



Military Bank Vietnam

MB POC Presentation – Data & Analysis

26th March 2020 & 27th March 2020

Updated 9th April 2020

Data from MB

Received 16th March 2020

Filename	SAS Comments
1. Digital Banking Registration Data.xlsx	<p>19,164 transactions</p> <p>14 columns</p> <ul style="list-style-type: none">• Are these ALL payments entries or a mixture of transaction types?• Why is device and phone number only sparsely populated?• What is REF_MOBILE column?<ul style="list-style-type: none">• Why are there empty cells?• What is ID_TYP_NO column?• Why are there columns with also a lot of empty cells?
2. Card Transaction Data.xlsx	<p>30,186 transactions</p> <p>45 columns</p> <p>We would need other information around these fields:</p> <ul style="list-style-type: none">• AMENDMENT_OFFICER• RECORD_ID• CARD_ID• CONTRACT_ID• SOURCE_MEMBER_ID• SOURCE_NUMBER

Data References / Description

Filename	File Data Reference
1. Digital Banking Registration Data.xlsx	5- Format of card transactional data_En.xlsx
2. Card Transaction Data.xlsx	6- Format of digital banking data_EN.xlsx



Data Profiling

Card Transaction Data

Profiling Output of Cards Data

File Edit View Insert Actions Tools Window Help Version: 3/17/2020 1:00:56 PM New

Report Properties

Tables

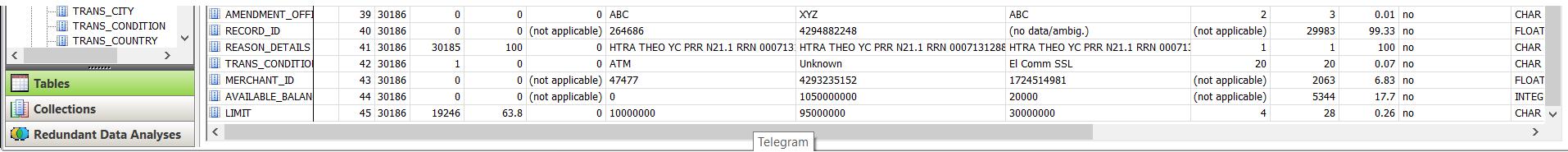
Card Transaction Data Mod.csv Data Source: Excel Samples

Standard Metrics **Custom Metrics** **Business Rules** **Alerts** **Visualizations** **Notes**

Field Name	Electrical Position /	Null Count	Percent Null	Blank Count	Minimum Value	Maximum Value	Mode	Pattern Count	Unique Count	Uniqueness	Primary Key Candidate	Data Type	
ID	1	30186	0	0	(not applicable)	30185	(no data/ambig.)	(not applicable)	30186	100	yes	INTEG	
CIF	2	30186	0	0	2637032	4292732900	573112153	(not applicable)	834	2.76	no	FLOAT	
FULL_NAME	3	30186	0	0	BUI CHIN HOANG	null VUONG TRUNG	VIEN TUAN TIEP	252	808	2.68	no	CHAR	
ID_NUMBER	4	30186	833	2.8	(not applicable)	1257098	851225465277	241201222309	(not applicable)	796	2.71	no	FLOAT
DATE_OF_ISSUE	5	30186	4434	14.7	(not applicable)	19951115	20200203	20160111	(not applicable)	573	2.23	no	INTEG
PLACE_OF_ISSUE	6	30186	40	0.1	0	20080425	quang ninh	CCS DKQL CU TRU VA DLQG VE DAN C	141	284	0.94	no	CHAR
DATE_OF_BIRTH	7	30186	7	0	(not applicable)	12/1/1958 12:00:00 AM	2/21/2012 12:00:00 AM	1/5/1989 12:00:00 AM	(not applicable)	785	2.6	no	DATETIME
CARD_ID	8	30186	15521	51.4	(not applicable)	1726411	2144888441	1506393930	(not applicable)	538	3.67	no	INTEG
CONTRACT_ID	9	30186	16114	53.4	(not applicable)	398243	2146621487	465205917	(not applicable)	519	3.69	no	INTEG
CARD_CLASS	10	30186	0	0	0	JCB_CREDIT	VISA_DEBIT_NORMAL	VISA_DEBIT_NORMAL	4	5	0.02	no	CHAR
MOBILE	12	30186	15926	52.8	0	.	983387158	0939183981	6	538	3.77	no	CHAR
EMAIL	13	30186	0	0	0	OSMTO5MT@GMAIL.COM	yzslgy.365@gmail.com	sfs	409	541	1.79	no	CHAR
ADDRESS	14	30186	0	0	0	. PHUONG DE THAM THANH PHO CAO B	áº»p ÄÄi, ÄÄt M��o��i Ch��nh, huy��n C	nan	642	665	2.2	no	CHAR
IS_AUTHORIZATION	15	30186	0	0	(not applicable)	1/1/2020 12:00:49 AM	2/29/2020 11:44:33 PM	(no data/ambig.)	(not applicable)	27752	91.94	no	DATETIME
LIMIT	16	30186	710	2.4	0	0.0100+	CTR	01000R	6	16	0.05	no	CHAR
SOURCE_CODE	17	30186	2	0	0	H2H emb	VISA	VISA	4	5	0.02	no	CHAR
PLACE_OF_ISSUE	18	30186	1371	4.5	0	Our JCB Cards	Our VISA Cards	Our VISA Cards	2	2	0.01	no	CHAR
REASON_DETAILS	19	30186	0	0	0	Auth	Auth	Auth	1	1	0	no	CHAR
REQUEST_CATEGORY	20	30186	0	0	0	Adjustment	Reversal	Request	4	4	0.01	no	CHAR
TRANS_TYPE	21	30186	993	3.3	0	ATM	Retail	Retail	7	8	0.03	no	CHAR
RET_CODE	22	30186	0	0	0	00008c033f7dd6c3679cb4c2de1f97d0	ffff6a0c568872a20e48df9ac16cb13	a3d2de676556553a5f08e4c88d2c228	27026	27027	89.53	no	CHAR
RET_REF_NUMBER	23	30186	0	0	0	a3d2de676556553a5f08e4c88d2c228	a3d2de676556553a5f08e4c88d2c228	a3d2de676556553a5f08e4c88d2c228	1	1	0	no	CHAR
SETTLEMENT_AMOUNT	24	30186	0	0	(not applicable)	1810114945	1810114945	1810114945	(not applicable)	1	0	no	INTEG
SETTLEMENT_CURRENCY	25	30186	0	0	0	35641800xxxx0008	484804xxxx9358	40890410xxxx3085	3	1801	5.97	no	CHAR
SOURCE_CHANNEL	26	30186	0	0	(not applicable)	41747292	4279403778	1956689887	(not applicable)	180	0.6	no	FLOAT
SOURCE_CODE	27	30186	0	0	(not applicable)	453523	4292206724	3121059754	(not applicable)	2570	8.51	no	FLOAT
SOURCE_MEMBER_ID	28	30186	0	0	(not applicable)	31574	4294933451	1810114945	(not applicable)	20293	67.23	no	FLOAT
SOURCE_NUMBER	29	30186	159	0.5	0	AUSTRALIA	VIET NAM	IRELAND	15	30	0.1	no	CHAR
TARGET_CHANNEL	30	30186	64	0.2	0	#HANOI0000000	www.apple.com	fb.me/ads	176	467	1.55	no	CHAR
TARGET_MEMBER_ID	31	30186	0	0	0	(JOO)SINSEGYEOIMYEONSE	xa thang long, dong hung,	APPLE.COM/BILL	2099	7996	26.49	no	CHAR
TARGET_NUMBER	32	30186	0	0	(not applicable)	1/1/2020 12:00:49 AM	2/29/2020 11:44:33 PM	(no data/ambig.)	(not applicable)	27752	91.94	no	DATETIME
TRANS_AMOUNT	33	30186	0	0	(not applicable)	0	1050000000	20000	(not applicable)	5344	17.7	no	INTEG
TRANS_CURR_DESC	34	30186	0	0	0	AED	VND	VND	1	27	0.09	no	CHAR
SIC_CODE	35	30186	478	1.6	0	0742 Veterinary Services	SIC Code MB Bankplus	7311 Advertising Services	123	134	0.45	no	CHAR
SETTLEMENT_CURRENCY	36	30186	780	2.6	(not applicable)	704	840	704	(not applicable)	3	0.01	no	INTEG
SETTLEMENT_AMOUNT	37	30186	0	0	(not applicable)	0	1293460477	20000	(not applicable)	6138	20.33	no	INTEG
RETURN_CODE	38	30186	0	0	0	Allowable number of PIN tries exceeded	Wrong Transaction Attributes	Successfully completed	22	22	0.07	no	CHAR
AMENDMENT_OFFICE	39	30186	0	0	0	ABC	XYZ	ABC	2	3	0.01	no	CHAR
RECORD_ID	40	30186	0	0	(not applicable)	264686	4294882248	(no data/ambig.)	(not applicable)	29983	99.33	no	FLOAT

Tables Collections Redundant Data Analyses

Profiling Output of Cards Data



The screenshot shows a SAS data profiling interface. On the left, there's a navigation bar with 'Tables' selected, followed by 'Collections' and 'Redundant Data Analyses'. Below this is a tree view of tables: TRANS_CITY, TRANS_CONDITION, and TRANS_COUNTRY. The main area displays a data grid with 45 columns and 30,186 rows. The columns include AMENDMENT_OFF, RECORD_ID, REASON_DETAILS, TRANS_CONDITION, MERCHANT_ID, AVAILABLE_BALAN, and LIMIT. The data grid has a header row and several data rows. A progress bar at the bottom indicates the analysis is complete.

	AMENDMENT_OFF	RECORD_ID	REASON_DETAILS	TRANS_CONDITION	MERCHANT_ID	AVAILABLE_BALAN	LIMIT	XYZ	ABC	2	3	0.01	no	CHAR		
39	30186	0	0	0	ABC	264686	45	4294882248	(no data/ambig.)	(not applicable)	29983	99.33	no	FLOAT		
40	30186	0	0	(not applicable)	264686	41	30186	100	0	HTRA THEO YC PRR N21.1 RRN 000713	HTRA THEO YC PRR N21.1 RRN 0007131288	1	1	100	no	CHAR
41	30186	30185	42	30186	1	0	0	ATM	Unknown	EI Comm SSL	20	20	0.07	no	CHAR	
42	30186	43	30186	0	0	(not applicable)	47477	4293235152	1724514981	(not applicable)	2063	6.83	no	FLOAT		
43	30186	44	30186	0	0	(not applicable)	0	1050000000	20000	(not applicable)	5344	17.7	no	INTEG		
44	30186	45	30186	19246	63.8	0	10000000	95000000	30000000	4	28	0.26	no	CHAR		

Summary of data profile:

- 30,186 records
- 45 columns
- REASON_DETAILS high null

Tables

Excel Samples
Card Transaction Data Mod.csv
ACQ_REF_NUMBER
ADDRESS
AMENDMENT_OFFICER
AMND_DATE
AUTH_CODE
AVAILABLE_BALANCE
CARD_CLASS
CARD_ID
CIF
CONTRACT_ID
DATE_OF_BIRTH
DATE_OF_ISSUE
EMAIL
FULL_NAME
ID_NUMBER
IS_AUTHORIZATION
LIMIT
MERCHANT_ID
MOBILE
PLACE_OF_ISSUE
REASON_DETAILS
RECORD_ID
REQUEST_CATEGORY
RETURN_CODE
RET_REF_NUMBER
SETTL_AMOUNT
SETTL_CURR
SIC_CODE
SOURCE CHANNEL

ADDRESS

Table: Card Transaction Data Mod.csv D

Column Profiling	Frequency Distribution	Pattern Frequency Di
Metric Name	Metric Value	
Ordinal Position	14	
Count	30186	
Null Count	0	
Percent Null	0	
Blank Count	0	
Minimum Value	. PHUONG DE THAM THANH...	
Maximum Value	đôp Ä" DÄ l, xÄ Mä»1 Ch...	
Mode	nan	
Pattern Count	642	
Unique Count	665	
Uniqueness	2.2	
Primary Key Candidate	no	
Data Type	CHAR	
Data Length	255 chars	
Actual Type	string	
Minimum Length	2	
Maximum Length	128	
Mean	(not applicable)	
Median	(not applicable)	
Non-null Count	30186	
Nullable	YES	
Decimal Places	0	
Standard Deviation	(not applicable)	
Standard Error	(not applicable)	

Note:

- ADDRESS field has very inconsistent data
- If data is required for analysis / decision making -> Requires data cleansing
- Further cleansing can include latitude and longitude data
- Standardization may help with proper address structure

ADDRESS

Table: Card Transaction Data Mod.csv Data Source: Excel Samples

Column Profiling	Frequency Distribution	Pattern Frequency Distribution	Percentiles	Outliers	Primary Key/Foreign Key Analy
Value					
nan					
829 LO B88310 CHUNG CU P831 QUAN 88310					
793/784/548 LE LAI PHUONG MAY CHAI					
760 KHUC THUA DU PHUONG DICH VONG					
HA NOI					
SN 742 LANG HA LANG HA DONG DA					
GIA LAM XA GIA LAM HUYEN LAM HA					
quang trung Mao Kha Dong Trieu					
KHU 832 XUAN SON DONG TRIEU-XUAN SON					
769 VAN GIANG, NINH BINH					
HAI NAM XA HAI NAM HUYEN HAI HAU					
. XA PHU LAM HUYEN TIEN DU					
KHANH NHON XA NHON HAI					
THACH BINH THACH BINH THACH THANH					
YEN TRUNG XA YEN TRUNG					
. XA GIAO THIEN HUYEN GIAO THUY					
AN LAO XA AN LAO HUYEN BINH LUC					
. XA DIEN KIM HUYEN DIEN CHAU					
. XA HOA QUY HUYEN NHU XUAN					
. PHUONG DE THAM THANH PHO CAO BANG					
KHU 829 THI TRAN KY SON HUYEN KY SON					
MB 813 CAT LINH					
. XA TA THANH OAI HUYEN THANH TRI					
QUAT LAM THI TRAN QUAT LAM					
806 HUNG GIA 830 ,PHUONG TAN PHONG , QUAN 827					
MY KHANH 832 XA MY HOA HUNG					
822 DUONG SO 821,KHU NAM LONG,AN LAC,BINH TAN.HCM					
1314 CT822A KDTM KIMVANKIMLU DAI KIM					
THON 833 CHANG SON THACH THAT HA NOI					
DAI LU XA DONG ICH HUYEN LAP THACH					
78334 CONG QUYNH, P. NGUYEN CU TRINH, QUAN 833, TP.HCM					
825 DAO DUY ANH - DONG DA					
. PHUONG QUANG TIEN					
. XA TUONG GIANG THI XA TU SON					
699/833/768 NGUYEN HUU CANH					
NAM THAI NAM TRUC NAM DINH					
SO 833 TAN SON, P8335, TAN BINH, TP HCM					
NGHIA MINH XA NGHIA MINH					
. PHUONG LAM HA THANH PHO PHU LY					
818 TRAN VU-HA NOI					
			Count	Percentage	
			5881.0	19.48	
			2282.0	7.56	
			710.0	2.35	
			683.0	2.26	
			620.0	2.05	
			400.0	1.33	
			305.0	1.01	
			270.0	0.89	
			250.0	0.83	
			242.0	0.80	
			194.0	0.64	
			193.0	0.64	
			191.0	0.63	
			190.0	0.63	
			189.0	0.63	
			185.0	0.61	
			166.0	0.55	
			155.0	0.51	
			146.0	0.48	
			128.0	0.42	
			117.0	0.39	
			116.0	0.38	
			114.0	0.38	
			110.0	0.36	
			99.0	0.33	
			99.0	0.33	
			98.0	0.32	
			96.0	0.32	
			95.0	0.31	
			93.0	0.31	
			92.0	0.30	
			91.0	0.30	
			91.0	0.30	
			89.0	0.29	
			88.0	0.29	
			86.0	0.28	
			86.0	0.28	
			85.0	0.28	

Tables

Card Transaction Data Mod
ACQ_REF_NUMBER
ADDRESS
AMENDMENT_OFFICER
AMND_DATE
AUTH_CODE
AVAILABLE_BALANCE
CARD_CLASS
CARD_ID
CIF
CONTRACT_ID
DATE_OF_BIRTH
DATE_OF_ISSUE
EMAIL
FULL_NAME
ID_NUMBER
IS_AUTHORIZATION
LIMIT
MERCHANT_ID
MOBILE
PLACE_OF_ISSUE
REASON_DETAILS
RECORD_ID
REQUEST_CATEGORY

EMAIL

Table: Card Transaction Data Mod.csv Data Source: Excel Samples

[Column Profiling](#) [Frequency Distribution](#) [Pattern Frequency Distribution](#)

Metric Name	Metric Value
Ordinal Position	13
Count	30186
Null Count	0
Percent Null	0
Blank Count	0
Minimum Value	0SMT0SMT@GMAIL.COM
Maximum Value	yzslyg.365@gmail.com
Mode	sfs
Pattern Count	409
Unique Count	541
Uniqueness	1.79
Primary Key Candidate	no
Data Type	CHAR
Data Length	255 chars
Actual Type	string
Minimum Length	3
Maximum Length	36
Mean	(not applicable)
Median	(not applicable)
Non-null Count	30186

Note:

- EMAIL field may be masked data
- Inconsistency but can be fixed
- There is high count of 8,219 where EMAIL = sfs

EMAIL

Table: Card Transaction Data Mod.csv Data Source: Excel Samples

[Column Profiling](#) [Frequency Distribution](#) [Pattern Frequency Distribution](#) [Percentiles](#) [Outliers](#) [Primary Key/Foreign Key Analysis](#)

Value	Count	Percentage
sfs	8219.0	27.23
azVZFSLRNSM6212@GMAIL.COM	2282.0	7.56
stjrfnq@hksoft.com.vn	1338.0	4.43
STJRFNQ@hksoft.com.vn	790.0	2.62
PMFSMMZSM6223@MAIL.COM	710.0	2.35
STJRFNQ@GMAIL.COM	487.0	1.61
INSMHMZSLFWX@GMAIL.COM	400.0	1.33
pmtsliflpbjrfnq@gmail.com	307.0	1.02
stjrfnq@gmail.com	301.0	1.00
mfmsmi@ximangxuanthanh.vn	242.0	0.80
IFTA NJYci222@GMAIL.COM	210.0	0.70
PMTSLHZSLHFU@hksoft.com.vn	174.0	0.58
aZRNSMMU262@GMAIL.COM	173.0	0.57
cZFSFSM52726221@GMAIL.COM	170.0	0.56
qjyzfsify5372@gmail.com	118.0	0.39
FSMYZFS61746224@GMAIL.COM	110.0	0.36
MZdyWFSLSLdJSPMFSM@THEGOIDIDONG.COM	99.0	0.33
SLTHMPSYWFS@HOTMAIL.COM	99.0	0.33
slzDjsymfsl5212@gmail.com	98.0	0.32
yzslyg.365@gmail.com	98.0	0.32
YFSSLZdjSS507625@GMAIL.COM	97.0	0.32
QJaFSSLMN071@GMAIL.COM	96.0	0.32
qjywzslmfz@gmail.com	95.0	0.31
ywfpfsmfnf2@gmail.com	95.0	0.31
YWFSSUMTZSLYMF7620@GMAIL.COM	95.0	0.31
QTAJQdQZcZGZ@GMAIL.COM	92.0	0.30
yzfaAng726711@gmail.com	91.0	0.30
YYYS5367@GMAIL.COM	91.0	0.30
YWFSSRFMSHIZTSL56727@GMAIL.COM	85.0	0.28
IQNSM17@YAHOO.COM	85.0	0.28
mfqyy@hksoft.com.vn	84.0	0.28
MW.QaFS@GMAIL.COM	84.0	0.28
SFRYZdjSS521@GMAIL.COM	84.0	0.28
MFNIFSL472@GMAIL.COM	84.0	0.28
xjCzpzs@icloud.com	83.0	0.27
VZFSLYMNJU724@GMAIL.COM	83.0	0.27
mfmsfymnsmd4667@gmail.com	82.0	0.27
YMzaFS57756212@GMAIL.COM	81.0	0.27
QFSFSMMS626712@GMAIL.COM	80.0	0.27
SLTczFSUMZH5773@GMAIL.COM	79.0	0.26

Tables	
Excel Samples	Card Transaction Data Mod.cs
Card Transaction Data Mod.cs	
ACQ_REF_NUMBER	
ADDRESS	
AMENDMENT_OFFICER	
AMND_DATE	
AUTH_CODE	
AVAILABLE_BALANCE	
CARD_CLASS	
CARD_ID	
CIF	
CONTRACT_ID	
DATE_OF_BIRTH	
DATE_OF_ISSUE	
EMAIL	
FULL_NAME	
ID_NUMBER	
IS_AUTHORIZATION	
LIMIT	
MERCHANT_ID	
MOBILE	
PLACE_OF_ISSUE	
REASON_DETAILS	
RECORD_ID	
REQUEST_CATEGORY	

FULL_NAME Table: Card Transaction Data Mod.cs	
Column Profiling	
Metric Name	Metric Value
Ordinal Position	3
Count	30186
Null Count	0
Percent Null	0
Blank Count	0
Minimum Value	BUI CHIN HOANG
Maximum Value	null VUONG TRUNG
Mode	VIEN TUAN TIEP
Pattern Count	252
Unique Count	808
Uniqueness	2.68
Primary Key Candidate	no
Data Type	CHAR
Data Length	255 chars
Actual Type	string
Minimum Length	5
Maximum Length	24
Mean	(not applicable)
Median	(not applicable)
Non-null Count	30186

Note:

- FULL_NAME field consists of names starting with null
- Data validation to be considered
- Another suggestion to add gender column to the respective names for future analysis

