Model Validation Report 2022

Consumer Unsecured Lending

Application Scorecard

Portfolio Name	Consumer Unsecured Lending
Model Name	Application Scorecard
Model Version	CUAS10
Model Owner	Modelling Department
Model Developer	Model Consultancy Ltd
Model Last Validation Date	Mar 2021

Model Validation Report 2022
Consumer Unsecured Lending - Application Scorecard

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1 Introduction

1.1 Background

To have a better tool to assess customer credit risk, the bank had develop the a model suite for Consumer Unsecured Lending segment. It comprised of an application scorecard, a behaviour scorecard and PD/EAD/LGD[1] segmentation models.

The application scorecard was developed in 2014 and implemented in Oct 2015, after gone through independent validation processes and obtained the approval for uses by Credit Risk Committee. Since then the scorecard was being assessed annually and concluding to be fit for continued uses.

The newly developed scorecards and segmentation models had achieved excellent risk ranking power, with AR of 71% for the Ascore, 85% for Bscore and 80% for PD models.

1.2 Scope of Validation

The scope of this review is to analyse the performance of the application scorecard for Consumer Unsecured Lending portfolios. Data was based on recent cohorts and asss if the scorecard is fit for continue uses. This report is to document the validation results and findings.

The performance of the scorecard is assessed against stardards set out in our Independent Validation Guidelines. These take into account the regulatory requirements. We employed the following color coding scheme in our assessment of the scorecard.

Table 1.1: Outcome Color Code

Color	Outcome
Green	Indicates generally complied with requirements/standards
Yellow	Indicates moderate gaps to requirements/standards
Red	Indicates significant gaps to requirements/standards

2 Executive Summary

Place holder for user comment

3 Portfolio Overview

The Consumer Unsecured Lending portfolio consist of 2 main products, Credit Card and Overdraft. The portfolio composition over the years are shown in following tables.

Table 3.1: Portfolio Overview (By Outstanding $mil)

Segment	Sub-segment	Dec 2015	Dec 2016	Dec 2017	Dec 2018	Dec 2019	Dec 2020	Dec 2021
CUL	CC	716	746	776	806	836	866	896
CUL	OD	221	200	195	187	179	171	163

Table 3.2: Portfolio Overview (By Count)

Segment	Sub-segment	Dec 2015	Dec 2016	Dec 2017	Dec 2018	Dec 2019	Dec 2020	Dec 2021
CUL	CC	3,748,200	4,197,453	4,646,706	5,095,959	5,545,212	5,994,465	6,443,718
CUL	OD	1,756,320	1,603,587	1,603,678	1,603,769	1,603,860	1,603,951	1,604,042

Place-holder for analyst to write more stories

4 Validation Data and Key Technical Definitions

4.1 Data Sources

The data sources for current review are summarised below.

Table 4.1: Data Sources

Data	Source	Description
Base	LOS	Contains application information
Base	CIC	Contains credit bureau information
Performance	Datawarehouse	Contains account performance information

4.2 Data Period

Table 4.2: Data Period

Analysis	Baseline	Current Review
Front-end Analysis	Applications from 2015-2016	Applications from 2017-2021
Back-end Analysis	Applications from 2015-2016 with performance tracked till Dec 2017	Applications from 2017-2019 with performance tracked till Dec 2021

4.3 Key Technical Definitions

Key Definitions	Description
Exclusion Criteria	Following applications were excluded from review samples 1. Pending or Cancelled applications 2. Outright Rejected applications: - Failed Regulatory requirements (e.g. income/age check, ...) - Failed the bank acceptance criteria (e.g. poor conduct on existing loans, bad credit check in CIC,...) 3. Bypass scoring decisions: - Staff applications - 2nd carding - Limit review
Good/Bad	This scorecard was developed at application level and the performance was tracked throughout the performance period. A customer was considered "Bad" if any of its Credit Card or Overdraft was satisfied the conditions below: - Ever 60+ dpd - NPL/Written-Off Otherwise, the customer was treated as "Good"
Technical Bad	Customer might have turn "Bad" due to technical reason rather than credit reasons, e.g. disputed on annual fees or charges. They were considered as "Technical Bad" and were treated as "Good". "Technical Bad" was defined as customer having total outstanding at Bad month with less than \$100. However, customers that were marked as bankpted/restructured were excluded from "Technical Bad" treatment. They were treated as "Bad" regardless of the outstanding at the month turning "Bad"

4.4 Data Quality and Completeness

For this exercise, a thorough check on data quality and completeness was conducted to ensure no significant impact to the assessment results.

