/or prediction

Task #1

4. Suggests solutions / recommendations

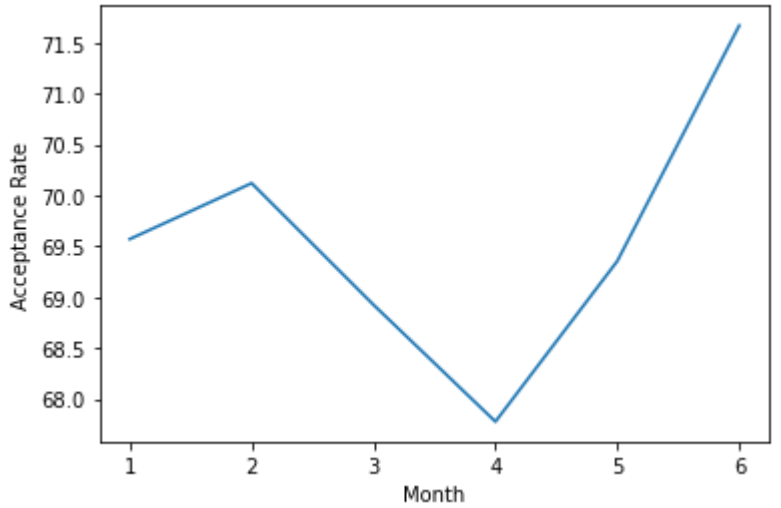
- Add CVV to be required field on the Web payment form
- Build a model that based on input data will predict the outcome of the transaction
- If probability of the failed transaction is more than 50%, suggest to the end customer changes in country/ currency combination
- Based on the output of the segmentation process focus marketing campaigns on those courtiers, currency that have large acceptance rate

Task #2

1. What is the acceptance rate over time?

date_time	accepted	declined	total	acceptance_rate
January	647	283	930	69.57
February	589	251	840	70.12
March	641	289	930	68.92
April	610	290	900	67.78
May	645	285	930	69.35
June	645	255	900	71.67

- The date range of data is from: Jan ‘19 – June ’19
- There are few transformations done on the datasets
- We will track the monthly changes
- Acceptance rate start at **69.57%** for January, drop to **67.78%** in April
- In the last two months there is grow to max **71.67%**



Task #2

2. List the countries where the amount of declined transactions went over $25M

The list of courtiers is the following:

['FR', 'UK', 'AE', 'US']

	state	country	amountUS
0	DECLINED	FR	32628785.93
1	DECLINED	UK	27489496.69
2	DECLINED	AE	26335152.43
3	DECLINED	US	25125669.78

	state	country	amountUS
0	DECLINED	FR	32628785.93
1	DECLINED	UK	27489496.69
2	DECLINED	AE	26335152.43
3	DECLINED	US	25125669.78
4	DECLINED	CA	18422315.65
5	DECLINED	MX	876158.35

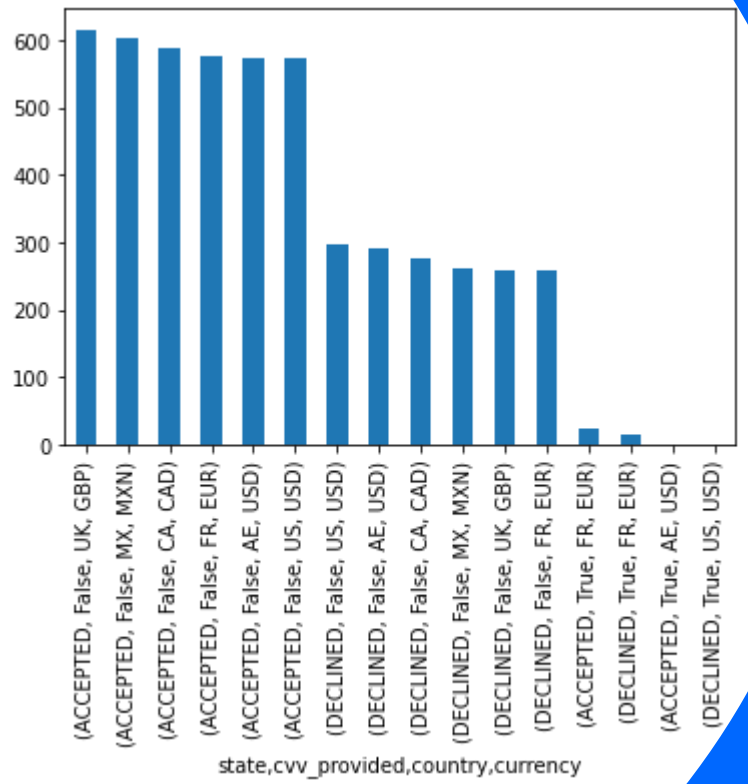
Task #2

3. Which transactions are missing chargeback data?

- The two datasets are merged and filtered by chargeback = False
- **We run a group summary statistics by:**
  1. state
  2. cvv_provided
  3. Country
  4. currency.

Based on the summary statistics we can divide these transactions in 2 main clusters:

1. **Cluster One** (Accepted transaction, with CVV not provided, from UK, MX, FR, AE and US, that have GBR, MXN, CAD EUR and USD currency)
2. **Cluster Two** (Declined transactions, with CVV not provided, from US, AE, CA, MX, UK and FR, that have USD, CAD, MXN, GBR and EUR currency)



Summary

- ✓ Having CVV required in the form should probably increase the acceptance rate. It needs to be A/B tested.
- ✓ Additional analysis including Supervised and Unsupervised Learning and need to be done for predicting acceptance rate and transaction segmentation.
- ✓ Date time analysis and forecasting could possibly unlock hidden patterns and give more insights of the data.

Thank you

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