FULL_NAME Table: Card Transaction Data Mod.csv Data Source: Excel Samples		
Column Profiling	Frequency Distribution	Pattern Frequency Distribution
Value	Count	Percentage
VIEN TUAN TIEP	2282.0	7.56
VAN SINH COMPANY	710.0	2.35
VAN SI THUONG	683.0	2.26
NGUYEN THOAI NGA	400.0	1.33
NGO TIEP SI	384.0	1.27
NGUYEN THI HOANG	307.0	1.02
NGO HAN M	305.0	1.01
VAN BIEN CHUNG	270.0	0.89
DINH TIEP SI	250.0	0.83
VAN SI DAO	242.0	0.80
TO QUY CHIN	210.0	0.70
DOAN AI BA	194.0	0.64
MAI PHU CAO	193.0	0.64
NGO LIEU	191.0	0.63
PHAM THONG MONG	190.0	0.63
VAN THI TRANG	189.0	0.63
LAM THI TRI	185.0	0.61
NGO TUAN CHU	174.0	0.58
VIEN TIEP SY	173.0	0.57
BUI HAOKHIEM	170.0	0.56
DANG PHUC SI	166.0	0.55
BUI HAOBINH	155.0	0.51
VAN SITHAN	152.0	0.50
null THONG KHIEM	146.0	0.48
DAM DA Quynh	128.0	0.42
VAN HAN BACH	118.0	0.39
null NAM TENH	118.0	0.39
VAN THU Tham	117.0	0.39
TU THE COMPANY	117.0	0.39
VAN DIEU TANG	114.0	0.38
VAN KHIEM NAM	110.0	0.36
VAN THONG THOA	110.0	0.36
null DU COMPANY KHIEM	103.0	0.34
DAM TUAN DAO	99.0	0.33
NGO THI THU TIN	99.0	0.33
NGO DANG SINH NHAN	99.0	0.33
NGO HAN BACH	98.0	0.32
VAN BANG THANG TAI	98.0	0.32
null THI MY	97.0	0.32
BUI THI QUYET	97.0	0.32

Tables	
	Excel Samples
	Card Transaction Data Mod.csv
	ACQ_REF_NUMBER
	ADDRESS
	AMENDMENT_OFFICE
	AMND_DATE
	AUTH_CODE
	AVAILABLE_BALANCE
	CARD_CLASS
	CARD_ID
	CIF
	CONTRACT_ID
	DATE_OF_BIRTH
	DATE_OF_ISSUE
	EMAIL
	FULL_NAME
	ID_NUMBER
	IS_AUTHORIZATION
	LIMIT
	MERCHANT_ID
	MOBILE
	PLACE_OF_ISSUE
	REASON_DETAILS
	RECORD_ID
	REQUEST_CATEGORY
	RETURN_CODE

Note:

- The data field seems to have a variation of length
- Is this common within Vietnam?
- Note ID_NUMBER 241201222309 alone has 2,282 transactions

ID_NUMBER

Table: Card Transaction Data Mod.csv

Column Profiling Frequency Distribution Pattern Frequency Distribution

Metric Name	Metric Value
Ordinal Position	4
Count	30186
Null Count	833
Percent Null	2.8
Blank Count	(not applicable)
Minimum Value	1257098
Maximum Value	851225465277
Mode	241201222309
Pattern Count	(not applicable)
Unique Count	796
Uniqueness	2.71
Primary Key Candidate	no
Data Type	FLOAT
Data Length	53 bit
Actual Type	float
Minimum Length	(not applicable)
Maximum Length	(not applicable)
Mean	117353499771.75396
Median	597340852
Non-null Count	29353

ID_NUMBER

Table: Card Transaction Data Mod.csv Data Source: Excel Samples

Column Profiling Frequency Distribution Pattern Frequency Distribution Percentiles Outliers Prism

Value	Count
241201222309	2282.0
(null value)	833.0
275216224313	710.0
568944169	683.0
299213222258	400.0
225322253972	384.0
225722273710	307.0
382466155	305.0
525303212	270.0
233216225298	250.0
277201222052	210.0
279325252129	194.0
538098483	193.0
391746463	191.0
270215223377	190.0
225722233864	189.0
597667539	185.0
590843294	174.0
225210223786	173.0
597340852	170.0
278214225717	166.0
504034463	155.0
540605303	146.0
208289609	128.0
546315819	118.0
557910816	117.0
538923275	117.0
251049917	114.0
233217223524	110.0

Tables

Excel Samples
Card Transaction Data Mod.csv
ACQ_REF_NUMBER
ADDRESS
AMENDMENT_OFFICER
AMND_DATE
AUTH_CODE
AVAILABLE_BALANCE
CARD_CLASS
CARD_ID
CIF
CONTRACT_ID
DATE_OF_BIRTH
DATE_OF_ISSUE
EMAIL
FULL_NAME
ID_NUMBER
IS_AUTHORIZATION
LIMIT
MERCHANT_ID
MOBILE
PLACE_OF_ISSUE
REASON_DETAILS
RECORD_ID
REQUEST_CATEGORY

PLACE_OF_ISSUE Table: Card Transaction Da

Column Profiling **Frequency Distribution** **Pattern Frequency**

Metric Name	Metric Value
Ordinal Position	6
Count	30186
Null Count	40
Percent Null	0.1
Blank Count	0
Minimum Value	20080425
Maximum Value	quang ninh
Mode	CCS DKQL CU TRU VA DLQ...
Pattern Count	141
Unique Count	284
Uniqueness	0.94
Primary Key Candidate	no
Data Type	CHAR
Data Length	255 chars
Actual Type	string
Minimum Length	2
Maximum Length	33
Mean	(not applicable)
Median	(not applicable)
Non-null Count	30146

Note:

- **PLACE_OF_ISSUE** is not in the data field format Excel provided
- This data field that can be standardized to ensure consistency
- By having the data cleansed, it may be a check to verify the **PLACE_OF_ISSUE** maintained / permitted by MB is accurate.

PLACE_OF_ISSUE Table: Card Transaction Data Mod.csv Data Source: Excel Samples

Column Profiling **Frequency Distribution** **Pattern Frequency Distribution** **Percentiles** **Outliers** **Primar**

Value	Count
CCS DKQL CU TRU VA DLQG VE DAN CU	2282.0
HA NOI	1973.0
CCSDKQLCTVLDLQGVDC	1938.0
CUC CANH SAT	1097.0
NAM DINH	981.0
HUNG YEN	969.0
CTCCSDKQLCTVLDLQGVDC	811.0
CTCCSDKQLCTDLQGD	710.0
THANH HOA	634.0
BAC NINH	620.0
CUC CS	525.0
HCM	497.0
HAI DUONG	473.0
CUC QLXNC	441.0
CCS	434.0
CUC CSDKQLCT VA DLQG VE DC	430.0
NGHE AN	413.0
HO CHI MINH	403.0
LAM DONG	398.0
DA NANG	394.0
CA HA NOI	381.0
CCSDKQLCTVLDLQVC	328.0
HOA BINH	309.0
CCSDKQLCTVADLQGVDC	307.0
HA NAM	303.0
CCSQLHCVTTXH	290.0
CA THANH HOA	278.0
quang ninh	270.0
BINH THUAN	212.0
NINH THUAN	191.0
CA HCM	188.0
NINH BINH	180.0
PHU THO	180.0
CCS DKQL VA DLQG	177.0
KHANH HOA	177.0
CA KHANH HOA	177.0
CA QUANG NINH	170.0
CA PHU THO	163.0
DAK LAK	141.0
CUC CSDKQLCTVLDLQGVDC	135.0

Tables

	FULL_NAME
	ID_NUMBER
	IS_AUTHORIZATION
	LIMIT
	MERCHANT_ID
	MOBILE
	PLACE_OF_ISSUE
	REASON_DETAILS
	RECORD_ID
	REQUEST_CATEGORY
	RETURN_CODE
	RET_REF_NUMBER
	SETTL_AMOUNT
	SETTL_CURR
	SIC_CODE
	SOURCE_CHANNEL
	SOURCE_CODE
	SOURCE_MEMBER_ID
	SOURCE_NUMBER
	TARGET_CHANNEL
	TARGET_MEMBER_ID
	TARGET_NUMBER
	TRANS_AMOUNT
	TRANS_CITY
	TRANS_CONDITION

RETURN_CODE

Table: Card Transaction Data I

Column Profiling Frequency Distribution Pattern Frequency

Metric Name	Metric Value
Ordinal Position	38
Count	30186
Null Count	0
Percent Null	0
Blank Count	0
Minimum Value	Allowable number of PIN tr...
Maximum Value	Wrong Transaction Attributes
Mode	Successfully completed
Pattern Count	22
Unique Count	22
Uniqueness	0.07
Primary Key Candidate	no
Data Type	CHAR
Data Length	255 chars
Actual Type	string
Minimum Length	7
Maximum Length	42
Mean	(not applicable)
Median	(not applicable)
Non-null Count	30186

RETURN_CODE

Table: Card Transaction Data Mod.csv Data Source: Excel Samples

Column Profiling Frequency Distribution Pattern Frequency Distribution Percentiles Outliers Prim

Value	Count
Successfully completed	16626.0
Not sufficient funds	5969.0
No investment account	2909.0
No such card	2135.0
Reconcile error / Auth Not found	1371.0
Exceeds withdrawal amount limit	260.0
PICK UP	209.0
Do not Honour	127.0
Pick up, lost card	122.0
Expired card / target	117.0
Incorrect PIN	92.0
Transaction not permitted to cardholder	85.0
Issuer or switch is inoperative	49.0
Wrong PIN, number of PIN tries exceeded	30.0
Allowable number of PIN tries exceeded	21.0
Exceeds withdrawal frequency limit	19.0
No chequing account	15.0
Duplicate Transmission	13.0
Invalid transaction	12.0
Time-out at issuer system / Bad CVV (VISA)	3.0
Wrong Transaction Attributes	1.0
System Malfunction	1.0

Note:

You may consider standardizing the Return codes for future analysis. You may consider grouping or improving the RETURN_CODE data capture

Tables

LIMIT
MERCHANT_ID
MOBILE
PLACE_OF_ISSUE
REASON_DETAILS
RECORD_ID
REQUEST_CATEGORY
RETURN_CODE
RET_REF_NUMBER
SETTLEMENT_AMOUNT
SETTLE_CURR
SIC_CODE
SOURCE_CHANNEL
SOURCE_CODE
SOURCE_MEMBER_ID
SOURCE_NUMBER
TARGET_CHANNEL
TARGET_MEMBER_ID
TARGET_NUMBER
TRANS_AMOUNT
TRANS_CITY
TRANS_CONDITION
TRANS_COUNTRY
TRANS_CURR_DESC
TRANS_DATE

SIC_CODE

Table: Card Transaction Data Mod.csv

[Column Profiling](#) [Frequency Distribution](#) [Pattern Frequency](#)

Metric Name	Metric Value
Ordinal Position	35
Count	30186
Null Count	478
Percent Null	1.6
Blank Count	0
Minimum Value	0742 Veterinary Services
Maximum Value	SIC Code MB Bankplus
Mode	7311 Advertising Services
Pattern Count	123
Unique Count	134
Uniqueness	0.45
Primary Key Candidate	no
Data Type	CHAR
Data Length	255 chars
Actual Type	string
Minimum Length	8
Maximum Length	32
Mean	(not applicable)
Median	(not applicable)
Non-null Count	29708

SIC_CODE

Table: Card Transaction Data Mod.csv

Data Source: Excel Samples

[Column Profiling](#) [Frequency Distribution](#) [Pattern Frequency Distribution](#) [Percentiles](#) [Outliers](#) [Primary](#)

Value	Count
7311 Advertising Services	10532.0
5735 Record Shops	4747.0
4121 Taxicabs/limousines	4585.0
6011 ATM	2184.0
5411 Grocery Stores,supermarkets	1659.0
7399 Business Services	898.0
8999 Services,not Elsewhere Clas	479.0
(null value)	478.0
4814 Telecommunication Service	411.0
5969 Direct Marketing-Other Dire	349.0
5311 Department stores	302.0
4899 Cable Services	273.0
5968 Direct Marketing-Continuity	266.0
5999 Miscellaneous & specialty r	252.0
5812 Eating Places,Restaurants	250.0
5814 Fast Food Res. (Quick P S P	209.0
MBB EMB Credit Card Cash	155.0
5734 Record Shops	135.0
5691 Men's And Ladies's Clothing	131.0
5942 Book Stores	119.0
5192 Books/Periodicals/Newspaper	90.0
5499 Miscellaneous Food Stores	88.0
5732 Electronic Sales	82.0
4511 Airlines, Air Carriers	76.0
4816 Computer Network/Informatio	74.0
6211 Security Brokers/dealers In	71.0
4722 Travel Agencies And Tour Op	69.0
7999 Recreation Services (Not El	67.0
5813 Drinking Places - Bars,Tave	61.0
7011 Hotels,Motels,Resorts-Lodgi	57.0
5651 Family Clothing Stores	55.0
7832 Motion Picture Theaters	53.0
5912 Drug Stores,pharmacies	49.0
7372 Computer And Data Processin	43.0
4789 Transportation Services	41.0
8062 Hospitals	39.0
5944 Jewelry Stores - Watches	37.0
6012 Member Financial Institutio	36.0
6300 Insurance Sales And Underw	35.0
7994 Video Games Arcades/establi	29.0

Note:

- You may consider parsing / chunking / splitting this data
- This will provide better analysis eg. Which POS business is being used the most
- There are 134 different SIC_CODE
- Consider parsing and standardizing the POS business type

Tables	
DATE_OF_ISSUE	
EMAIL	
FULL_NAME	
ID_NUMBER	
IS_AUTHORIZATION	
LIMIT	
MERCHANT_ID	
MOBILE	
PLACE_OF_ISSUE	
REASON_DETAILS	
RECORD_ID	
REQUEST_CATEGORY	
RETURN_CODE	
RET_REF_NUMBER	
SETTL_AMOUNT	
SETTL_CURR	
SIC_CODE	
SOURCE_CHANNEL	
SOURCE_CODE	
SOURCE_MEMBER_ID	
SOURCE_NUMBER	
TARGET_CHANNEL	
TARGET_MEMBER_ID	
TARGET_NUMBER	
TRANS_AMOUNT	
TRANS_CITY	
TRANS_CONDITION	
TRANS_COUNTRY	
TRANS_CURR_DESC	
TRANS_DATE	
TRANS_DETAILS	

TRANS_CITY Table: Card Transaction Data Mod.csv

[Column Profiling](#) [Frequency Distribution](#) [Pattern Frequency Distribution](#)

Metric Name	Metric Value
Ordinal Position	30
Count	30186
Null Count	64
Percent Null	0.2
Blank Count	0
Minimum Value	#HANOI0000000
Maximum Value	www.apple.com
Mode	fb.me/ads
Pattern Count	176
Unique Count	467
Uniqueness	1.55
Primary Key Candidate	no
Data Type	CHAR
Data Length	255 chars
Actual Type	string
Minimum Length	1
Maximum Length	13
Mean	(not applicable)
Median	(not applicable)
Non-null Count	30122
Nullable	YES
Decimal Places	0
Standard Deviation	(not applicable)
Standard Error	(not applicable)

TRANS_CITY Table: Card Transaction Data Mod.csv

[Column Profiling](#) [Frequency Distribution](#) [Pattern Frequency Distribution](#)

Value	Count	Percentage
BINH DUONG	39.0	0.13
BINH PHUOC	22.0	0.07
BINHDINH	22.0	0.07
CAN THO	34.0	0.11
CAU GIAY-HN	20.0	0.07
CC GOOGLE.COM	267.0	0.88
CHICAGO	50.0	0.17
DA LAT	15.0	0.05
DA NANG	90.0	0.30
DN	29.0	0.10
DONG NAI	27.0	0.09
fb.me/ads	7746.0	25.66
fb.me/cc	88.0	0.29
g.co/helppay#	925.0	3.06
HA NOI	1269.0	4.20
Ha Noi	286.0	0.95
Ha noi	164.0	0.54
HAI PHONG	45.0	0.15
HANOI	253.0	0.84
HCM	4544.0	15.05
HCMC	24.0	0.08
HELP.EA.COM	14.0	0.05
HN	202.0	0.67
HO CHI MINH	805.0	2.67
Ho Chi Minh	28.0	0.09
HOCHIMINH	135.0	0.45
HP	15.0	0.05
ITUNES.COM	4693.0	15.55
KHANH HOA	143.0	0.47
KIEN GIANG	36.0	0.12
LAM DONG	26.0	0.09
LAMDONG	16.0	0.05
LIMASSOL	53.0	0.18
London	34.0	0.11
MATAWAN	15.0	0.05
NETFLIX.COM	116.0	0.38
NINH BINH	14.0	0.05
PHNOM PENH	24.0	0.08
PRAGUE	41.0	0.14
SUA DONG	15.0	0.05

Note:

- TRANS_CITY data is very inconsistent
- The Bank needs to carry out data cleansing and enrichment to improve this if the field needs to be used for analysis

Tables

AMND_DATE
AUTH_CODE
AVAILABLE_BALANCE
CARD_CLASS
CARD_ID
CIF
CONTRACT_ID
DATE_OF_BIRTH
DATE_OF_ISSUE
EMAIL
FULL_NAME
ID_NUMBER
IS_AUTHORIZATION
LIMIT
MERCHANT_ID
MOBILE
PLACE_OF_ISSUE
REASON_DETAILS
RECORD_ID
REQUEST_CATEGORY
RETURN_CODE
RET_REF_NUMBER
SETT_AMOUNT
SETT_CURR
SIC_CODE
SOURCE_CHANNEL
SOURCE_CODE
SOURCE_MEMBER_ID
SOURCE_NUMBER
TARGET_CHANNEL
TARGET_MEMBER_ID

TRANS_DETAILS

Table: Card Transaction D...

Column Profiling | Frequency Distribution | Pattern Frequenc...

Metric Name	Metric Value
Ordinal Position	31
Count	30186
Null Count	0
Percent Null	0
Blank Count	0
Minimum Value	(JOO)SINSEGYEOMYEONSE
Maximum Value	xa thang long, dong hung,
Mode	APPLE.COM/BILL
Pattern Count	2099
Unique Count	7996
Uniqueness	26.49
Primary Key Candidate	no
Data Type	CHAR
Data Length	255 chars
Actual Type	string
Minimum Length	2
Maximum Length	25
Mean	(not applicable)
Median	(not applicable)
Non-null Count	30186
Nullable	YES
Decimal Places	0
Standard Deviation	(not applicable)
Standard Error	(not applicable)

Note:

- TRANS_DETAILS column has a wide variety of data
- The Bank may want to assess how this data can be improved / to create more explanation
- For some additional data enhancement, to label / group them if that is possible

TRANS_DETAILS

Table: Card Transaction Data Mod.csv

Data Source: MB POC Data

Column Profiling | Frequency Distribution | Pattern Frequency Distribution | Percentiles | Outliers | Primary

Value	Count	Percentage
APPLE.COM/BILL	4743.0	15.71
GRAB	3251.0	10.77
FACEBK *ADS	1950.0	6.46
FACEBOOK.COM*ADS	1916.0	6.35
FACEBK ADS	801.0	2.65
MOCA	726.0	2.41
BEGROUPJSC	402.0	1.33
PAYPAL *FACEBOOK	398.0	1.32
GOOGLE *TEMPORARY HOLD	366.0	1.21
Vi Momo	320.0	1.06
NETFLIX.COM	253.0	0.84
VE	160.0	0.53
GOOGLE *Lilith Mobile	137.0	0.45
AIRPAY VN	135.0	0.45
CUA HANG VINMART	123.0	0.41
ZaloPay*MOBILEPAYMENT	121.0	0.40
PAYPAL	117.0	0.39
BIDV	114.0	0.38
Shopee - Vietnam	112.0	0.37
ZaloPay*DICHVU	102.0	0.34
ZaloPay*zalopay	101.0	0.33
Tiki Corp	89.0	0.29
SIEU THI MINI OKONO	79.0	0.26
PAYPAL *DISCORD	74.0	0.25
NL-ALEPAY-TGDD	68.0	0.23
UBR* PENDING.UBER.COM	68.0	0.23
Amazon seller repay	67.0	0.22
MBBANK	66.0	0.22
ecom.militarybank.com.vn	60.0	0.20
SENDO	60.0	0.20
GOOGLE*TEMPORARY HOLD	60.0	0.20
GOOGLE *EYOU	58.0	0.19
PAYPAL *FACEBOOK FACEBO	54.0	0.18
GOOGLE *CHUANG COOL	54.0	0.18
IQOPTION.COM	53.0	0.18

Redundant Data Analyses

Card Data

Card Data

Digital Data

	ATE_OF_ISSI	EMAIL	FULL_NAME	ID_NUMBER	AUTHORIZAT	LIMIT	MERCHANT_ID	MOBILE	ACE_OF_ISSI	ASON_DETA	RECORD_ID	JEST_CATE	RETURN_CODE	REF_NUM	TTL_AMOUN	SETTL_CURR	SIC_CODE	URCE_CHAN	OURCE_COD	RCE_MEMB	II
ACQ_REF_NUMBER	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	30186/40	0/0	0/0	0/0	0/0	0/0	0/0	
ADDRESS	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	
AMENDMENT_OFFICER	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	
AMND_DATE	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	
AUTH_CODE	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	6167/410	0/0	0/0	0/0	0/0	0/0	0/0	
AVAILABLE_BALANCE	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	
CARD_CLASS	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	
CARD_ID	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	
CIF	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	
CONTRACT_ID	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	
DATE_OF_BIRTH	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	
DATE_OF_ISSUE	X	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	
EMAIL		X	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	
FULL_NAME			X	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	
ID_NUMBER				X	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	
IS_AUTHORIZATION					X	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	
LIMIT						X	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	

Primary Value	Count	Secondary Value	Count
a3d2de7675556553a5f...	30186.0	a3d2de7675556553a...	401.0

Grid data: Left outliers Common Right outliers

ACQ_REF_NUMBER

Card Transaction Data Mod.csv

Excel Samples

Export...

Print...

Close

0 (0 distinct)

Question:
Is it normal to overlap between
ACQ_REF_NUMBER and RET_REF_NUMBER
data fields?

29785 (27026 distinct)

RET_REF_NUMBER

Card Transaction Data Mod.csv

Excel Samples

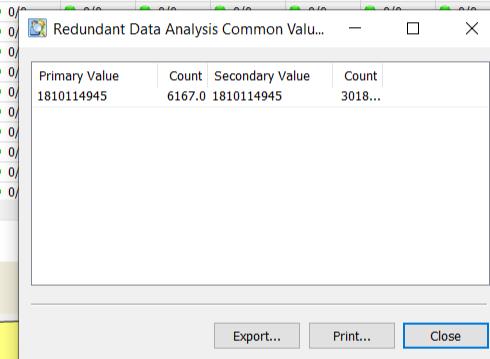
- Tables
- Collections
- Redundant Data Analyses

Redundant Data Analyses

Card Data

Digital Data

	MOBILE	ACE_OF_ISS	ASONL_DATE	RECORD_ID	JEST_CATE	GETURN_CD	DT_REF_NUM	ETTL_AMOUN	SETTL_CURR	SIC_CODE	URCE_CHANI	OURCE_COD	RCE_MEMBER	OURCE_NUM	GET_CHANI	GET_MEMBER	GET_NUM	RANS_AMOU	TRANS_CITY	ANS_CONDIT
ACQ_REF_NUMBER	0/0	0/0	0/0	0/0	0/0	0/0	30186/4C	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	
ADDRESS	0/0	926/3516	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	1007/67C	0/0	
AMENDMENT_OFFICER	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	
AMND_DATE	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	
AUTH_CODE	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	6167/44	0/0	0/0	0/0	
AVAILABLE_BALANCE	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	30186/3C	88/20	
CARD_CLASS	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	
CARD_ID	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	
CIF	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	
CONTRACT_ID	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	
DATE_OF_BIRTH	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	
DATE_OF_ISSUE	0/0	66/22	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	
EMAIL	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	
FULL_NAME	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	
ID_NUMBER	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	
IS_AUTHORIZATION	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	
LIMIT	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	



AUTH_CODE

Card Transaction Data Mod.csv
Excel Samples

24019 (20292 distinct)

Question:
Is it normal to have high overlap between these data points?