No issue was found. We concluded that data quality and completeness were fit and representative for validation purpuse.

4.5 Summary of Validation Data

Table below summarised the steps to arrive the front-end and back-end validation samples.

Table 4.3: Data Waterfall Analysis

	Dev	Review			All
Category	Baseline	2018	2019	2020	
01. Front-end	34,656	55,912	32,111	29,130	151,809
02. (-) Rejected	6,554	8,811	9,457	7,741	32,563
03. (-) Insufficient Performance Window	0	0	0	21,389	21,389
04. (-) Indeterminated	599	1,061	284	0	1,944
05. Back-end	27,503	46,040	22,370	0	95,913
06. Good	26,897	44,190	22,104	0	93,191
07. Bad	606	1,850	266	0	2,722

5 Scorecard Assessment

5.1 Front-end Assessment

5.1.1 Population Stability Index (PSI)

Table 5.1: Frontend Distribution

	Count				Distribution				IV		
	Dev	Review			Dev	Review			Review		
	Baseline	2018	2019	2020	Baseline	2018	2019	2020	2018	2019	2020
(0, 200]	1,180	3,003	1,847	1,721	3.4%	5.4%	5.8%	5.9%	0.0090	0.0123	0.0138
(200, 220]	1,582	2,874	1,946	1,792	4.6%	5.1%	6.1%	6.2%	0.0007	0.0042	0.0047
(220, 240]	2,648	4,727	2,835	2,492	7.6%	8.5%	8.8%	8.6%	0.0008	0.0017	0.0010
(240, 260]	3,665	6,404	3,656	3,305	10.6%	11.5%	11.4%	11.3%	0.0007	0.0006	0.0005
(260, 280]	4,260	7,764	4,251	3,855	12.3%	13.9%	13.2%	13.2%	0.0019	0.0007	0.0007
(280, 300]	5,680	9,158	5,103	4,596	16.4%	16.4%	15.9%	15.8%	0.0000	0.0002	0.0002
(300, 320]	7,233	10,217	5,733	5,395	20.9%	18.3%	17.9%	18.5%	0.0035	0.0047	0.0028
(320, 340]	5,642	7,927	4,576	4,085	16.3%	14.2%	14.3%	14.0%	0.0029	0.0027	0.0034
(340, 360]	2,326	3,204	1,823	1,583	6.7%	5.7%	5.7%	5.4%	0.0016	0.0017	0.0027
(360, 380]	432	633	340	306	1.2%	1.1%	1.1%	1.1%	0.0001	0.0003	0.0003
(380, 999]	8	1	1	0	0.0%	0.0%	0.0%	0.0%	0.0005	0.0004	0.0004
Total	34,656	55,912	32,111	29,130	100.0%	100.0%	100.0%	100.0%	0.0217	0.0296	0.0306

Table 5.2: PSI Outcome

	Review			Dev
	2018	2019	2020	Baseline
PSI	2.2%	3.0%	3.1%	NA
AHI	4.2%	3.9%	4.0%	5.1%

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From the outcome table above, we concluded that compared to the baseline, the population of all 3 review cohorts are very stable with PSI well below the threshold of 15%.

The AHI of review cohorts were also well below the threshold of 20%, indicated no concentration concern for review data.

5.1.2 Factor Charateristic Analysis

The tests outcome on Characteristic Analysis are shown in table below.

Table 5.3: Score Change

	2018	2019	2020
Address Type	0.2	0.3	0.2
Gender	0.4	0.8	0.7
Education Level	2.0	1.4	2.5
Residential Status	-0.9	-2.5	-4.0
Years of Service	-1.6	-1.8	-2.5
Deposits L3M	0.8	0.6	0.6
MOB From Credit Bureau	-2.1	-1.6	-1.1
Number of New Application's Enquiries in CB in L6M	-4.6	-4.2	-3.6
Ever 30+dpd in CB in L12M	-1.5	-1.2	-1.0
Months with Cash Advance L3M	-0.3	-0.2	-0.2
Partial Payment L3M	1.8	1.3	1.1

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Below are tables that showed distribution and score changes for first 4 factors.