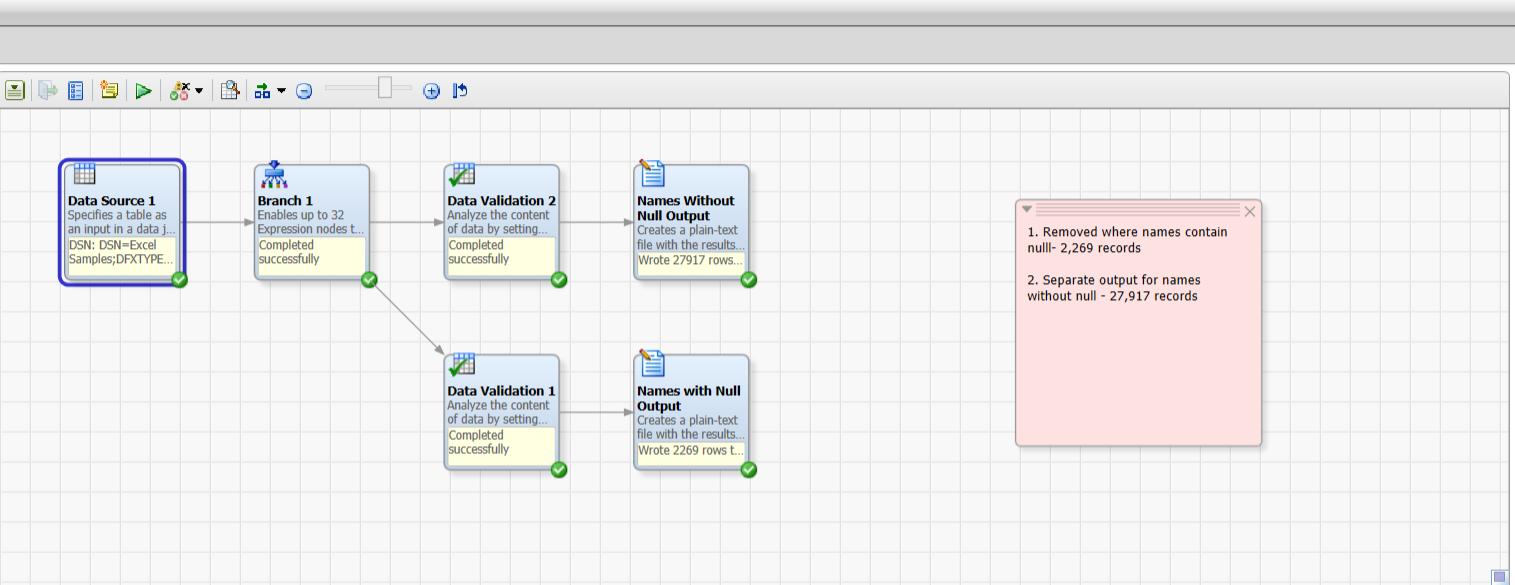
Grid data: Left outliers Common Right outliers

TARGET_MEMBER_ID
Card Transaction Data Mod.csv
Excel Samples

0 (0 distinct)



Data Quality Activities on Card Data



Row	Node Name	Contained In	Instance	Node ID	Node Type	Status	Run Time (minutes)	Start Time	End Time
1	Data Source 1			1	Data Source	DSN: DSN=Excel Samples;DFXTYPE=SQL;SELECT 'NO','CIF','FULL_N, 30186 rows read	00:51.693	3/25/2020 5:57 PM	3/25/2020 5:58 PM

Names with null.txt - Notepad

File Edit Format View Help

NO,CIF,FULL_NAME,ID_NUMBER,DATE_OF_ISSUE,PLACE_OF_ISSUE,DATE_OF_BIRTH,CARD_ID,CONTRACT_ID,CARD_CLASS,MOBILE,EMAIL,AI ^
537,3906298780,null THONG COMPANY,239218223697,20171220,CUC CS,6/11/1995 12:00:00 AM,503529681,1761898567,VISA_DEBI
538,3906298780,null THONG COMPANY,239218223697,20171220,CUC CS,6/11/1995 12:00:00 AM,503529681,1761898567,VISA_DEBI
539,3906298780,null THONG COMPANY,239218223697,20171220,CUC CS,6/11/1995 12:00:00 AM,503529681,1761898567,VISA_DEBI
540,3906298780,null THONG COMPANY,239218223697,20171220,CUC CS,6/11/1995 12:00:00 AM,503529681,1761898567,VISA_DEBI
541,3906298780,null THONG COMPANY,239218223697,20171220,CUC CS,6/11/1995 12:00:00 AM,503529681,1761898567,VISA_DEBI
542,3906298780,null THONG COMPANY,239218223697,20171220,CUC CS,6/11/1995 12:00:00 AM,503529681,1761898567,VISA_DEBI
543,3906298780,null THONG COMPANY,239218223697,20171220,CUC CS,6/11/1995 12:00:00 AM,503529681,1761898567,VISA_DEBI
544,3906298780,null THONG COMPANY,239218223697,20171220,CUC CS,6/11/1995 12:00:00 AM,503529681,1761898567,VISA_DEBI
545,3906298780,null THONG COMPANY,239218223697,20171220,CUC CS,6/11/1995 12:00:00 AM,503529681,1761898567,VISA_DEBI
546,3906298780,null THONG COMPANY,239218223697,20171220,CUC CS,6/11/1995 12:00:00 AM,503529681,1761898567,VISA_DEBI
547,3906298780,null THONG COMPANY,239218223697,20171220,CUC CS,6/11/1995 12:00:00 AM,503529681,1761898567,VISA_DEBI
548,3906298780,null THONG COMPANY,239218223697,20171220,CUC CS,6/11/1995 12:00:00 AM,503529681,1761898567,VISA_DEBI
549,3906298780,null THONG COMPANY,239218223697,20171220,CUC CS,6/11/1995 12:00:00 AM,503529681,1761898567,VISA_DEBI
550,3906298780,null THONG COMPANY,239218223697,20171220,CUC CS,6/11/1995 12:00:00 AM,503529681,1761898567,VISA_DEBI
551,3906298780,null THONG COMPANY,239218223697,20171220,CUC CS,6/11/1995 12:00:00 AM,503529681,1761898567,VISA_DEBI
833,2963474855,null NAM TENH,546315819,20101106,CA THANH HOA,4/29/1994 12
834,2963474855,null NAM TENH,546315819,20101106,CA THANH HOA,4/29/1994 12
835,2963474855,null NAM TENH,546315819,20101106,CA THANH HOA,4/29/1994 12
836,2963474855,null NAM TENH,546315819,20101106,CA THANH HOA,4/29/1994 12
837,2963474855,null NAM TENH,546315819,20101106,CA THANH HOA,4/29/1994 12
838,2963474855,null NAM TENH,546315819,20101106,CA THANH HOA,4/29/1994 12
<

1. Removed where names contain null- 2,269 records
2. Separate output for names
with count null - 27,413 seconds

Names without Null Output.txt - Notepad

File Edit Format View Help

NO,CIF,FULL_NAME,ID_NUMBER,DATE_OF_ISSUE,PLACE_OF_ISSUE,DATE_OF_BIRTH,CARD_ID,CONTRACT_ID,CARD_CLASS,MOBILE,EMAIL,AI ^
0,3020651176,GIANG THONG THOA,279200222332,20150702,CCSDKCT V DLQGVDC,9/1/1988 12:00:00 AM,218776111,2047701689,VIS
1,3020651176,GIANG THONG THOA,279200222332,20150702,CCSDKCT V DLQGVDC,9/1/1988 12:00:00 AM,218776111,2047701689,VIS
2,3020651176,GIANG THONG THOA,279200222332,20150702,CCSDKCT V DLQGVDC,9/1/1988 12:00:00 AM,218776111,2047701689,VIS
3,3020651176,GIANG THONG THOA,279200222332,20150702,CCSDKCT V DLQGVDC,9/1/1988 12:00:00 AM,218776111,2047701689,VIS
4,3020651176,GIANG THONG THOA,279200222332,20150702,CCSDKCT V DLQGVDC,9/1/1988 12:00:00 AM,218776111,2047701689,VIS
5,3020651176,GIANG THONG THOA,279200222332,20150702,CCSDKCT V DLQGVDC,9/1/1988 12:00:00 AM,218776111,2047701689,VIS
6,3020651176,GIANG THONG THOA,279200222332,20150702,CCSDKCT V DLQGVDC,9/1/1988 12:00:00 AM,218776111,2047701689,VIS
7,3020651176,GIANG THONG THOA,279200222332,20150702,CCSDKCT V DLQGVDC,9/1/1988 12:00:00 AM,218776111,2047701689,VIS
8,3020651176,GIANG THONG THOA,279200222332,20150702,CCSDKCT V DLQGVDC,9/1/1988 12:00:00 AM,218776111,2047701689,VIS
9,3020651176,GIANG THONG THOA,279200222332,20150702,CCSDKCT V DLQGVDC,9/1/1988 12:00:00 AM,218776111,2047701689,VIS
10,3020651176,GIANG THONG THOA,279200222332,20150702,CCSDKCT V DLQGVDC,9/1/1988 12:00:00 AM,218776111,2047701689,VIS
11,3020651176,GIANG THONG THOA,279200222332,20150702,CCSDKCT V DLQGVDC,9/1/1988 12:00:00 AM,218776111,2047701689,VIS
12,3020651176,GIANG THONG THOA,279200222332,20150702,CCSDKCT V DLQGVDC,9/1/1988 12:00:00 AM,218776111,2047701689,VIS
13,3020651176,GIANG THONG THOA,279200222332,20150702,CCSDKCT V DLQGVDC,9/1/1988 12:00:00 AM,218776111,2047701689,VIS
14,3020651176,GIANG THONG THOA,279200222332,20150702,CCSDKCT V DLQGVDC,9/1/1988 12:00:00 AM,218776111,2047701689,VIS
15,3020651176,GIANG THONG THOA,279200222332,20150702,CCSDKCT V DLQGVDC,9/1/1988 12:00:00 AM,218776111,2047701689,VIS
16,3020651176,GIANG THONG THOA,279200222332,20150702,CCSDKCT V DLQGVDC,9/1/1988 12:00:00 AM,218776111,2047701689,VIS
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19,3020651176,GIANG THONG THOA,279200222332,20150702,CCSDKCT V DLQGVDC,9/1/1988 12:00:00 AM,218776111,2047701689,VIS
20,3020651176,GIANG THONG THOA,279200222332,20150702,CCSDKCT V DLQGVDC,9/1/1988 12:00:00 AM,174556726,2103490208,VIS

✓ Card Customer Name Fuzzy Match

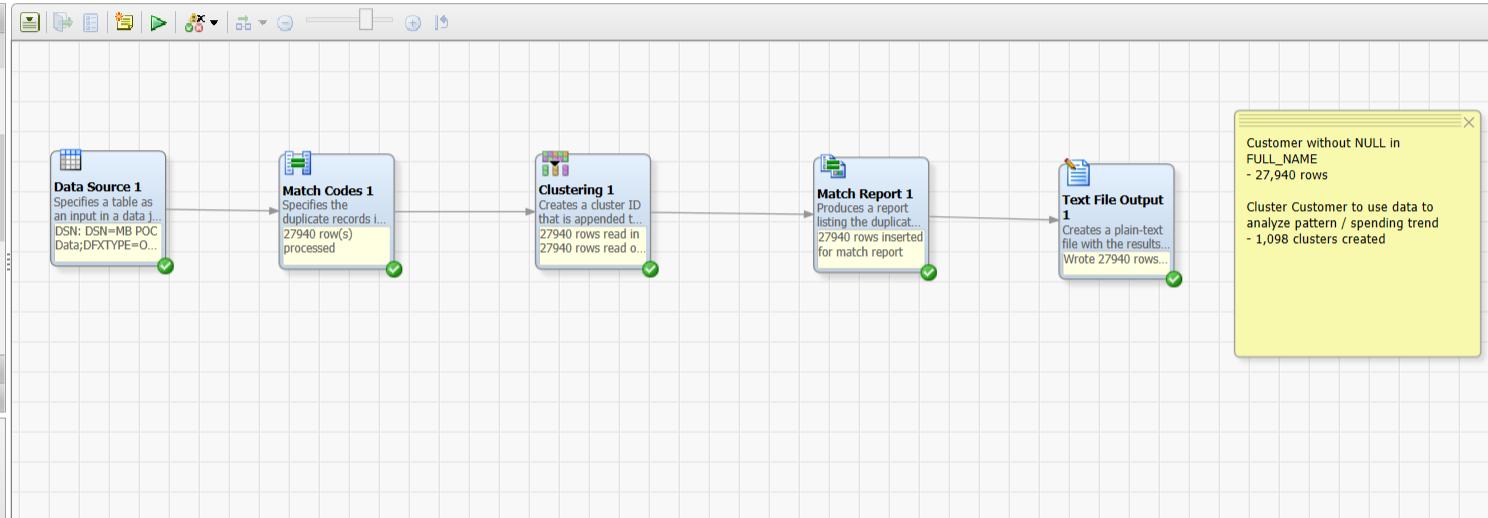
Data Flow Settings Variables Log

Nodes

- [Gender Analysis](#)
- [Gender Analysis \(Parsed\)](#)
- [Identification Analysis](#)
- [Parsing](#)
- [Standardization](#)
- [Standardization \(Parsed\)](#)
- [Change Case](#)
- [Locale Guessing](#)
- [Right Fielding](#)

Folders

Accelerators



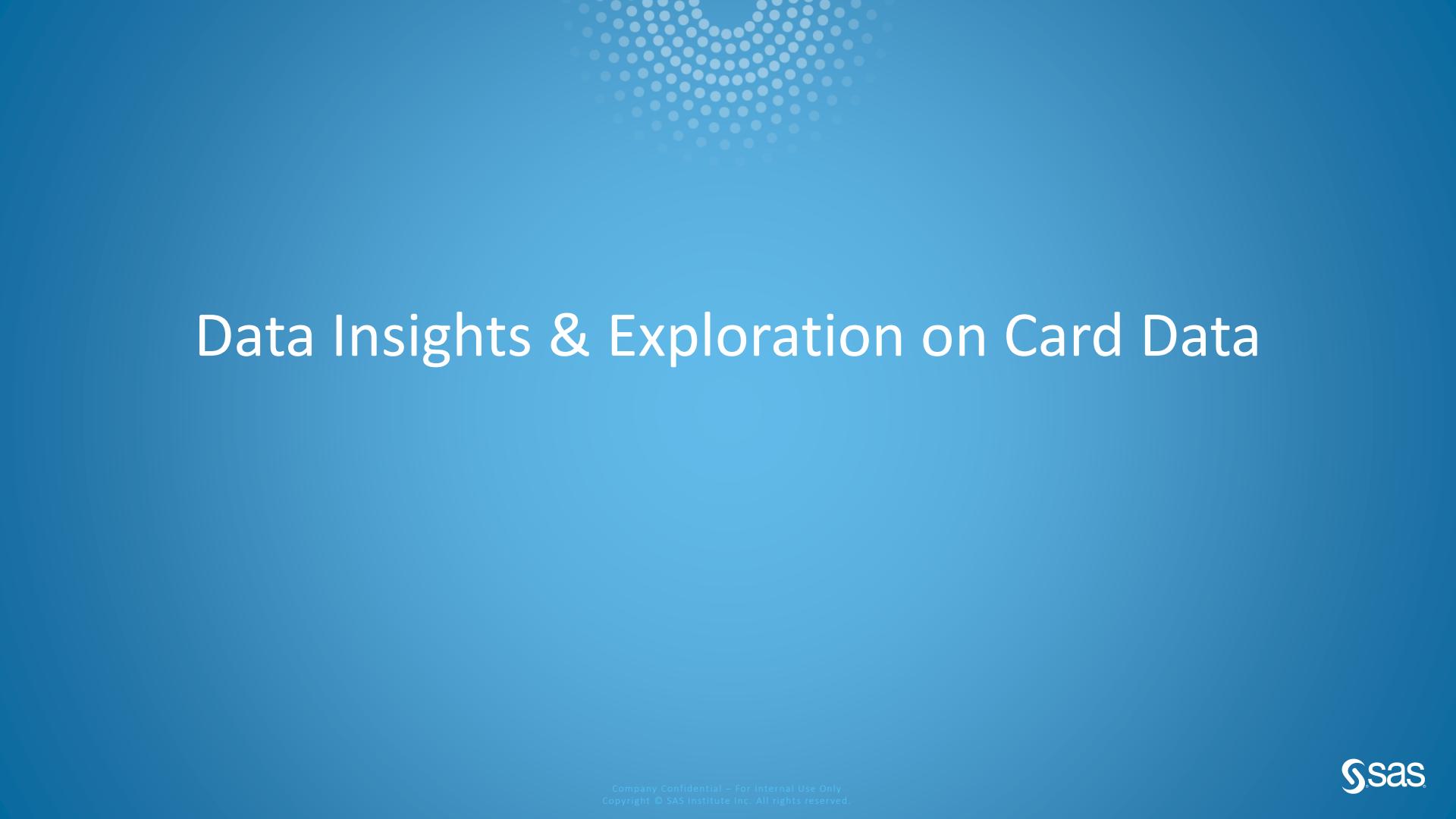
Log

Show full log

Show: All entries

Row	Node Name	Contained In	Instance	Node ID	Node Type	Status	Run Time (minutes)	Start Time	End Time
0	Card Customer Name Fuzzy Match				Data Job	✓ Completed successfully	02:43.11	3/25/2020 3:15 PM	3/25/2020 3:18 PM
1	Data Source 1			1	Data Source	✓ DSN: DSN=MB POC Data;DFXTYPE=O...	02:43.11	3/25/2020 3:15 PM	3/25/2020 3:18 PM
2	Match Codes 1			2	Match Codes	✓ 27940 row(s) processed	02:43.11	3/25/2020 3:15 PM	3/25/2020 3:18 PM
3	Clustering 1			3	Clustering	✓ 27940 rows.read.in	02:43.11	3/25/2020 3:15 PM	3/25/2020 3:18 PM

Job Status: ✓ Completed Successfully Run time: 0 hours 2 minutes 43.11 seconds



Data Insights & Exploration on Card Data

MB POC Card Transaction Data



Card Transaction Overview

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Unique Customer CIF

834

Total Transaction Amount (in Billions)

119B

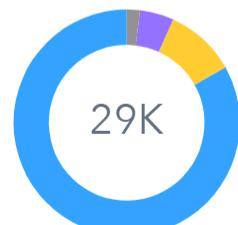
Currency Used

Frequency



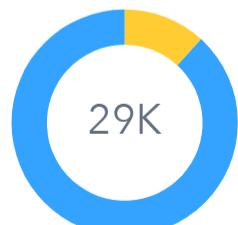
Breakdown of Source Channel

Frequency



Breakdown of Target Channels

Frequency



Breakdown of Transaction Type

Frequency



MB POC Card Transaction Data

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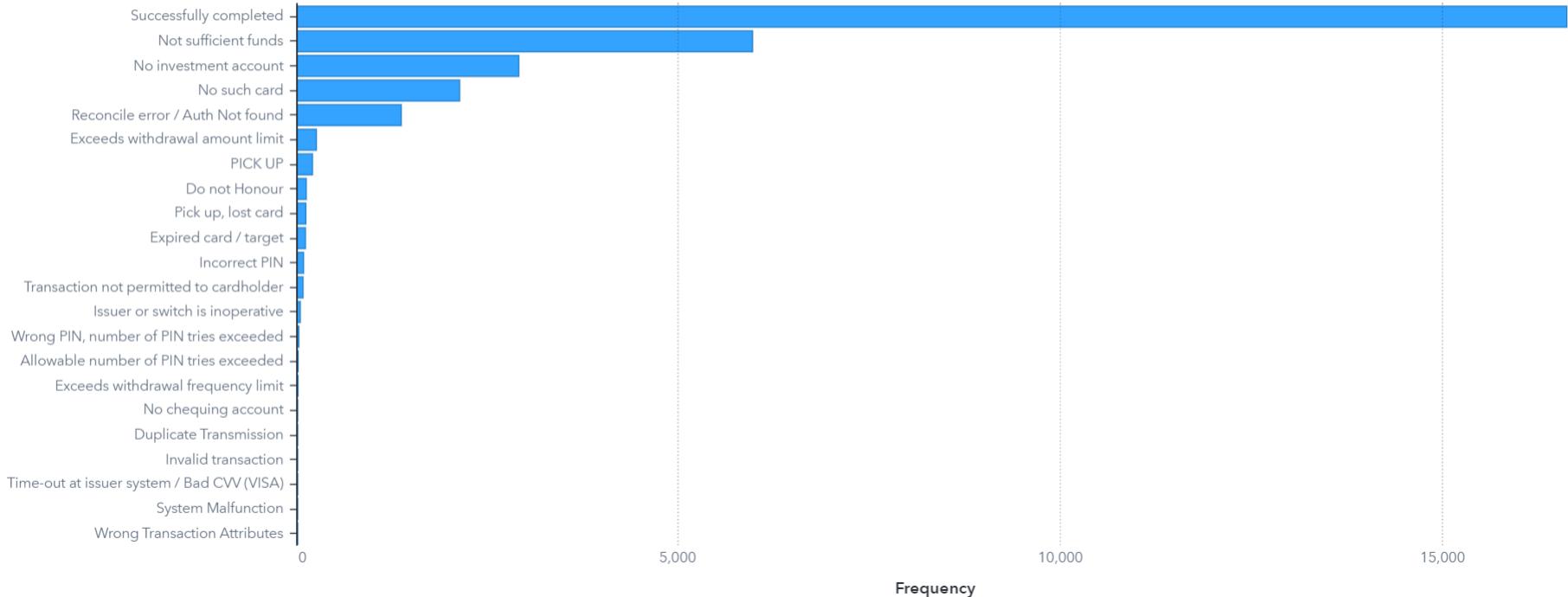
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Filters: No selections

Frequency of RETURN_CODE

RETURN_CODE



MB POC Card Transaction Data

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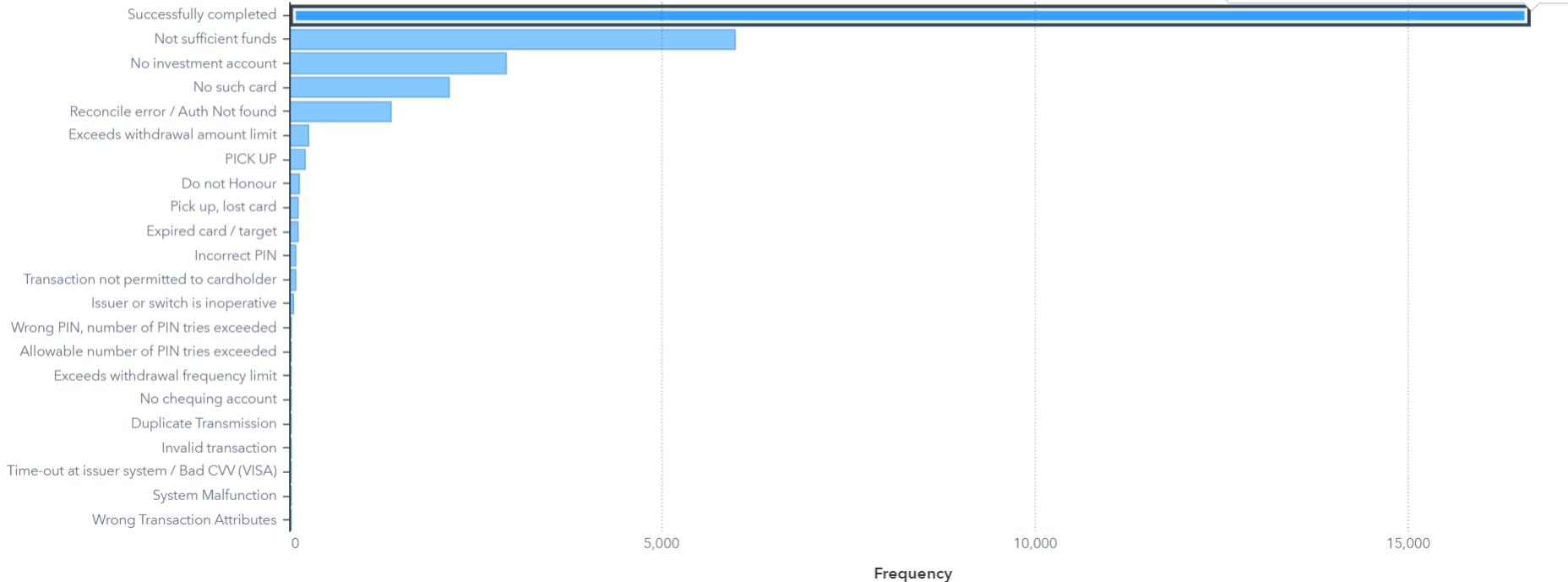
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Filters: Successfully completed

Frequency of RETURN_CODE

RETURN_CODE



MB POC Card Transaction Data

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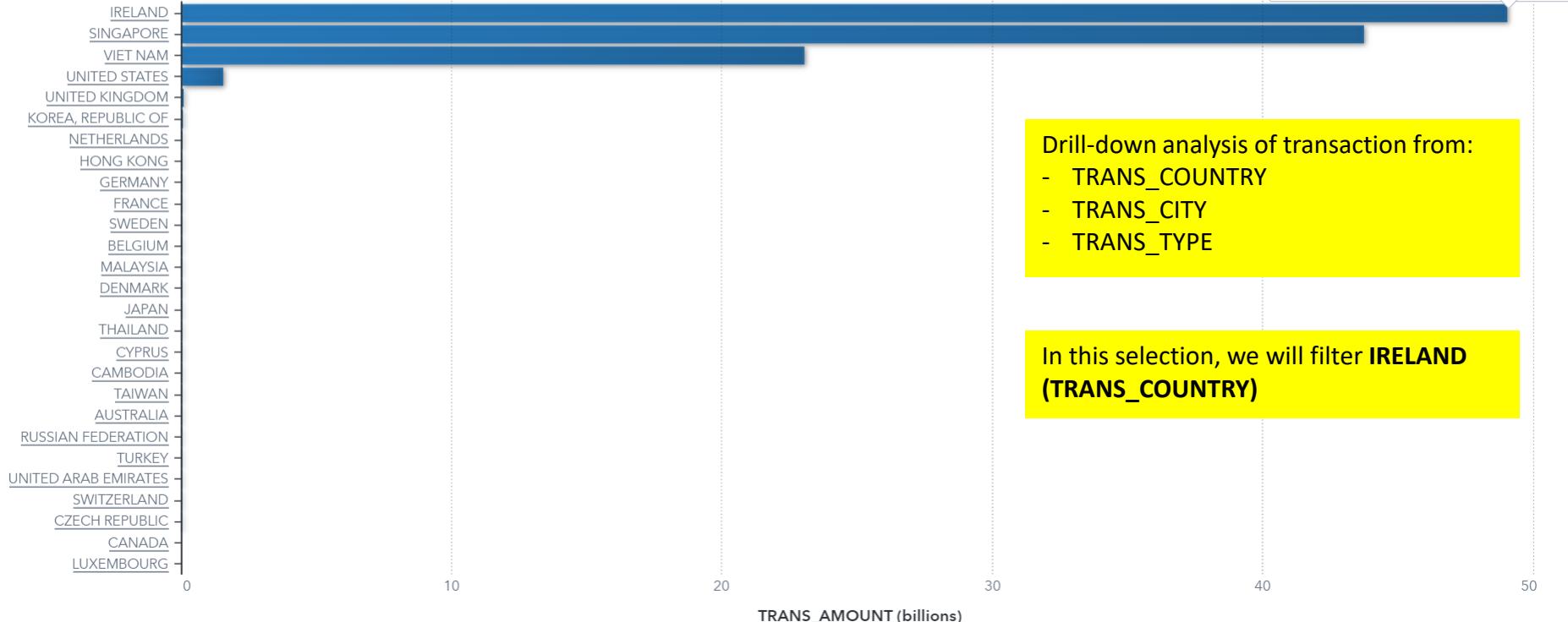
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TRANS_AMOUNT by TRANS_COUNTRY

TRANS_COUNTRY



MB POC Card Transaction Data

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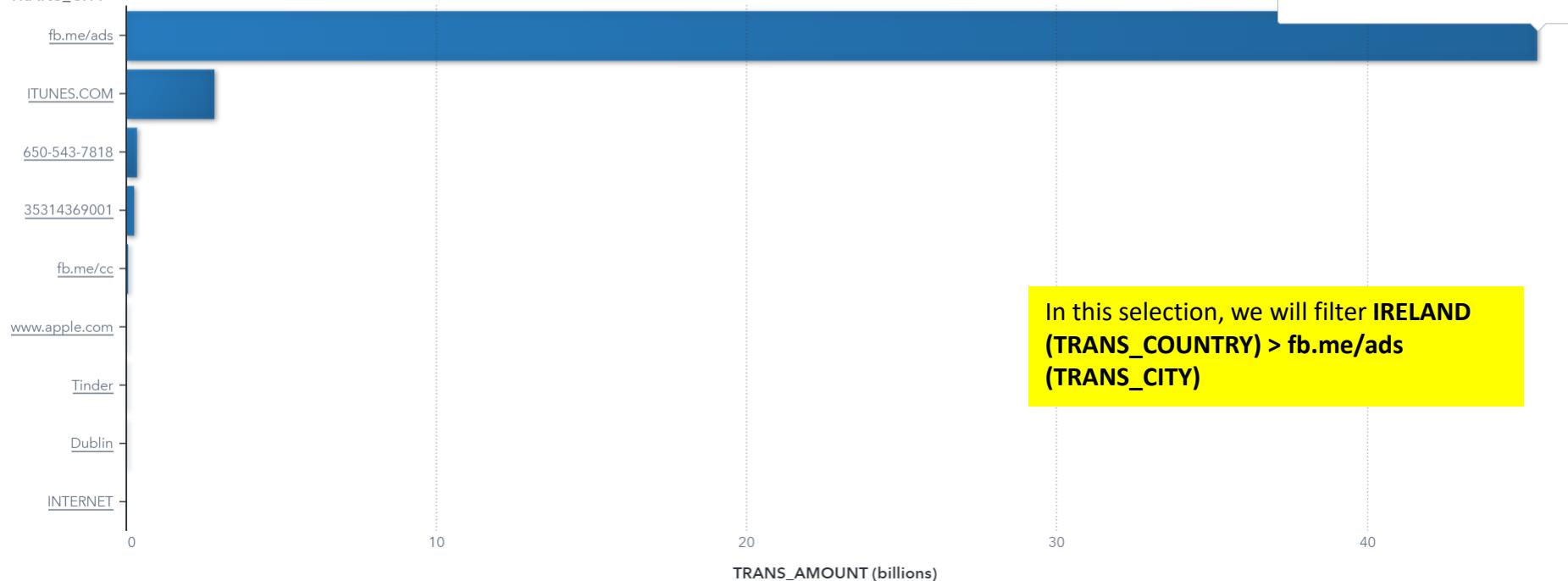
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TRANS_AMOUNT by TRANS_COUNTRY

All Trans Country Hierarchy > IRELAND ▾

TRANS_CITY



MB POC Card Transaction Data



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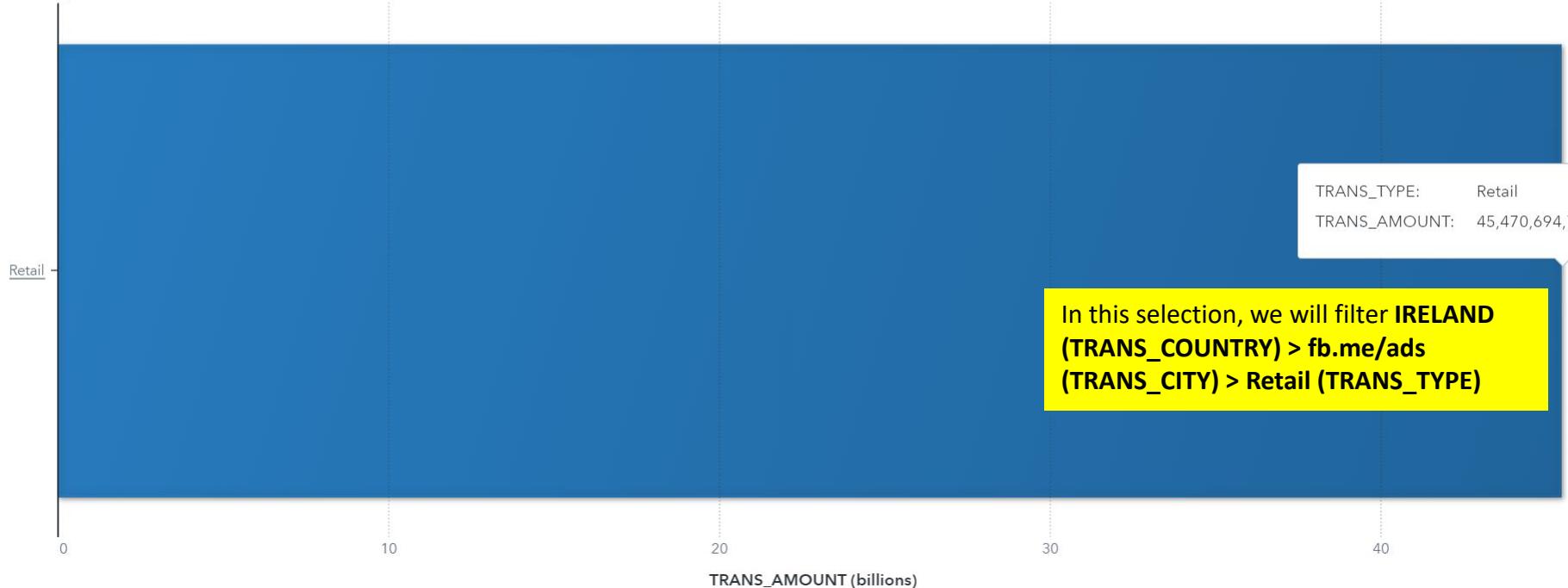
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TRANS_AMOUNT by TRANS_COUNTRY

All Trans Country Hierarchy > IRELAND ▾ > fb.me/ads ▾

TRANS_TYPE



MB POC Card Transaction Data



Card Transaction Overview

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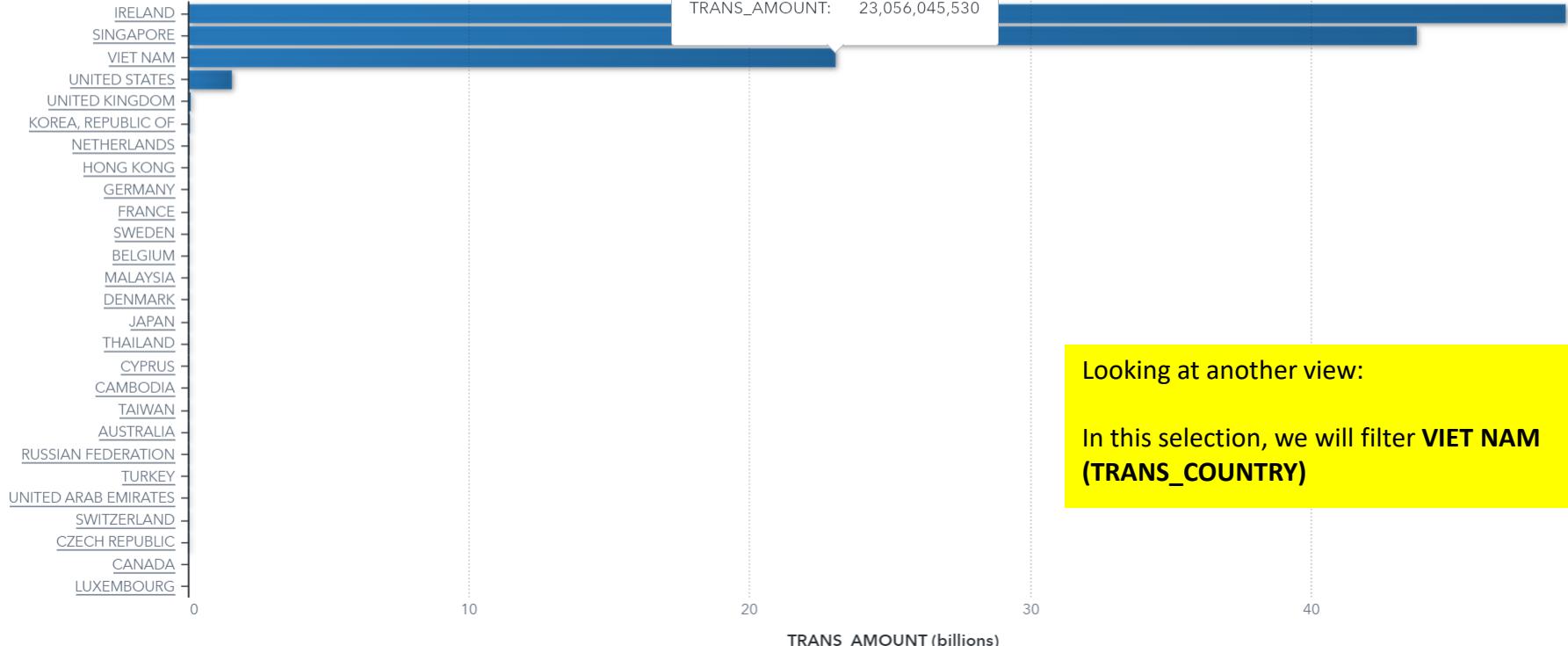
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TRANS_AMOUNT by TRANS_COUNTRY

TRANS_COUNTRY



TRANS_AMOUNT (billions)

Looking at another view:

In this selection, we will filter **VIET NAM**
(TRANS_COUNTRY)



MB POC Card Transaction Data

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Card Transaction Overview

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TRANS_AMOUNT by TRANS_COUNTRY

All Trans Country Hierarchy > VIET NAM ▾

TRANS_CITY

 HA NOI
HANOI

DA NANG

84873009999

Q THANH KHE

LAM DONG

TPHCM

TAYNINH

THAI BINH

HA NAM

HAIPHONG

HCMC

DAKLAK

SG

HUE

TRANS_AMOUNT (billions)

 TRANS_CITY: HA NOI
TRANS_AMOUNT: 5,820,426,489

In this selection, we will filter VIET NAM (TRANS_COUNTRY) > HA NOI and HANOI (TRANS_CITY)

Note:

- The Bank may want to consider cleaning up the TRANS_CITY data field to improve the analysis
- The type of duplicates will also cause misled figures and duplicated analysis.

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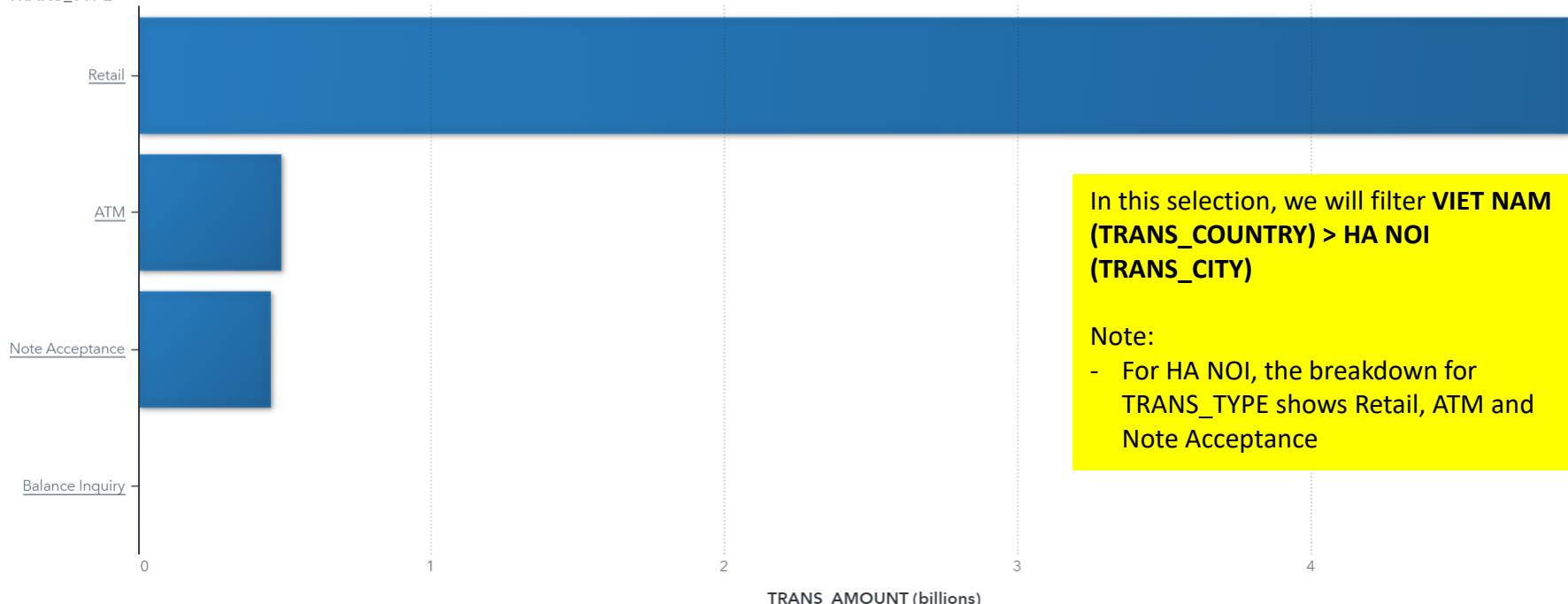
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TRANS_AMOUNT by TRANS_COUNTRY

All Trans Country Hierarchy > VIET NAM ▾ > HA NOI ▾



TRANS_TYPE



MB POC Card Transaction Data



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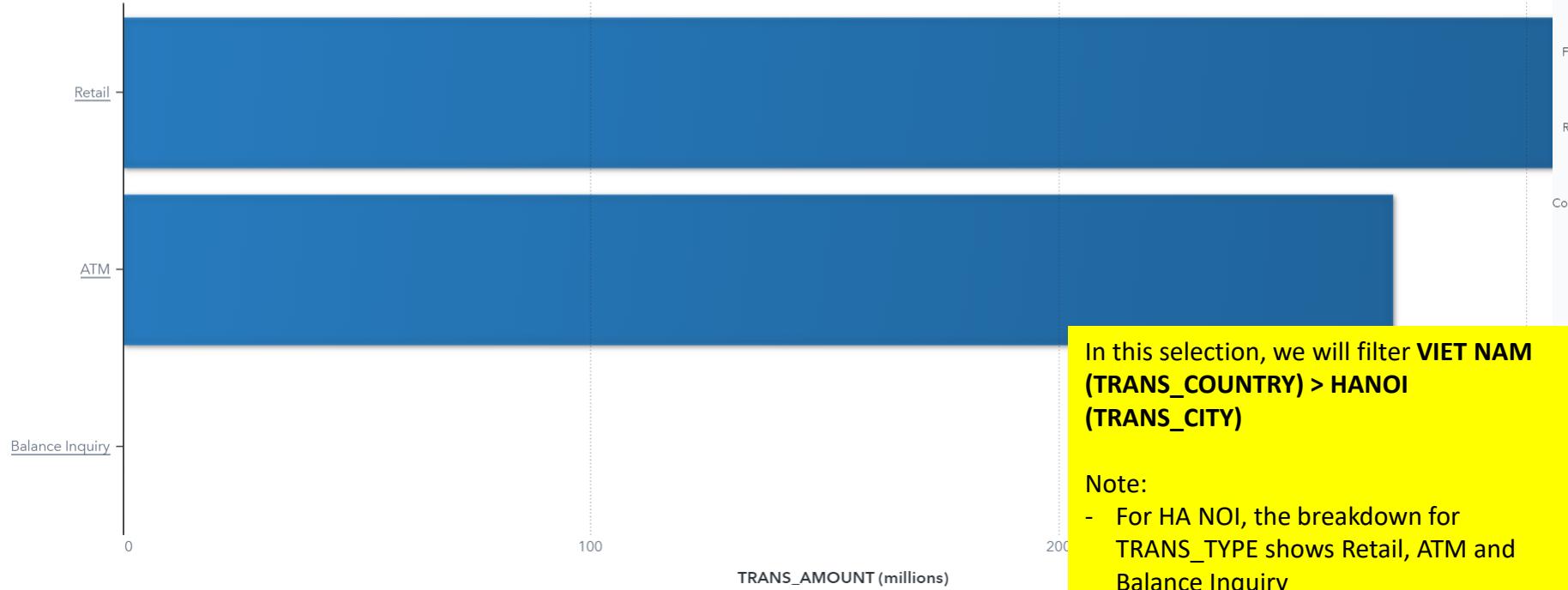
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TRANS_AMOUNT by TRANS_COUNTRY

All Trans Country Hierarchy > VIET NAM ▾ > HANOI ▾

TRANS_TYPE



....