Table 5.4: Number of New Application's Enquiries in CB in L6M

Bucket	Score	Count				Distribution				Score Changes		
		Baseline	2018	2019	2020	Baseline	2018	2019	2020	2018	2019	2020
05. No CB	42	6,274	791	610	1,081	18.1%	1.4%	1.9%	3.7%	-7.01	-6.81	-6.04
01. No enquiry	41	9,194	16,595	11,195	9,248	26.5%	29.7%	34.9%	31.7%	1.29	3.42	2.14
02. 1-2	37	13,671	21,512	11,312	11,018	39.4%	38.5%	35.2%	37.8%	-0.36	-1.56	-0.60
03. 3-4	28	3,659	8,723	4,100	3,946	10.6%	15.6%	12.8%	13.5%	1.41	0.62	0.84
04. >= 5	1	1,858	8,291	4,894	3,837	5.4%	14.8%	15.2%	13.2%	0.09	0.10	0.08
Total		34,656	55,912	32,111	29,130	100.0%	100.0%	100.0%	100.0%	-4.57	-4.23	-3.59

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Table 5.5: Residential Status

Bucket	Score	Count				Distribution				Score Changes		
		Baseline	2018	2019	2020	Baseline	2018	2019	2020	2018	2019	2020
01. Own	32	8,780	22,639	9,828	7,436	25.3%	40.5%	30.6%	25.5%	4.85	1.69	0.06
02. Mortgage	27	17,199	10,766	6,544	4,799	49.6%	19.3%	20.4%	16.5%	-8.20	-7.90	-8.95
03. Parent	21	6,320	13,382	8,320	7,655	18.2%	23.9%	25.9%	26.3%	1.20	1.61	1.69
04. Others	13	2,357	9,125	7,419	9,240	6.8%	16.3%	23.1%	31.7%	1.24	2.12	3.24
Total		34,656	55,912	32,111	29,130	100.0%	100.0%	100.0%	100.0%	-0.92	-2.48	-3.96

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Table 5.6: Education Level

		Count				Distribution				Score Changes		
Bucket	Score	Baseline	2018	2019	2020	Baseline	2018	2019	2020	2018	2019	2020
01. Degree & Above	38	12,481	24,099	13,128	13,491	36.0%	43.1%	40.9%	46.3%	2.69	1.85	3.91
02. Pre-Uni	36	1,999	1,893	957	787	5.8%	3.4%	3.0%	2.7%	-0.86	-1.00	-1.10
03. Diploma & Cert	29	9,670	16,951	9,914	8,411	27.9%	30.3%	30.9%	28.9%	0.70	0.86	0.28
04. Others	7	10,506	12,969	8,112	6,441	30.3%	23.2%	25.3%	22.1%	-0.50	-0.35	-0.57
Total		34,656	55,912	32,111	29,130	100.0%	100.0%	100.0%	100.0%	2.04	1.35	2.52

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Table 5.7: Years of Service

		Count				Distribution				Score Changes		
Bucket	Score	Baseline	2018	2019	2020	Baseline	2018	2019	2020	2018	2019	2020
01. 1 year	21	4,634	13,463	7,020	6,052	13.4%	24.4%	22.4%	21.5%	2.33	1.89	1.71
02. 2-6 years	18	15,334	23,445	14,319	14,168	44.2%	42.6%	45.6%	50.3%	-0.30	0.24	1.09
03. 7-9 years	28	4,161	6,011	3,248	2,424	12.0%	10.9%	10.3%	8.6%	-0.31	-0.47	-0.95
04. Above 9 years	40	10,527	12,151	6,814	5,513	30.4%	22.1%	21.7%	19.6%	-3.32	-3.47	-4.32
Total		34,656	55,070	31,401	28,157	100.0%	100.0%	100.0%	100.0%	-1.61	-1.81	-2.47