Data



Rules



Filters



Ranks



Comments



Editing

MB POC Card Transaction Data

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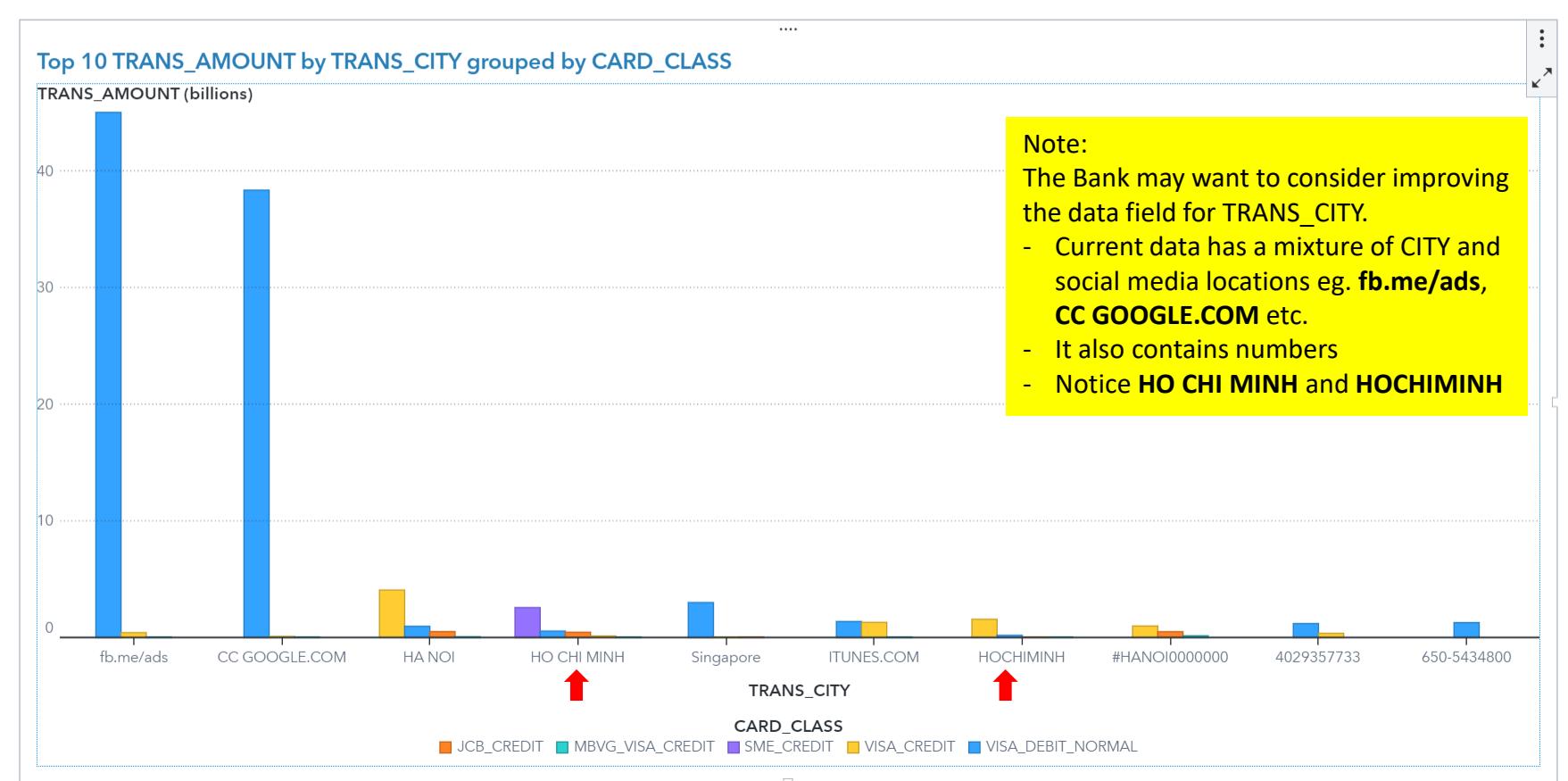
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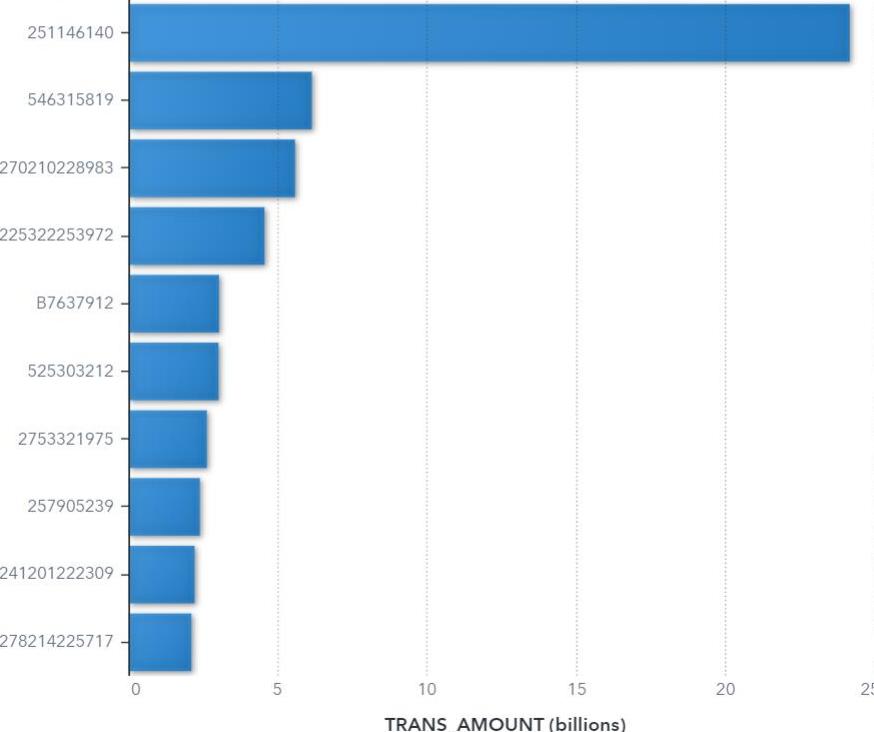
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Top 10 ID with Highest Transaction Amount

ID_NUMBER

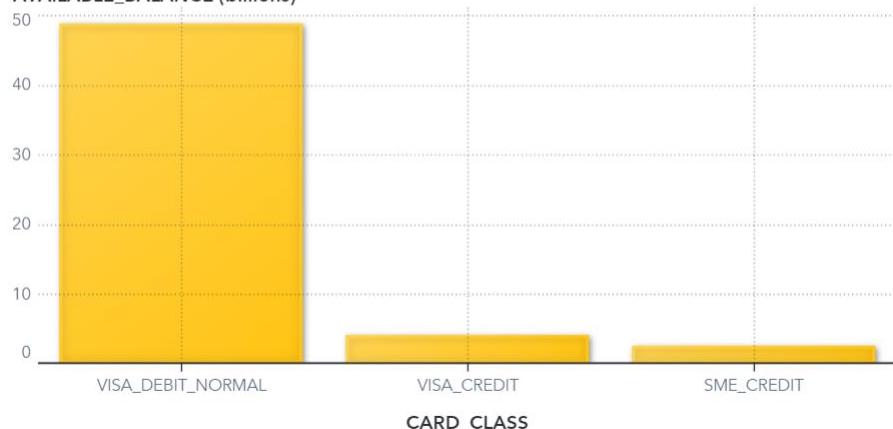


Customer Name

VIEN TUAN TIEP

Available Balance by Card Class

AVAILABLE_BALANCE (billions)





Editing

MB POC Card Transaction Data



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Card Transaction Overview

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Customer Details

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Company View

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....

Data

Objects

Suggest

Outline

Filters: No selections

Top 10 ID with Highest Transaction Amount

CIF (ID)

2432988724

2963474855

179078608

2797339981

3133766358

2783122020

4159457354

4252250819

573112153

2688873580

- ID_NUMBER with the highest TRANS_AMOUNT
- Selecting 2432988724 displays Customer VAN THU SULAIMANI
- High AVAILABLE_BALANCE in VISA_DEBIT_NORMAL

TRANS_AMOUNT (billions)

Customer Name

VIEN TUAN TIEP

Available Balance by Card Class

AVAILABLE_BALANCE (billions)



Options

Roles

Actions

Rules

Filters

Ranks

Editing

MB POC Card Transaction Data > Customer Details

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Customer Details

CIF (ID)	FULL_NAME	TRANS_COUNTRY	SOURCE_CHANNEL	MOBILE	TRANS_TYPE	TRANS_AMOUNT	AVAILABLE_BALANCE	Frequency	TRANS_DATE
2432988724	VAN THU SULAIM...	SINGAPORE	VISA		Retail	500,000	500,000	1	2020-01-03 21:14:53
2432988724	VAN THU SULAIM...	IRELAND	VISA		Retail	21,308,480	21,308,480	1	2020-01-04 10:29:11
2432988724	VAN THU SULAIM...	SINGAPORE	VISA		Retail	500,000	500,000	1	2020-01-05 04:05:01
2432988724	VAN THU SULAIM...	SINGAPORE	VISA		Retail	400,000	400,000	1	2020-01-05 04:05:52
2432988724	VAN THU SULAIM...	IRELAND	VISA		Retail	1,331,780	1,331,780	1	2020-01-06 16:03:52
2432988724	VAN THU SULAIM...	IRELAND	VISA		Retail	21,397,847	21,397,847	1	2020-01-07 00:31:20
2432988724	VAN THU SULAIM...	SINGAPORE	VISA		Retail	10,000,000	10,000,000	1	2020-01-08 00:22:32
2432988724	VAN THU SULAIM...	SINGAPORE	VISA		Retail	50,000,000	50,000,000	1	2020-01-08 00:22:51
2432988724	VAN THU SULAIM...	SINGAPORE	VISA		Retail	100,000,000	100,000,000	1	2020-01-08 00:23:10
2432988724	- Transaction details / Customer details						100,000,000	1	2020-01-08 00:23:32
2432988724	- Notice TRANS_AMOUNT and AVAILABLE_BALANCE amount is the same?						500,000,000	1	2020-01-08 00:29:37
2432988724	- AVAILABLE_BALANCE data description (Available Balance/Limit of the card linked account)						500,000,000	1	2020-01-08 00:35:54
2432988724	- TRANS_AMOUNT data description (Transaction Amount)						500,000,000	1	2020-01-08 00:37:57
2432988724	VAN THU SULAIM...	SINGAPORE	VISA		Retail	500,000,000	500,000,000	1	2020-01-08 00:38:14
2432988724	VAN THU SULAIM...	SINGAPORE	VISA		Retail	800,000,000	800,000,000	1	2020-01-08 00:38:32
2432988724	VAN THU SULAIM...	SINGAPORE	VISA		Retail	800,000,000	800,000,000	1	2020-01-08 00:38:50
2432988724	VAN THU SULAIM...	SINGAPORE	VISA		Retail	800,000,000	800,000,000	1	2020-01-08 00:39:19
2432988724	VAN THU SULAIM...	SINGAPORE	VISA		Retail	800,000,000	800,000,000	1	2020-01-08 00:43:36
2432988724	VAN THU SULAIM...	SINGAPORE	VISA		Retail	900,000,000	900,000,000	1	2020-01-08 00:51:28
2432988724	VAN THU SULAIM...	SINGAPORE	VISA		Retail	900,000,000	900,000,000	1	2020-01-08 00:51:45
2432988724	VAN THU SULAIM...	SINGAPORE	VISA		Retail	800,000,000	800,000,000	1	2020-01-08 00:55:21
2432988724	VAN THU SULAIM...	SINGAPORE	VISA		Retail	800,000,000	800,000,000	1	2020-01-08 01:00:28
						Sum: 24,156,657,909			

- ...
Data
Objects
Suggest
- Options
Roles
Actions
Rules
Filters
Ranks



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MB POC Card Transaction Data

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Data

Objects

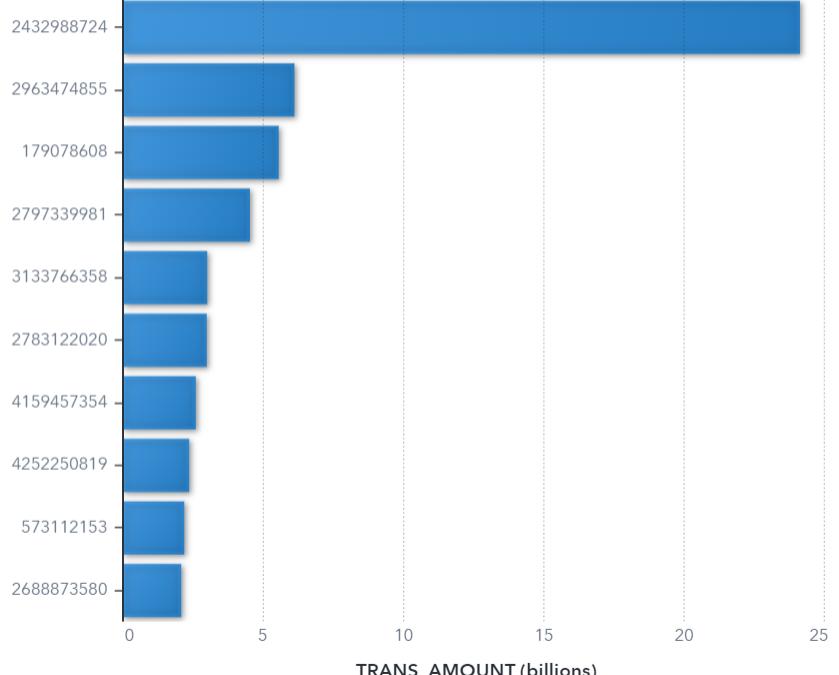
Suggest

Outline

Filters: No selections

Top 10 ID with Highest Transaction Amount

CIF (ID)



Customer Name

FULL_NAME: VIEN TUAN TIEP

Frequency: 2,282

VIEN TUAN TIEP

Available Balance

AVAILABLE_BALANCE (billions)



- Let's look at Customer **VIEN TUAN TIEP** which appears 2,282 times within the data

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Options

Roles

Actions

Rules

Filters

Ranks

Editing

MB POC Card Transaction Data > Customer Details

↻ ↻ ↺ ↻ ↻ ↻

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Customer Details

CIF(ID)	FULL_NAME	TRANS_COUNTRY	SOURCE_CHANNEL	MOBILE	TRANS_TYPE	TRANS_AMOUNT	AVAILABLE_BALANCE	Frequency	TRANS_DATE
573112153	VIEN TUAN TIEP	IRELAND	VISA	0939183981	Retail	149,000	149,000	1	2020-01-01 09:18:35
573112153	VIEN TUAN TIEP	IRELAND	VISA	86939183981	Retail	2,199,000	2,199,000	1	2020-01-01 10:30:15
573112153	VIEN TUAN TIEP	IRELAND	VISA	0939183981	Retail	2,199,000	2,199,000	1	2020-01-01 10:30:18
573112153	VIEN TUAN TIEP	IRELAND	VISA	86939183981	Retail	1,299,000	1,299,000	1	2020-01-01 10:30:43
573112153	VIEN TUAN TIEP	IRELAND	VISA	0939183981	Retail	1,299,000	1,299,000	1	2020-01-01 10:30:45
573112153	VIEN TUAN TIEP	IRELAND	VISA	86939183981	Retail	2,199,000	2,199,000	1	2020-01-01 10:39:42
573112153	VIEN TUAN TIEP	IRELAND	VISA	0939183981	Retail	2,199,000	2,199,000	1	2020-01-01 10:39:45
573112153	VIEN TUAN TIEP	IRELAND	VISA	86939183981	Retail	1,299,000	1,299,000	1	2020-01-01 10:40:01
573112153	VIEN TUAN TIEP	IRELAND	VISA	0939183981	Retail	1,299,000	1,299,000	1	2020-01-01 10:40:04
573112153	VIEN TUAN TIEP	IRELAND	VISA	86939183981	Retail	2,199,000	2,199,000	1	2020-01-01 10:42:34
573112153	VIEN TUAN TIEP	IRELAND	VISA	0939183981	Retail	2,199,000	2,199,000	1	2020-01-01 10:42:37
573112153	VIEN TUAN TIEP	IRELAND	VISA	86939183981	Retail	1,299,000	1,299,000	1	2020-01-01 10:42:53
573112153	VIEN TUAN TIEP	IRELAND	VISA	0939183981	Retail	1,299,000	1,299,000	1	2020-01-01 10:42:55
573112153	VIEN TUAN TIEP	IRELAND	VISA	86939183981	Retail	449,000	449,000	1	2020-01-01 10:50:32
573112153	VIEN TUAN TIEP	IRELAND	VISA	0939183981	Retail	449,000	449,000	1	2020-01-01 10:50:35
573112153	<ul style="list-style-type: none"> - Adding in TRANS_DATE into the analysis - Notice that the transaction has same amount with a difference of seconds - Is this a normal transaction pattern or can we include other parameters to expand the analysis? 					22,000	22,000	1	2020-01-01 11:39:53
573112153						22,000	22,000	1	2020-01-01 11:39:55
573112153						22,000	22,000	1	2020-01-01 11:40:10
573112153						22,000	22,000	1	2020-01-01 11:40:13
573112153						22,000	22,000	1	2020-01-01 11:40:32
573112153						22,000	22,000	1	2020-01-01 11:40:34
573112153	VIEN TUAN TIEP	IRELAND	VISA	86939183981	Retail	119,000	119,000	1	2020-01-01 11:57:52
						Sum: 2,205,939,397			

...

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Frequency of CUSTOMER_AGE

Frequency

3,000

2,000

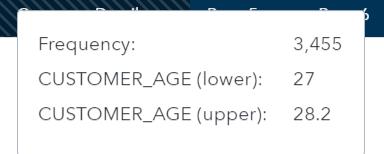
1,000

0

Frequency: 3,455

CUSTOMER_AGE (lower): 27

CUSTOMER_AGE (upper): 28.2



Note:
The average CUSTOMER_AGE (we derive this from the DOB) is between 27 to 31



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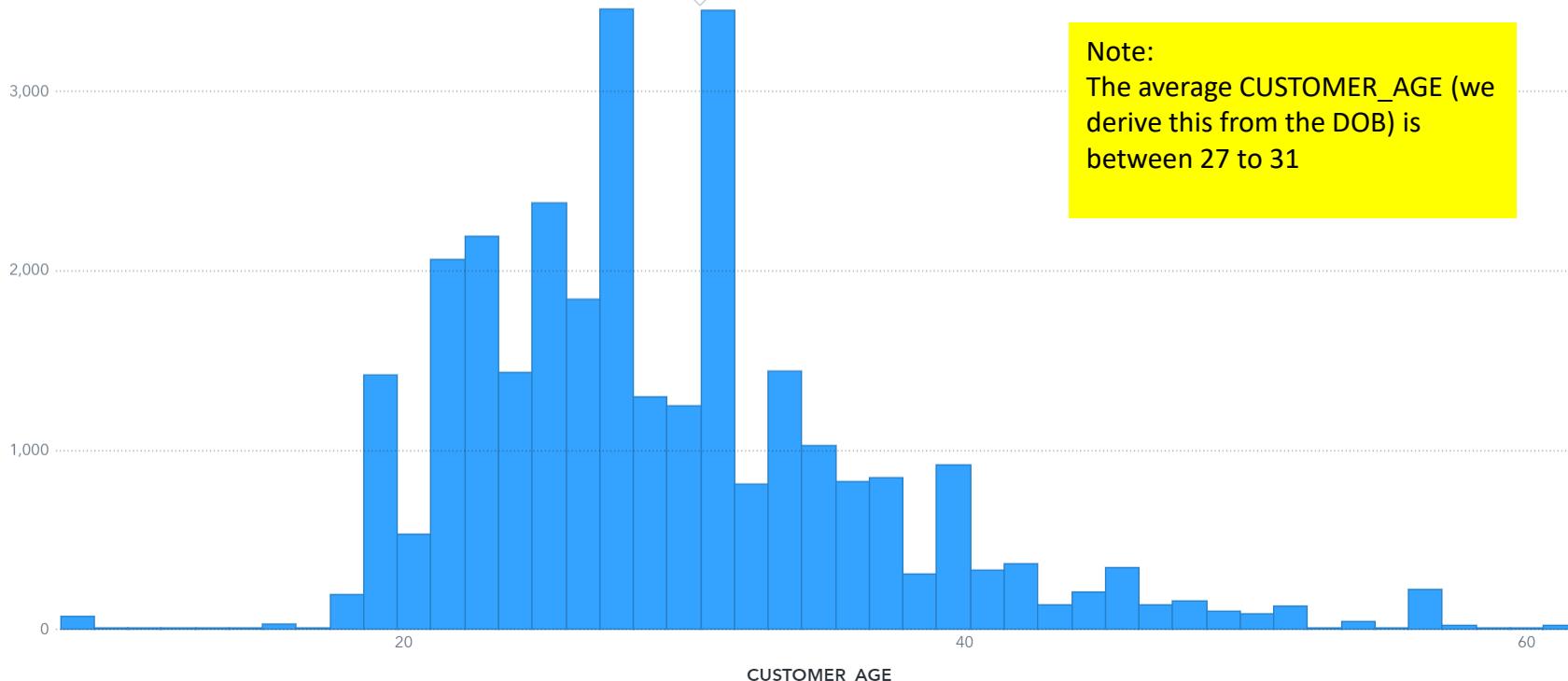
Page 9

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Frequency of CUSTOMER_AGE

Frequency



Frequency: 3,450
CUSTOMER_AGE (lower): 30.6
CUSTOMER_AGE (upper): 31.8

Note:
The average CUSTOMER_AGE (we derive this from the DOB) is between 27 to 31

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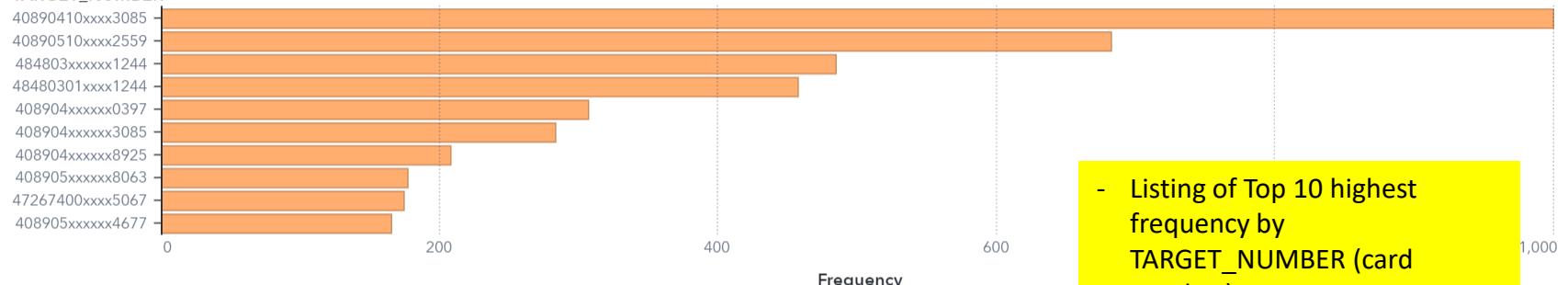
Rules

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Top 10 TARGET_NUMBER

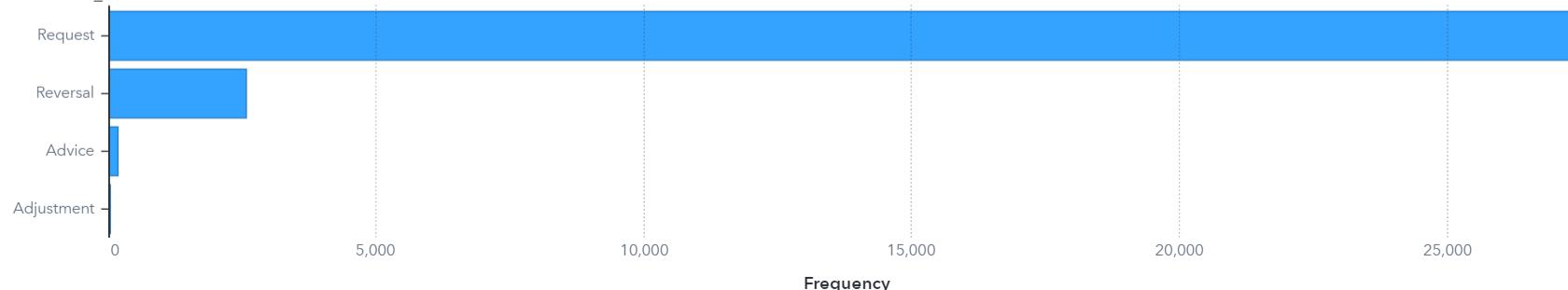
TARGET_NUMBER



- Listing of Top 10 highest frequency by TARGET_NUMBER (card number)

Breakdown of REQUEST_CATEGORY

REQUEST_CATEGORY





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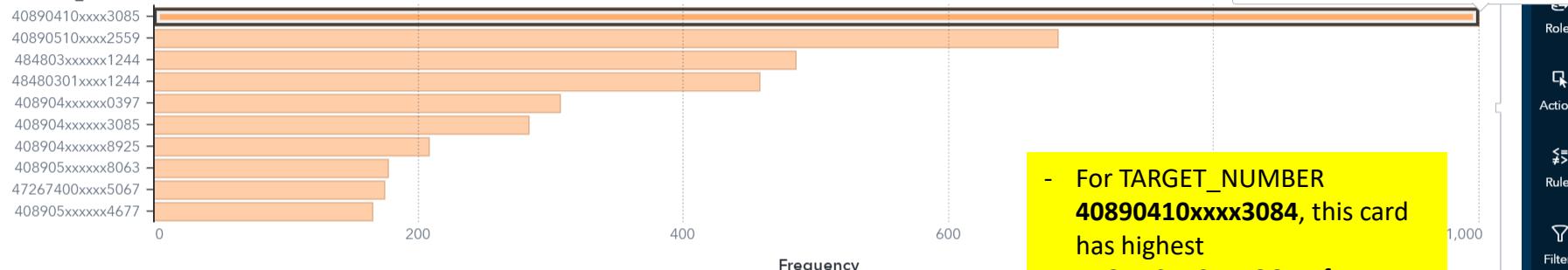
Objects

Suggest

Outline

Top 10 TARGET_NUMBER

TARGET_NUMBER

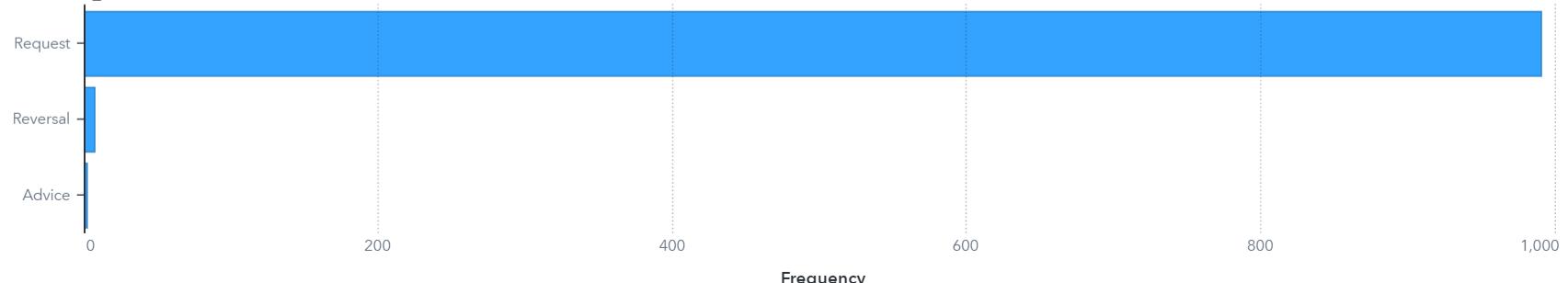


TARGET_NUMBER: 40890410xxxx3085
Frequency: 1,000

- For TARGET_NUMBER
40890410xxxx3084, this card
has highest
REQUEST_CATEGORY for
Request.

Breakdown of REQUEST_CATEGORY

REQUEST_CATEGORY



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CIF(ID)	FULL_NAME	TRANS_COUNTRY	SOURCE_CHANNEL	MOBILE	TRANS_TYPE	TRANS_AMOUNT	AVAILABLE_BALANCE	Frequency	TRANS_DATE
573112153	VIEN TUAN TIEP	IRELAND	VISA	0939183981	Retail	449,000	449,000	1	2020-01-14 19:51:55
573112153	VIEN TUAN TIEP	IRELAND	VISA	0939183981	Retail	2,199,000	2,199,000	1	2020-01-14 20:04:54
573112153	VIEN TUAN TIEP	IRELAND	VISA	0939183981	Retail	1,299,000	1,299,000	1	2020-01-14 20:05:17
573112153	VIEN TUAN TIEP	IRELAND	VISA	0939183981	Retail	2,199,000	2,199,000	1	2020-01-14 20:08:01
573112153	VIEN TUAN TIEP	IRELAND	VISA	0939183981	Retail	1,299,000	1,299,000	1	2020-01-14 20:08:31
573112153	VIEN TUAN TIEP	IRELAND	VISA	0939183981	Retail	2,199,000	2,199,000	1	2020-01-14 20:11:35
573112153	VIEN TUAN TIEP	IRELAND	VISA	0939183981	Retail	449,000	449,000	1	2020-01-14 20:12:16
573112153	VIEN TUAN TIEP	IRELAND	VISA	0939183981	Retail	449,000	449,000	1	2020-01-14 20:12:33
573112153	VIEN TUAN TIEP	IRELAND	VISA	0939183981	Retail	22,000	22,000	1	2020-01-14 20:12:48
573112153	VIEN TUAN TIEP	IRELAND	VISA	0939183981	Retail	1,299,000	1,299,000	1	2020-01-15 09:16:42
573112153	VIEN TUAN TIEP	IRELAND	VISA	0939183981	Retail	2,199,000	2,199,000	1	2020-01-15 09:19:19
573112153	VIEN TUAN TIEP	IRELAND	VISA	0939183981	Retail	1,299,000	1,299,000	1	2020-01-15 09:19:35
573112153	VIEN TUAN TIEP	IRELAND	VISA	0939183981	Retail	2,199,000	2,199,000	1	2020-01-15 09:31:15
573112153	VIEN TUAN TIEP	IRELAND	VISA	0939183981	Retail	2,199,000	2,199,000	1	2020-01-15 09:33:17
573112153	For TARGET_NUMBER 40890410xxxx3084, this is the Customer details			0939183981	Retail	149,000	149,000	1	2020-01-15 09:33:37
573112153				0939183981	Retail	449,000	449,000	1	2020-01-15 09:37:27
573112153				0939183981	Retail	2,199,000	2,199,000	1	2020-01-15 10:32:23
573112153				0939183981	Retail	1,299,000	1,299,000	1	2020-01-15 10:32:56
573112153	VIEN TUAN TIEP	IRELAND	VISA	0939183981	Retail	2,199,000	2,199,000	1	2020-01-15 11:38:40
573112153	VIEN TUAN TIEP	IRELAND	VISA	0939183981	Retail	2,199,000	2,199,000	1	2020-01-15 11:43:02
573112153	VIEN TUAN TIEP	IRELAND	VISA	0939183981	Retail	2,199,000	2,199,000	1	2020-01-15 11:46:06
573112153	VIEN TUAN TIEP	IRELAND	VISA	0939183981	Retail	2,199,000	2,199,000	1	2020-01-15 11:47:01
573112153	VIEN TUAN TIEP	IRELAND	VISA	0939183981	Retail	2,199,000	2,199,000	1	2020-01-15 11:48:19



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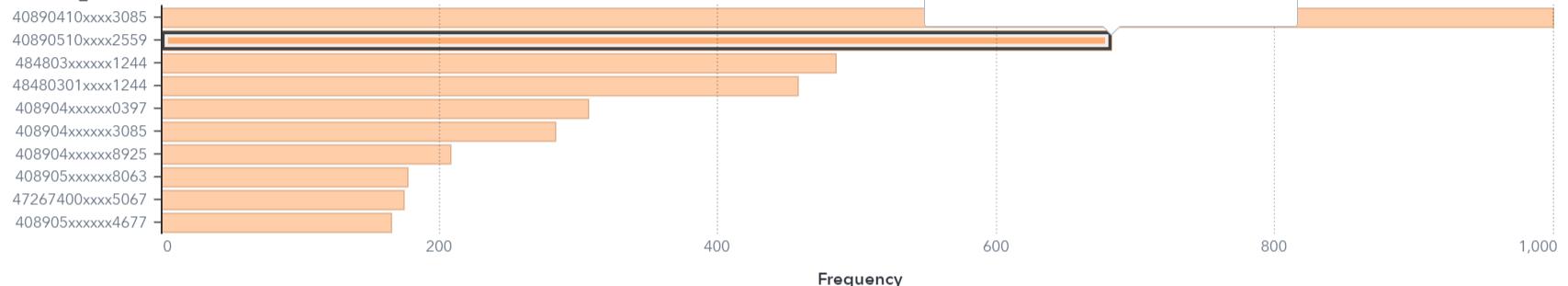
Rules

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Top 10 TARGET_NUMBER

TARGET_NUMBER



Breakdown of REQUEST_CATEGORY

REQUEST_CATEGORY



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Customer Details

CIF (ID)	FULL_NAME	TRANS_COUNTRY	SOURCE_CHANNEL	MOBILE	TRANS_TYPE	TRANS_AMOUNT	AVAILABLE_BALANCE	Frequency	TRANS_DATE
3864713204	VAN SI THUONG	IRELAND	VISA		Retail	40,000	40,000	2	2020-01-16 14:35:17
3864713204	VAN SI THUONG	IRELAND	VISA		Retail	50,000	50,000	1	2020-01-16 19:13:30
3864713204	VAN SI THUONG	IRELAND	VISA		Retail	50,000	50,000	1	2020-01-16 19:14:11
3864713204	VAN SI THUONG	IRELAND	VISA		Retail	50,000	50,000	1	2020-01-16 19:29:17
3864713204	VAN SI THUONG	IRELAND	VISA		Retail	50,000	50,000	1	2020-01-16 19:56:19
3864713204	VAN SI THUONG	IRELAND	VISA		Retail	50,000	50,000	1	2020-01-16 20:37:41
3864713204	VAN SI THUONG	IRELAND	VISA		Retail	70,000	70,000	1	2020-01-16 21:37:07
3864713204	VAN SI THUONG	IRELAND	VISA		Retail	50,000	50,000	1	2020-01-17 08:05:47
3864713204	VAN SI THUONG	IRELAND	VISA		Retail	50,000	50,000	1	2020-01-17 08:12:34
3864713204	VAN SI THUONG	IRELAND	VISA		Retail	50,000	50,000	1	2020-01-17 08:19:48
3864713204	VAN SI THUONG	IRELAND	VISA		Retail	50,000	50,000	1	2020-01-17 08:28:06
3864713204	VAN SI THUONG	IRELAND	VISA		Retail	50,000	50,000	1	2020-01-17 08:39:35
3864713204	VAN SI THUONG	IRELAND	VISA		Retail	50,000	50,000	1	2020-01-17 08:41:57
3864713204	VAN SI THUONG	IRELAND	VISA		Retail	50,000	50,000	1	2020-01-17 08:50:25
386	- For TARGET_NUMBER			A	Retail	50,000	50,000	1	2020-01-17 08:57:17
386	40890510xxxx2559, this is the			A	Retail	75,982	75,982	1	2020-01-17 09:25:10
386	Customer details			A	Retail	50,000	50,000	1	2020-01-17 10:36:09
3864713204	VAN SI THUONG	IRELAND	VISA		Retail	50,000	50,000	1	2020-01-17 10:38:26
3864713204	VAN SI THUONG	IRELAND	VISA		Retail	50,000	50,000	1	2020-01-17 10:50:17
3864713204	VAN SI THUONG	IRELAND	VISA		Retail	50,000	50,000	1	2020-01-17 10:51:43
3864713204	VAN SI THUONG	IRELAND	VISA		Retail	50,000	50,000	1	2020-01-17 10:55:30
3864713204	VAN SI THUONG	IRELAND	VISA		Retail	50,000	50,000	1	2020-01-17 11:01:43
3864713204	VAN SI THUONG	IRELAND	VISA		Retail	50,000	50,000	1	2020-01-17 11:03:10
3864713204	VAN SI THUONG	IRELAND	VISA		Retail	50,000	50,000	1	2020-01-17 11:12:10

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Filters: ABC x

AMENDMENT_OFFICER

AMENDMENT_OFFICER

ABC

XYZ

LE THI TU OANH-TTTTT

0

5,000

10,000

15,000

20,000

25,000

Frequency

AMENDMENT_OFFICER: ABC

Frequency:

28,216

PE by AMENDMENT_OFFICER

ATM

Balance Inquiry

Credit

Note Acceptance

MiniStatement

EMB Cash

0

5,000

10,000

15,000

20,000

25,000

Frequency

TRANS_AMOUNT by TRANS_DATE_ONLY

TRANS_AMOUNT (billions)

50

40

30

20

10

0

05Jan2020

12Jan2020

19Jan2020

26Jan2020

02Feb2020

09Feb2020

16Feb2020

23Feb2020

01Mar2020

TRANS_DATE_ONLY

- **AMENDMENT_OFFICER ABC top 2 TRANS_TYPE are Retail & ATM**
- The time series shows the transaction frequency with **08 Jan 2020** with the highest



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Filters: XYZ x

AMENDMENT_OFFICER

AMENDMENT_OFFICER

AMENDMENT_OFFICER: XYZ

Frequency: 1,969

XYZ

LE THI TU OANH-TTTTT

Frequency

TRANS_TYPE by AMENDMENT_OFFICER

TRANS_TYPE

Retail

EMB Cash

ATM

Balance Inquiry

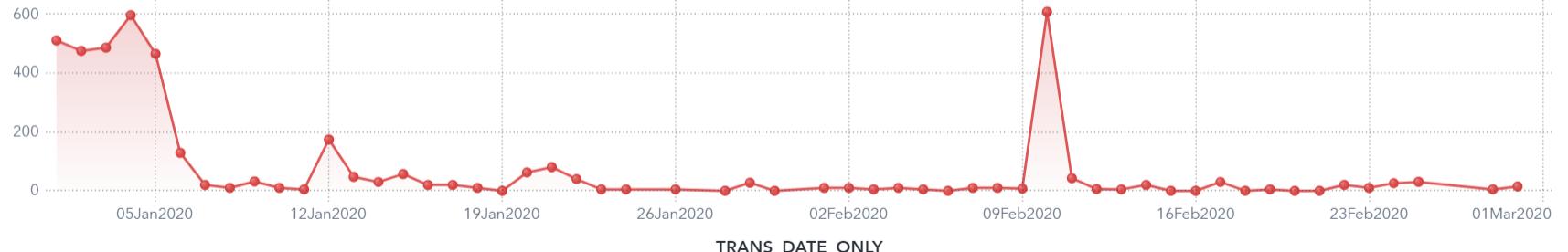
Note Acceptance

Buy VinID Point

- AMENDMENT_OFFICER XYZ top 3 TRANS_TYPE are Retail, EMB Cash & ATM
- The time series shows the transaction frequency with 04 Jan 2020 and 10 Feb 2020 with the highest

TRANS_AMOUNT by TRANS_DATE_ONLY

TRANS_AMOUNT (millions)





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Company



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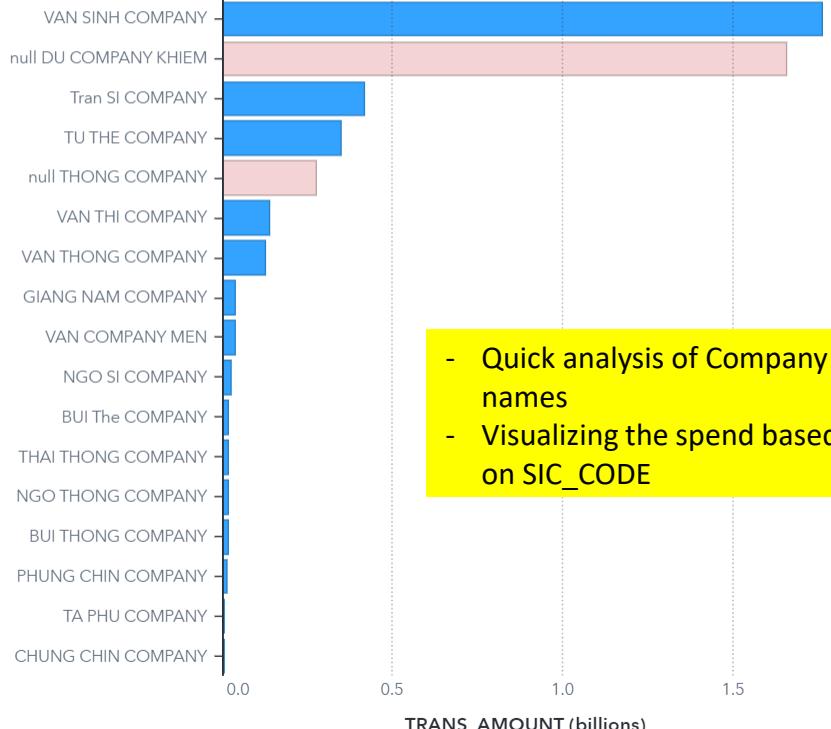
Rules

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Ranks

Breakdown by Company Names

FULL_NAME



- Quick analysis of Company names
- Visualizing the spend based on SIC_CODE

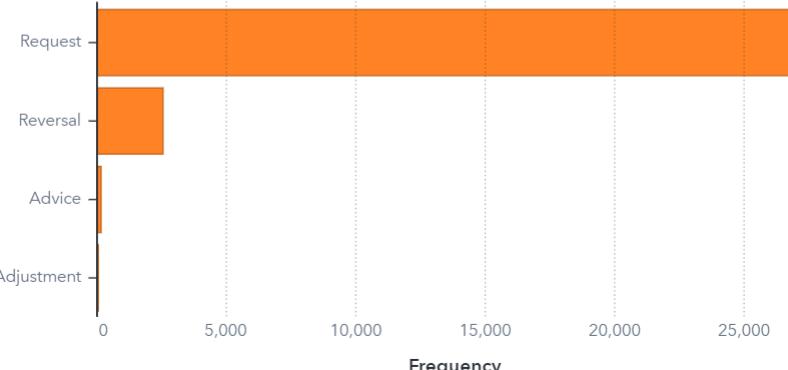
SIC_CODE Word Cloud



Frequency TRANS_AMOUNT

Frequency of REQUEST_CATEGORY

REQUEST_CATEGORY



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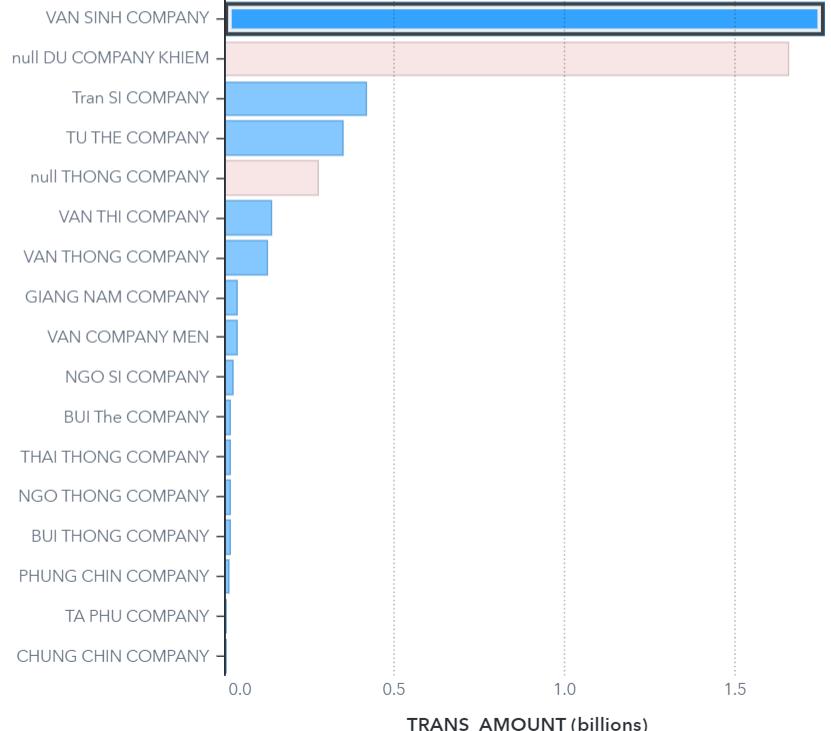
Rules

Filters

Ranks

Breakdown by Company Names

FULL_NAME



SIC_CODE Word Cloud

7311 Advertising Services

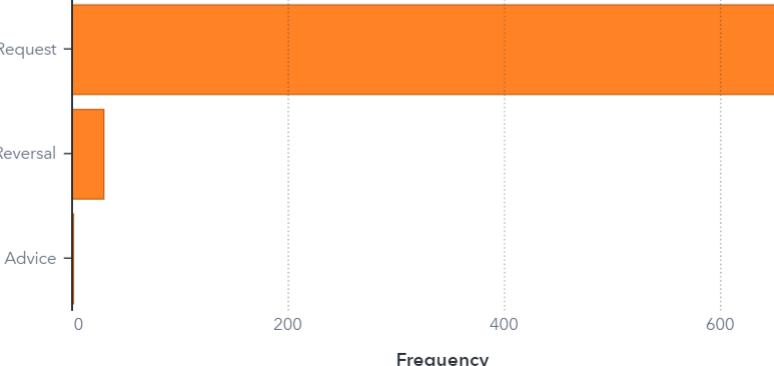
7399 Business Services

Frequency

TRANS_AMOUNT

Frequency of REQUEST_CATEGORY

REQUEST_CATEGORY



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CIF (ID)	FULL_NAME	TRANS_DATE	TRANS_COUNTRY	SOURCE_CHANNEL	SIC_CODE	TRANS_AMOUNT	Frequency
1882377780	VAN SINH COMPANY	2020-01-07 01:17:21	UNITED KINGDOM	VISA	7399 Business Services	0	1
1882377780	VAN SINH COMPANY	2020-01-07 01:17:55	IRELAND	VISA	7311 Advertising Services	20,000	1
1882377780	VAN SINH COMPANY	2020-01-07 01:17:57	IRELAND	VISA	7311 Advertising Services	20,000	1
1882377780	VAN SINH COMPANY	2020-01-07 01:18:26	IRELAND	VISA	7311 Advertising Services	20,000	1
1882377780	VAN SINH COMPANY	2020-01-07 01:18:27	IRELAND	VISA	7311 Advertising Services	20,000	1
1882377780	VAN SINH COMPANY	2020-01-07 01:20:02	IRELAND	VISA	7311 Advertising Services	20,000	1
1882377780	VAN SINH COMPANY	2020-01-07 01:20:04	IRELAND	VISA	7311 Advertising Services	20,000	1
1882377780	VAN SINH COMPANY	2020-01-07 01:20:49	IRELAND	VISA	7311 Advertising Services	20,000	1
1882377780	VAN SINH COMPANY	2020-01-07 01:20:51	IRELAND	VISA	7311 Advertising Services	20,000	1
1882377780	VAN SINH COMPANY	2020-01-07 01:24:44	IRELAND	VISA	7311 Advertising Services	20,000	1
1882377780	VAN SINH COMPANY	2020-01-07 01:24:46	IRELAND	VISA	7311 Advertising Services	20,000	1
1882377780	VAN SINH COMPANY	2020-01-07 01:30:47	IRELAND	VISA	7311 Advertising Services	20,000	1
1882377780	VAN SINH COMPANY	2020-01-07 01:30:48	IRELAND	VISA	7311 Advertising Services	20,000	1
1882377780	VAN SINH COMPANY	2020-01-07 01:31:50	IRELAND	VISA	7311 Advertising Services	20,000	1
1882377780	VAN SINH COMPANY	2020-01-07 01:31:52	IRELAND	VISA	7311 Advertising Services	20,000	1
1882377780	VAN SINH COMPANY	2020-01-07 01:32:18	IRELAND	VISA	7311 Advertising Services	20,000	1
1882377780	VAN SINH COMPANY	2020-01-07 01:32:20	IRELAND	VISA	7311 Advertising Services	20,000	1
1882377780	VAN SINH COMPANY	2020-01-07 01:32:54	IRELAND	VISA	7311 Advertising Services	20,000	1
<ul style="list-style-type: none"> - Company details breakdown sorted by TRANS_DATE - The TRANS_AMOUNT is the same value in a span of few seconds 		RELAND	VISA	7311 Advertising Services	20,000	1	
		RELAND	VISA	7311 Advertising Services	20,000	1	
		RELAND	VISA	7311 Advertising Services	20,000	1	
		RELAND	VISA	7311 Advertising Services	20,000	1	
		RELAND	VISA	7311 Advertising Services	20,000	1	
		RELAND	VISA	7311 Advertising Services	20,000	1	
1882377780	VAN SINH COMPANY	2020-01-07 01:44:11	IRELAND	VISA	7311 Advertising Services	20,000	1



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Company View

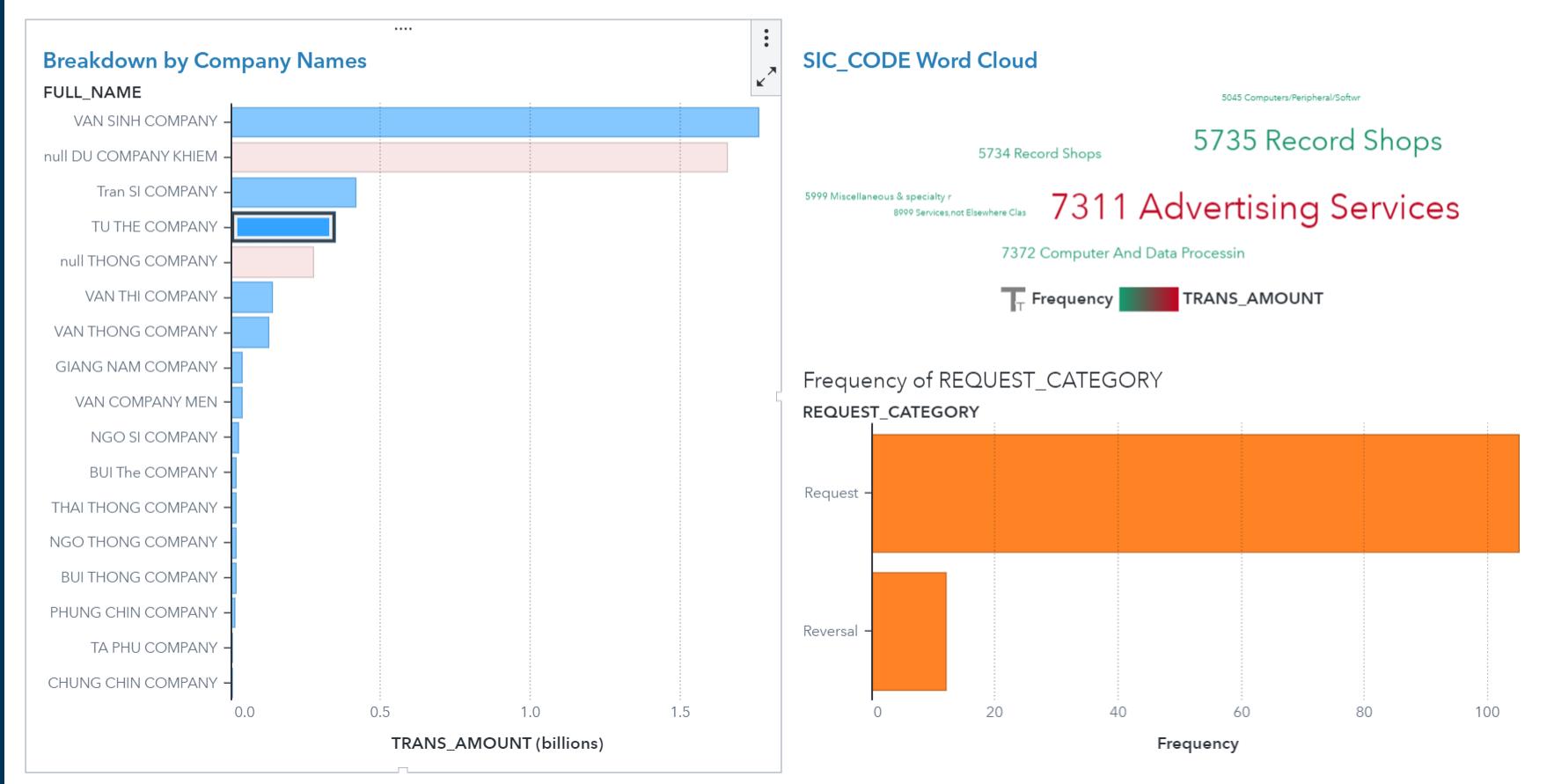
Company

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Customer Details

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CIF (ID)	FULL_NAME	TRANS_DATE	TRANS_COUNTRY	SOURCE_CHANNEL	SIC_CODE	TRANS_AMOUNT	▲	Frequency
1465728828	TU THE COMPANY	2020-01-30 20:37:06	SINGAPORE	VISA	5999 Miscellaneous & specialty r	0	1	
1465728828	TU THE COMPANY	2020-01-07 23:08:49	IRELAND	VISA	7311 Advertising Services	2	2	
1465728828	TU THE COMPANY	2020-01-07 23:35:15	IRELAND	VISA	7311 Advertising Services	2	2	
1465728828	TU THE COMPANY	2020-01-08 00:43:10	IRELAND	VISA	7311 Advertising Services	2	2	
1465728828	TU THE COMPANY	2020-01-08 00:37:44	IRELAND	VISA	7311 Advertising Services	2	2	
1465728828	TU THE COMPANY	2020-01-07 22:56:51	IRELAND	VISA	7311 Advertising Services	2	2	
1465728828	TU THE COMPANY	2020-01-07 23:12:39	IRELAND	VISA	7311 Advertising Services	2	2	
1465728828	TU THE COMPANY	2020-01-07 23:18:16	IRELAND	VISA	7311 Advertising Services	2	2	
1465728828	TU THE COMPANY	2020-01-07 23:32:24	IRELAND	VISA	7311 Advertising Services	2	2	
1465728828	TU THE COMPANY	2020-01-07 23:29:43	IRELAND	VISA	7311 Advertising Services	2	2	
1465728828	TU THE COMPANY	2020-01-21 21:22:51	UNITED STATES	VISA	7372 Computer And Data Processin	3	1	
1465728828	TU THE COMPANY	2020-01-07 23:33:29	IRELAND	VISA	7311 Advertising Services	7	1	
1465728828	TU THE COMPANY	2020-01-02 11:12:33	UNITED KINGDOM	VISA		12	1	
1465728828	TU THE COMPANY	2020-02-08 20:28:16	UNITED KINGDOM	VISA		12	1	
1465728828	TU THE COMPANY	2020-02-23 20:08:18	UNITED KINGDOM	VISA	7372 Computer And Data Processin	12	1	
1465728828	TU THE COMPANY	2020-01-02 11:12:32	UNITED KINGDOM	VISA		12	1	
1465728828	TU THE COMPANY	2020-02-08 20:28:17	UNITED KINGDOM	VISA		12	1	
1465728828	TU THE COMPANY	2020-01-06 11:13:19	UNITED KINGDOM	VISA	7372 Computer And Data Processin	12	1	
- Company details breakdown sorted by TRANS_DATE		8:19	UNITED KINGDOM	VISA	7372 Computer And Data Processin	12	1	
		2:53	UNITED KINGDOM	VISA	7372 Computer And Data Processin	12	1	
		7:05	NETHERLANDS	VISA	5734 Record Shops	12	1	
1465728828	TU THE COMPANY	2020-02-19 01:16:58	NETHERLANDS	VISA	5734 Record Shops	12	1	
1465728828	TU THE COMPANY	2020-02-14 06:16:58	NETHERLANDS	VISA	5734 Record Shops	12	1	
1465728828	TU THE COMPANY	2020-01-12 14:32:55	UNITED KINGDOM	VISA	7372 Computer And Data Processin	12	1	

⋮

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Data

Objects

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Data Profiling

Digital Banking Transaction Data

Profiling Output of Digital Banking Data

File Edit View Insert Actions Tools Window Help Version: 3/17/2020 1:00:56 PM New

Report Properties

Tables

Digital Banking Registration Data Mod.csv Data Source: Excel Samples

Standard Metrics Custom Metrics Business Rules Alerts Visualizations Notes

Field Name	Collection	Total	Count /	Null Count	Percent Null	Blank Count	Minimum Value	Maximum Value	Mode	Pattern Count	Unique Count	Uniqueness	Primary Key Candidate	Data Type	Data Length
PLACE_OF_ISSUE	1	19164	0	0	(not applicable)	0	19189	(no data/ambig.)	(not applicable)	19164	100	yes	INTEGER	10 chars	
REASON_DETAILS													FLOAT	53 bit	
RECORD_ID													CHAR	255 chars	
REQUEST_CATEGORY													DATETIME	19 chars	
RETURN_CODE													FLOAT	53 bit	
RET_REF_NUMBER													CHAR	255 chars	
SETTl_AMOUNT													CHAR	255 chars	
SETTl_CURR													DATETIME	19 chars	
SIC_CODE													CHAR	255 chars	
SOURCE_CHANNEL													CHAR	255 chars	
SOURCE_CODE													CHAR	255 chars	
SOURCE_MEMBER_ID													CHAR	255 chars	
SOURCE_NUMBER													CHAR	255 chars	
TARGET_CHANNEL													CHAR	255 chars	
TARGET_MEMBER_ID													CHAR	255 chars	
TARGET_NUMBER													DATETIME	19 chars	
TRANS_AMOUNT													CHAR	255 chars	
TRANS_CITY													CHAR	255 chars	
TRANS_CONDITION													CHAR	255 chars	
TRANS_COUNTRY													CHAR	255 chars	
TRANS_CURR_DESC													CHAR	255 chars	
TRANS_DATE													CHAR	255 chars	
TRANS_DETAILS													CHAR	255 chars	
TRANS_TYPE													CHAR	255 chars	
USER_ID													CHAR	255 chars	
FULL_NAME													CHAR	255 chars	
DOB													CHAR	255 chars	
ID_TYP_NO													CHAR	255 chars	
IP_ADDRESS													CHAR	255 chars	
PHONE_ID													CHAR	255 chars	
CREATED_DT													DATETIME	19 chars	
ORG_UNIT_CD													CHAR	255 chars	
REF_MOBILE													CHAR	255 chars	

Summary of data profile:

- 19,164 records
- 14 columns
- There is no fields with measure/non-character type data for analysis

Tables

Excel Samples
Card Transaction Data Mod.csv
Digital Banking Registration Data Mod.csv
ADDRESS
CREATED_DT
DEVICE_ID
DOB
EMAIL
FULL_NAME
ID_TYP_NO
IP_ADDRESS
ORG_UNIT_CD
PHONE
PHONE_ID
REF_MOBILE
USER_ID
V2NO

ADDRESS

Table: Digital Banking Registration

Column Profiling | Frequency Distribution | Pattern Fre

Metric Name	Metric Value
Ordinal Position	6
Count	19164
Null Count	0
Percent Null	0
Blank Count	0
Minimum Value	#mB8423578857
Maximum Value	yen minh ha giang
Mode	Kien giang
Pattern Count	10627
Unique Count	12953
Uniqueness	67.59
Primary Key Candidate	no
Data Type	CHAR
Data Length	255 chars
Actual Type	string
Minimum Length	1
Maximum Length	111
Mean	(not applicable)
Median	(not applicable)
Non-null Count	19164
Nullable	YES
Decimal Places	0
Standard Deviation	(not applicable)
Standard Error	(not applicable)

ADDRESS

Table: Digital Banking Registration Data Mod.csv Data Source: Ex

Column Profiling | Frequency Distribution | Pattern Frequency Distribution | Percentiles

Value	Count
Kien giang	148.0
P AN BINH, THI XA DI AN, BINH DUONG	60.0
Kg	58.0
BEN TRE	43.0
SON HOA, TUYEN HOA, QUANG BINH	43.0
TT KIEN LUONG, KIEN LUONG, KIEN GIANG	36.0
Ho chi minh	36.0
BINH AN, KIEN LUONG, KIEN GIANG	33.0
Thanh hoa	31.0
P DI AN, THI XA DI AN, BINH DUONG	30.0
An giang	30.0
Nghe an	30.0
Ben tre	28.0
P TAN DONG HIEP, THI XA DI AN, BINH DUONG	27.0
An bien kien giang	25.0
Soc trang	25.0
Ha tinh	24.0
Hau giang	23.0
Binh duong	22.0
Kien luong kien giang	22.0
P DONG HOA, THI XA DI AN, BINH DUONG	21.0
Dong nai	21.0
TUNG LOC, CAN LOC, HA TINH	21.0
VINH HOA PHU, CHAU THANH, KIEN GIANG	20.0
NINH KIEU, TP CAN THO	19.0
Chau thanh kien giang	18.0
XA PHIEN, LONG Ma»,, HAU GIANG	18.0
LOC YEN, HUONG KHE, HA TINH	17.0
TP HO CHI MINH	17.0
THANH LOI, MONG THO A, CHAU THANH, KIEN GIANG	17.0
Ha tien kien giang	16.0
Quang binh	16.0
Ben Tre	16.0
P TAN BINH, THI XA DI AN, BINH DUONG	16.0
GIA PHO, HUONG KHE, HA TINH	16.0
Bt	16.0
NINH BINH AN BINH	16.0
PHU THO, TP THU DAU MOT, BINH DUONG	16.0
VI DONG, VI THUY, HAU GIANG	15.0

Note:

- The ADDRESS field data is very “dirty”
- Is the source capturing the data without validation / Customer key-in / free text input?
- Bank may consider improving the data capture or carry out an exercise to cleanse this data.

Tables

- Excel Samples
- Card Transaction Data Mod.csv
- Digital Banking Registration Data Mod.csv
- ADDRESS
- CREATED_DT
- DEVICE_ID
- DOB
- EMAIL
- FULL_NAME
- ID_TYP_NO
- IP_ADDRESS
- ORG_UNIT_CD
- PHONE
- PHONE_ID
- REF_MOBILE
- USER_ID
- T₁NO

DEVICE_ID Table: Digital Banking Registration Data Mod.csv Data Source

Column Profiling Frequency Distribution Pattern Frequency Distribution Percentiles

Value	Count
(null value)	14425.0
a70d158a28211825d68319d8ae53cca	2.0
d8d5481080e2c796824c97ec72787a1d	2.0
4e88b50c335cb2ca170d10e6fd39f1	2.0
37bcb3a55218e4f483369b92ce5fb01	2.0
cet7536fe64e0a89622cd3db57023420	2.0
ff33319d31a5de36946372da43dc655e	2.0
db169ea919fad607f282890b88810fc9	2.0
30add73a3056df74979fd8a0759840	2.0
a984cf2db86e458a7f5128ea154380f0	2.0
104165c54bd11c49e1f72ab8057205c7	2.0
f10777bd3a1be6d326237c392b8377f	2.0
f9a261b31aa7baefb91bc14f0180bd	2.0
721d1da9289b499f2715cf809c7fc884	2.0
99a545ee27f3fefea5298ea52baaf9644	2.0
add3d784dd5d3d1407e46067d5d3026	2.0
de8330a9a6912ee3bb4a8d97e3c85b44	2.0
28e0591037ab2b092354748bbc19821e	2.0
b06c720acc724fcf735d4a8b11a170d	2.0
601b93b43d2e50f37baeacbee73f7413	2.0
6d9691153aeab4391688686121d4332f	2.0
61c7580f35ac722c866937e18024c7f6	2.0
9ef8be1lee74e4974f41de507c2d33b	2.0
aa7d315103248cd23e118e9c0fd61a97	2.0
9b31b6864206724744a3a59c0a2e521b	2.0
558ae61e4725cccd9e634f43af173c7	2.0
ab616e8444ce93a60c22845f9235e02	2.0
7be59578fd9718a18b00dea8a0943699	2.0
63eb837b4d5436579b5905c688f00ce9	2.0
e65daab1985426880cffa74e23b8c9	2.0
8b29c1ea585ccfe7e3308d023a34847	2.0

IP_ADDRESS Table: Digital Banking Re

Column Profiling Frequency Distribution Pattern Fr

Metric Name	Metric Value
Ordinal Position	10
Count	19164
Null Count	19164
Percent Null	100
Blank Count	0
Minimum Value	
Maximum Value	
Mode	(no data/ambig.)
Pattern Count	0
Unique Count	0
Uniqueness	0
Primary Key Candidate	no
Data Type	CHAR

Note:

- DEVICE_ID (REG_DEVICE_ID) null value is very high.
- 14,425 null against 19,164 records

Note:

- The IP_ADDRESS (REG_DEV_IP) fields is 100% null

Tables

- Excel Samples
 - Card Transaction Data Mod.csv
 - Digital Banking Registration Data Mod.csv
 - ADDRESS
 - CREATED_DT
 - DEVICE_ID
 - DOB
 - EMAIL
 - FULL_NAME
 - ID_TYP_NO
 - IP_ADDRESS
 - ORG_UNIT_CD
 - PHONE
 - PHONE_ID
 - REF_MOBILE
 - USER_ID
 - txNO

PHONE_ID Table: Digital Banking Registrat

Column Profiling | Frequency Distribution | Pattern Fre

Value	Count
(null value)	14425.0
MI 4LTE-839080	93.0
MI 4LTE-879080	91.0
MI 4LTE-889080	90.0
MI 4LTE-869080	83.0
MI 4LTE-829080	76.0
MI 4LTE-909080	69.0
MI 4LTE-899080	63.0
MI 4LTE-929080	60.0
MI 4LTE-919080	49.0
MI 4LTE-849080	47.0
MI 4LTE-739180	45.0
MI 4LTE-779180	44.0
MI 4LTE-809180	41.0
MI 4LTE-759180	37.0
SM-A999494F	37.0
MI 4LTE-769180	36.0
MI 4LTE-709180	36.0
MI 4LTE-749180	35.0
MI 4LTE-789180	34.0
SM-A999249GN	33.0
MI 4LTE-729180	32.0
MI 4LTE-829180	32.0
MI 4LTE-819180	32.0
MI 4LTE-949080	31.0
MI 4LTE-769080	30.0
MI 4LTE-719180	30.0
MI 4LTE-959080	30.0
NOOK-709180	29.0
Y550-L999996	25.0
MI 4LTE-759080	24.0
9250-919080	24.0
MI 4LTE-719080	23.0
MI 4LTE-939080	23.0
MI 4LTE-300180	22.0
	21.0

Note:

- The PHONE_ID (REG_DEV_TYPE) has high null values
- 14,425 null against 19,164 records

REF_MOBILE Table: Digital Banking Registrat

Column Profiling | Frequency Distribution | Pattern Fre

Value	Count
(null value)	1260.0
E78	15.0
E131	15.0
E105	15.0
E210	14.0
E118	14.0
E235	14.0
E188	14.0
E122	14.0
E33	14.0
E135	13.0
E51	13.0
E23	13.0
E144	13.0
E36	13.0
E63	13.0
E128	13.0
E68	13.0
E161	12.0
E172	12.0
E110	12.0
E153	12.0
E185	12.0
G34	12.0
E200	12.0
E248	12.0
G90	12.0
E61	12.0
E250	12.0
E194	12.0
E158	12.0
E205	12.0
D65	12.0
E186	12.0

Note:

- The REF_MOBILE (REFERRAL_USER_ID) has high null values
- 1,260 null against 19,164 records



Data Quality Activities on Digital Banking Data

✓ Digital Banking Validation

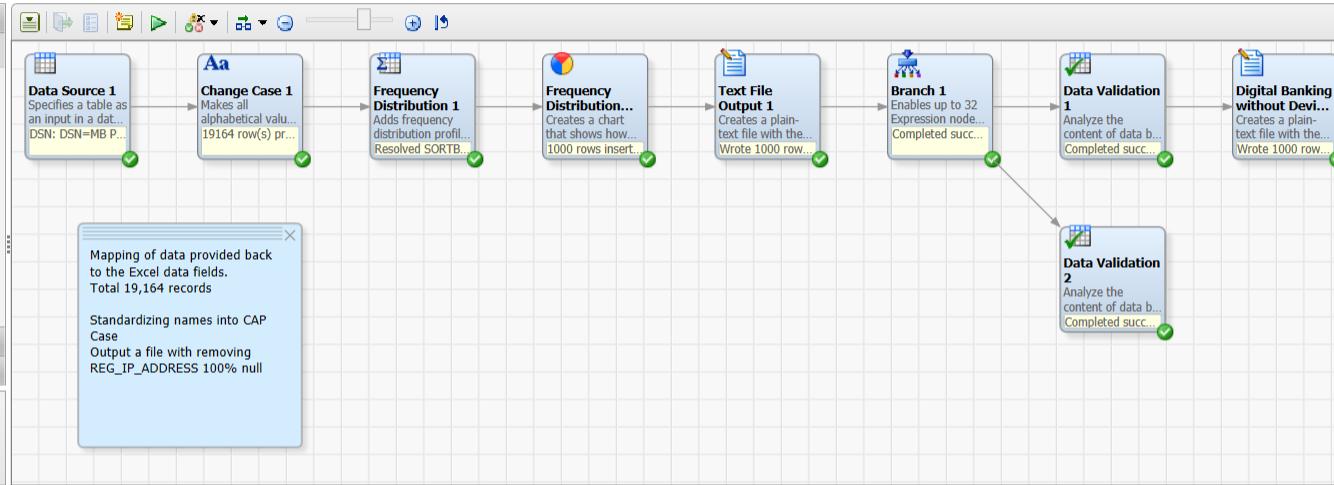
[Data Flow](#)
[Settings](#)
[Variables](#)
[Log](#)

Nodes

- [Data Job](#)
- [Data Inputs](#)
- [Data Outputs](#)
- [Data Integration](#)
- [Quality](#)
- [Enrichment](#)
- [Entity Resolution](#)
- [Monitor](#)
- [Profile](#)
- [Utilities](#)

Folders

Accelerators



Log

Row	Node Name	Contained In	Instance	Node ID	Node Type	Status	Run Time (minutes)	Start Time	End Time
0	Digital Banking Validation				Data Job	Completed successfully	00:04.393	3/31/2020 11:32 PM	3/31/2020 11:32 PM
1	Data Source 1			1	Data Source	DSN: DSN=MB POC Data;DFXTYPE=SQL; SELECT `ID`, `NAME`, `ADDRESS` FROM `CUSTOMERS`; 19164 rows read	00:04.393	3/31/2020 11:32 PM	3/31/2020 11:32 PM
2	AA Change Case 1			2	Change Case	19164 row(s) processed	00:04.393	3/31/2020 11:32 PM	3/31/2020 11:32 PM
3	Frequency Distribution 1			5	Frequency Distribution	Resolved SORTBYTES: 25165824 Resolved CHUNKSIZE: 8388608 Resolved SORTTHREADES: 2	00:04.393	3/31/2020 11:32 PM	3/31/2020 11:32 PM

Job Status: ✓ Completed Successfully Run time: 0 hours 0 minutes 4.393 seconds

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Data Insights & Exploration on Digital Banking Data



Editing

Digital Banking Insights

Digital Banking : Details

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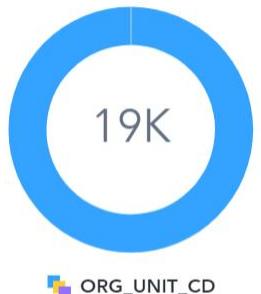
Details for Key Value

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+

Filters: No selections

Branch Code



Frequency
46

BANG KHANH HY

Pick a data and go to Details to view



CREATED_DATE

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Digital Banking Insights > Details for Key Value

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Details on Customer and Device Information

FULL_NAME	REF_MOBILE	PHONE	USER_ID	Frequency
BANG KHANH HY	(missing)	0815140395	1511614161	1
		0931771857	2631098433	1
	A213	0387306450	2184224109	1
	A714	0873140215	2492519573	1
	A90	0933849700	3184282300	1
	B115	0815721152	2232638380	1
	D164	0336344570	2381426102	1
	d343	0929613135	2305048358	1
	d350	0316213418	2561925977	1
	D580	0398883517	3111026029	1
	d651	0366439783	2070239333	1
	E175	0916254246	3550285489	1
	E199	0913793640	3222803194	1
	E26	0927746954	1544793820	1
	E301	0982305031	1414571845	1
	E36	0987358605	2938671299	1
	E51	0927075269	2385167565	1
	E540	0397501636	2588138293	1
	E565	0919302160	2224320856	1
	E572	0331766817	2753192890	1
	E6	0367873664	3301592892	1
	F465	0297744881	2755106327	1

The details for Customer **BANG KHANH HY**

- This customer appears to have many PHONE and USER_ID
- If the Bank can include information such as transaction type can help to identify some patterns

...
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Digital Banking Insights



Digital Banking



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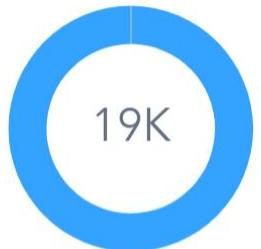
Details for Key Value

Page 5



Filters: No selections

Branch Code



ORG_UNIT_CD

Pick a data and go to Details to view

CREATED_DATE: 29/08/2019
Frequency: 811



Frequency

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BANG KHANH HY



Options



Roles



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Editing

Digital Banking Insights

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Details for Key Value

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Filters: 29/08/2019

29/08/2019

CREATED_DATE	FULL_NAME	PHONE_ID	EMAIL
	BANG DAN NGHĨA	(missing)	jkf50770@aklqo.com
	BANG DAN Y	MI 4LTE-709180	asxsxs@gmail.com
	BANG DAY UONG NIN	(missing)	oxoxpxsrx@gmail.com
			Kpppkp@gmail.com
			Mioinknkp@gmail.com
			Nininin@gmail.com
			Oinknnkn@gmail.com
			Oiodp@gmail.com
			Oioikp@gmail.com
			Oioiooi@gmail.com
			Oiokpk@gmail.com
			Oipikn@gmail.com
			Oipinpkp@gmail.com
			Oipkpkp@gmail.com
			Pipipkp@gmail.com
			Zinink@gmail.com
29/08/2019	BANG DOM KHEN	(missing)	7441223702@gmail.com
	BANG DRONG NHE	(missing)	lmfngCmnjfogEnm@gmail.com
	BANG DRONG TUYEN	(missing)	
	BANG ET COP		

The details for CREATED_DATE **29/08/2019**

- Details of the time series for highest frequency detected
- Notice that Customer BANG DOM KHEN has different EMAIL address.
- Same for Customer BANG THI UT YEU, LINH KHANH, PHUONG KIEM, etc.
- Is this due to data masking?

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Filters

Ranks

29/08/2019

BANG THI UT YEU

(missing)

AxDzz@gmail.com
Axmxmmm@gmail.com
Axxzmm@gmail.com
EAoooo@gmail.com
iIDzo@gmail.com
IxDmm@gmail.com
Ixzxmmmo@gmail.com
xADzz@gmail.com
xAmmo@gmail.com
xkxzmmo@gmail.com
xIDmm@gmail.com
xlmzz@gmail.com

29/08/2019

LINH KHANH PHUONG KIEM

(missing)

Ninipip@gmail.com
OCoipip@gmail.com
Oioipi@gmail.com
Oioipktt@gmail.com
Oiokkp@gmail.com
Oioknnk@gmail.com
Oiokok@gmail.com
Oipkpkpi@gmail.com
Pipkpk@gmail.cok



Editing

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Digital Banking Insights

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Question: Notice same Customer names but different User ID. Is this normal?

FULL_NAME	USER_ID	PHONE_ID	DEVICE_ID	PHONE_TYPE	EMAIL
A NHAT RA	1294944219	MI 4LTE-869080	b660098a148e7c76a3c135db632d4c2b	031	
AI NHUY THI	2592095894			098	
AN CHI HY	169451290	Galaxy On Nxt-829180	7438454c6665a35d52ac2f50d40723f7	090	
AN DAN phuong	4147747753			095	
AN DAY NEH DANG	1482141806			093	
AN DRONG KHAN	2402763326			0389213764	STJRFNQ.753215223@hksoft.com
AN ET KHEN	2023740314	MI 4LTE-839080	5d91f474f9f196445ffe4b20decd5cb6	0323816495	allAlm@gmail.com
AN KHANH BEP	1564464046			0868510964	lon13221@bcaoo.com
AN KHANH CANG	4215520512			0331566440	Ymzymztrl@gmail.com
AN KHANH CHUONG	2567784644			0376616791	afsynsm53655p6@gmail.com
AN KHANH CHUONG	607711666			0382034086	Ynsm226@gmail.com
AN KHANH COP	471686259			0954972801	looxoxopo@gmail.com
AN KHANH COP	3949037211			0339479646	Qfr6542@gmail.com
AN KHANH HE	3724121104	MI 4LTE-909080	a94ff143ca22662e59895ea2d68c1af7	0368806597	allz1zl@gmail.com
AN KHANH KHEN	3766143772			0954219921	afshftizsl@gmail.com
AN KHANH KHEN	3795612997			0787529537	Htshzfjrqfgf@gmail.com
AN KHANH KY	1815845052			0965458494	aCoxfxg@gmail.com
AN KHANH LAI	1832160209			0317225704	STJRFNQ.656641466@hksoft.com
AN KHANH LỢI	132042098			0812411498	Fpiripi@gmail.com
AN KHANH LỢI	2885539834			0315799110	Koioipp@gmail.com
AN KHANH MANH	968477266			0917994867	vtnDizAnklCivsfrmhv@gmail.com

Notice in this list, there are Customer with different USER_ID, PHONE and EMAIL.

- Is this a normal occurrence? This appears many times.
- If you want to detect fraud by using DEVICE_ID or PHONE_ID type data, the Bank needs to ensure these data is available.
- Bank may want to include transaction type for these devices to analyze.



Editing

Digital Banking Insights

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Digital Banking

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Details for Key Value

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Question: Notice same Customer names but different User ID. Is this normal?

Customer AN KHANH xuan

- Name needs to be standardized
- Customer with different USER_ID, PHONE and EMAIL

FULL_NAME	USER_ID	PHONE_ID	DEVICE_ID	PHONE	EMAIL
AN KHANH SACH	2090714341			0908254190	Fsmljqf@gmail.com
AN KHANH SUU	2310029653			0917621287	7212301012@gmail.com
AN KHANH SUU	1053149733			0383043935	7414764245@gmail.com
AN KHANH TUOM	816417152			0395648992	Vzthmzzs7@gmail.com
AN KHANH TUYEN	3717140413			0898862413	7121130614@gmail.com
AN KHANH VI	865714168			0222345550	Qfzht654@gmail.com
AN KHANH xuan	695295322			0988175898	7211125121@gmail.com
AN KHANH xuan	2619941014			0362598366	7430521433@gmail.com
AN KHANH xuan	2815143688			0327980696	7402217323@gmail.com
AN KHANH xuan	4260058633	Galaxy S8+-869080	76cd8f490d0925ad0a0622f6ac874153	0986063902	7213734270@gmail.com
AN KIEM NEH	2531712931			0841626281	GhpCpipC@gamil.com
AN LICH BANL	906903776			0383707559	STJRFNQ.764453277@hksoft.com.vn
AN LICH KIEM	3689312766			0868168629	GCopCpC@gmail.com
AN NHAT men	1959711527			0362454235	Ymf00001000@gmail.com
AN NHAT MI	2616304428	A3300-839080	c53aea99f782d5376840ef11a657c7bd	0369910508	fhhhlAA125Bl64io@gmail.com
AN NHAT VY	3511128469	MI 4LTE-839080	cad7c24a6cbeec2210d7803d3d4682d0	0812896844	Pipxppiqxq@gmail.com
AN NHIEM DAC	593040936			0363407383	Wnjhojtx@gmail.com
AN NHIN BEP	3991969141			0366635196	7433345123@gmail.com
AN NHIN BEP	2013474694			0387284639	7412016342@gmail.com
AN NHOAN CHON	3813598800	9250-919080	21ffe9597b2e7fa844c936bf81aefeb3	0812091973	Pxqkpfir@gmail.com
AN NIN CHUONG	1174672837	MI 4TF-869080	f1bc7ae47250362c79096ca9f748204a	0377615186	Mxononr@gmail.com

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Digital Banking Insights



Digital Banking

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Details for Key Value

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Question: Notice same Customer names but different User ID. Is this normal?

Customer AN THAU VU

- Customer with different USER_ID, PHONE and EMAIL

FULL_NAME	USER_ID	PHONE_ID	DEVICE_ID	PHONE	EMAIL
AN PHUONG xuan	2352274524			0382262690	Ymfsmgnsm23@gmail.com
AN RA LO	2718438628			0865235917	htfymzDslmn11@gmail.com
AN TAY MI	3265914734			0331308582	7441471510@gmail.com
AN THAU VU	4081418530			0388040048	Miokkn@gmail.com
AN THAU VU	4021599322			0387158358	Pipkppk@gmail.com
AN THAU VU	1715610314			0386057529	Okopkpk@gmail.com
AN THAU VU	1777832193			0386280318	Oiokokp@gmail.com
AN THAU VU	3962516810			0381098299	Oippkppk@gmail.com
AN THAU VU	149186143			0381314729	Mioiopi@gmail.com
AN THAU VU	253245847			0372090887	Mioipkpk@gmail.com
AN THAU VU	1296602099			0382358518	Sispkp@gmail.com
AN THAU VU	1363365811			0388989472	Oiopkpk@gmail.com
AN THAU VU	977752435			0386684429	Oioinpi@gmail.com
AN THAU VU	3223783171			0386560360	Oipkpk@gmail.com
AN THAU VU	2835355539			0388811029	Mioioip@gmail.com
AN THE CANG	684707583			0388542305	STJRFNQ.751716776305@hksoft.com.vn
AN THI BON LIEN	2878982808	SM-J999189Y	b2d7225218a710f3cb85749827cf9c39	0396386327	RDyzDjy5571@gmail.com
AN THI BON TON	597253938			0967218572	Hftqnsm6225777@gmail.com
AN THI BON XUYEN	2636139768			0336120211	7443107011@gmail.com
AN THI BON XUYEN	3723394696			0389784381	Hftinjz01277@gmail.com
AN THI RON XI JYFN	426301679			0385275508	Iniz11222222@gmail.com





Summary of Findings for MB to Further Investigate

Overall Findings, Anomalies, Trends

Card Transaction Data

- TRANS_DATE: 1 January 2020 till 29 February 2020
- Customer with largest spend is VIEN TUAN TIEP. Spend amount VND 2,205,939,397
- Customer with highest transaction frequency is 2432988724 – VAN THU SULAIMANI
- The overall transactions where we filter to view by TRANS_COUNTRY, IRELAND and SINGAPORE has the highest transactions

Refer exported file

Transaction Hierarchy Ireland Spend.xlsx

Note that these are NOT confirmed fraud but requires the Bank to further investigate if these trends are normal. There are large transactions coming from TRANS_CITY fb.me/ads. Do we know what transactions are these?

Some highlighted below:

CIF Number	Comments
139741170	Large transaction volume and transactions are close apart, in seconds
296015326	High transaction volume. There is a weird trend of multiple 20,000 transactions before a large transaction
401907763	Very high transactions on 8 Jan 2020. There is a weird trend of multiple 20,000 transactions before a large transaction
502385420	There is a weird trend of multiple 20,000 transactions before a large transaction. This is across different credit cards
573112153	Same transactions amount recorded using different credit cards. Is this normal?

Refer exported file

Transaction Hierarchy Ireland Spend.xlsx

CIF Number	Comments
799317562	There is a weird trend of multiple 20,000 transactions before a large transaction. Very high transactions on 8 Jan 2020. Is this normal?
851050877	Noticed many duplicate transactions across seconds in timestamp
855099865	Noticed duplicate transactions across different credit cards over seconds or minutes timestamp
947791864	There is a weird trend of multiple 20,000 transactions before a large transaction. Very high transactions on 8 Jan 2020. Is this normal? Spend increases and use of multiple credit cards.
1759670304	Very high transaction for 8 Jan 2020. Weird trend of 20,000 transactions before a large transaction. Trend is noticed across different credit cards.

Refer exported file

Transaction Hierarchy Ireland Spend.xlsx

CIF Number	Comments
2783122020	Many duplicate transactions noticed across different credit cards across very close timestamp
3382590914	Duplicate transactions noticed. Is this normal?
3547149756	Duplicate transactions noticed. Is this normal? Transactions with same amount across close timestamp. Is this normal?

Refer to Excel: [Transaction Hierarchy Ireland Spend.xlsx](#)

Refer exported file

Transaction Hierarchy Singapore Spend.xlsx

Note that these are NOT confirmed fraud but requires the Bank to further investigate if these trends are normal. There are large transactions coming from TRANS_CITY CC GOOGLE.COM. Do we know what transactions are these?

Some highlighted below:

CIF Number	Comments
3047053807	The trend of 20,000 transactions before a large transaction appears here. Largest spend of 1,050,000,000
179078608	Multiple 20,000 transactions before a large.
4252250819	Duplicated transactions.
2963474855	Same transaction amount across minutes. Is this normal? Transactions amount more than 100million
2477849817	Normal to have on hold and release for transaction 500million?

Refer exported file

Transaction Hierarchy Ireland Spend.xlsx

CIF Number	Comments
2432988724	<p>Very high transactions on 8 Jan 2020. Transactions noticed very close timestamp for values ranging 10,000 – 900,000,000</p> <p>Is it normal for duplicate transactions with same timestamp?</p>
1118797120	Duplicate transaction of 100million

Refer to Excel: [Transaction Hierarchy Singapore Spend.xlsx](#)

Refer exported file

Transaction Hierarchy Vietnam Spend.xlsx

Note that these are NOT confirmed fraud but requires the Bank to further investigate if these trends are normal. The transactions for TRAN_COUNTRY Vietnam are mainly retail and ATM. TRANS_CITY data is not proper and will need to be improved by the Bank.

Highlighting some ATM trends for the Bank to consider:

CIF Number	Comments
67863264	Multiple duplicate transactions
299114534	ATM transactions are very close. Is this normal?
299587687	ATM transactions are very close and frequent. Is this normal or due to limit?
546878862	Please check the ATM location and if transactions are normal?
574989703	There are many ATM transactions. Is this normal for a day?

Refer to Excel: [Transaction Hierarchy Vietnam Spend.xlsx](#)

Additional Excel for MB Investigation

- VAN THU SULAIMANI Highest Transaction.xlsx
- null NAM TENH Second Highest Transaction.xlsx

Overall Findings, Anomalies, Trends

Digital Banking Data

- Data is across 1 Jan 2019 till 30 November 2019
- There are a lot of missing data points
- Numerical data is not available to understand the digital banking trend.
- There is no transaction amount for digital banking transactions to understand more.
- The data has to be deeply improved with additional parameters such as activity / details where you have Device ID.
- Also concern why a Customer has multiple email ID, Device ID, and if the Bank wants more insights, additional information has to be linked.

Additional Excel for MB Investigation

This file provides a list of Customer with multiple User ID and email

- **Table where Customer has many User ID.xlsx**

This file provides the day with highest records

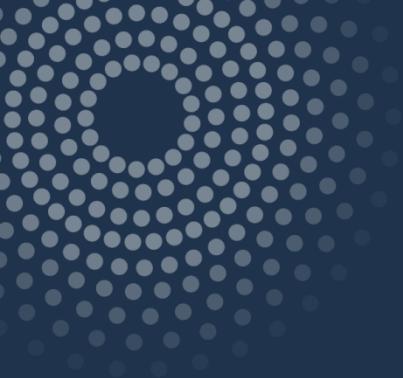
- **Details for 29 Aug 2019.xlsx**
- The file shares details. Screen below highlights a question if this is same or different customer and why so many email IDs?

29/08/2019	BANG KHANH phuong	(missing)	GiCoho@gmail.com HCohs@gmail.com Imooi@gmail.com ciopioC@gmail.com
	BANG KHANH PHUONG	(missing)	lohsAp@gmail.com Sijnox@gmail.com

File provides details for Bang Khanh Hy

- Bang Khanh Hy Details.xlsx
- Notice this Customer has many Phone and User ID. Is this normal? What are these Phone used for?

Details on Customer and Device Information				
	FULL_NAME	REF_MOBILE	PHONE	USER_ID
BANG KHANH HY	E175	0916254246	3550285489	
	E199	0913793640	3222803194	
	E26	0927746954	1544793820	
	E301	0982305031	1414571845	
	E36	0987358605	2938671299	
	E51	0927075269	2385167565	
	E540	0397501636	2588138293	
	E565	0919302160	2224320856	
	E572	0331766817	2753192890	
	E6	0367873664	3301592892	
	F465	0297744881	2755106327	
	G111	0333080232	117359209	
	G188	0358949518	1950859521	
	G24	0928961607	359431508	
	G316	0335029779	3988213609	



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