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5.2 Back-end Assessment

5.2.1 Overall Model Performance

Tables below show the overall model performance tests outcome and bad rate distribution.
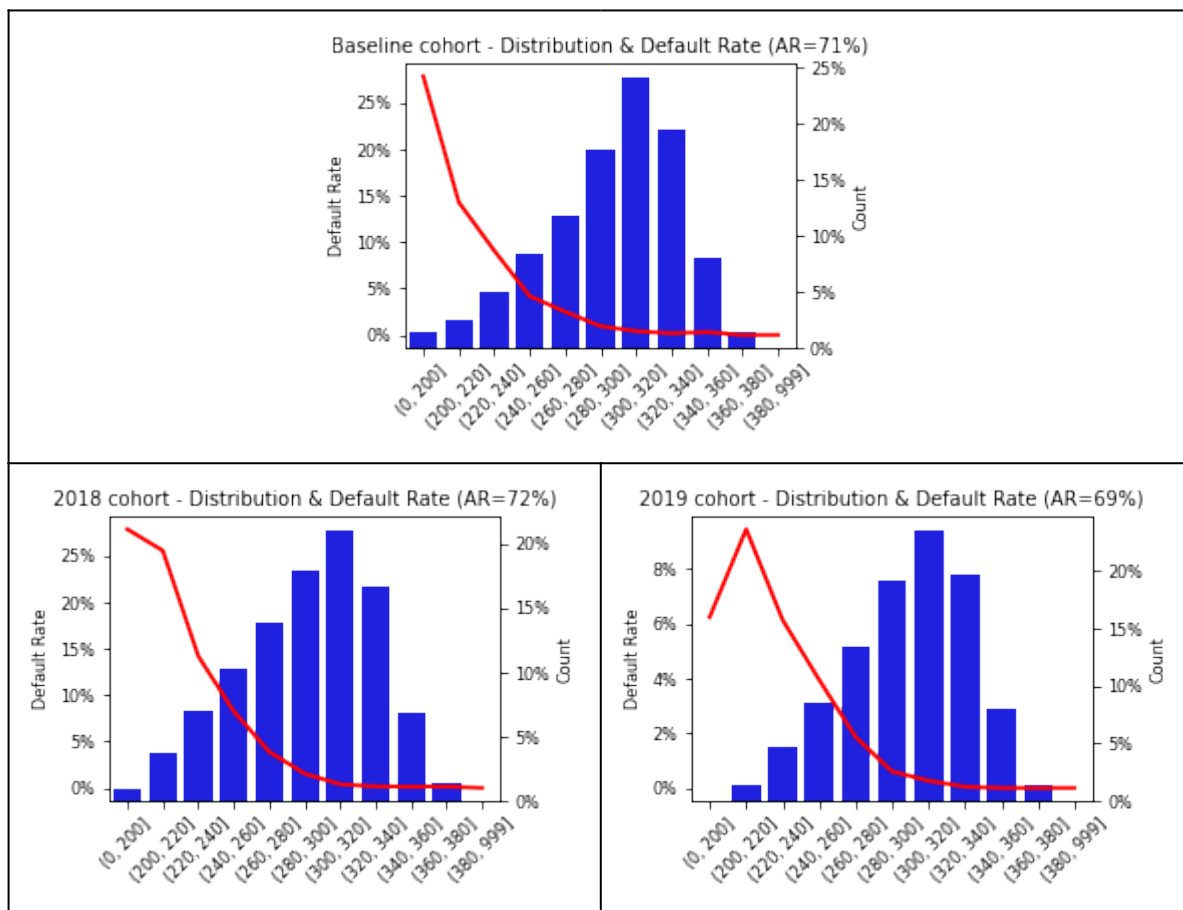
Table 5.8: Risk Ranking Outcome

cohort	Baseline	2018	2019
AR	71.1%	71.8%	69.4%
AUC	85.6%	85.9%	84.7%
# of Default	606	1,850	266
Outcome	GREEN	GREEN	GREEN

Table 5.9: Distribution & Bad Rate by Scoreband

	Count			Default			Distribution			Default Rate		
	Dev	Review		Dev	Review		Dev	Review		Dev	Review	
	Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019
(0, 200]	409	449	16	114	125	1	1.5%	1.0%	0.1%	27.87%	27.84%	6.25%
(200, 220]	671	1,731	296	96	442	28	2.4%	3.8%	1.3%	14.31%	25.53%	9.46%
(220, 240]	1,375	3,213	1,042	125	456	64	5.0%	7.0%	4.7%	9.09%	14.19%	6.14%
(240, 260]	2,337	4,769	1,896	98	393	75	8.5%	10.4%	8.5%	4.19%	8.24%	3.96%
(260, 280]	3,268	6,425	3,006	82	250	56	11.9%	14.0%	13.4%	2.51%	3.89%	1.86%
(280, 300]	4,851	8,260	4,308	46	127	26	17.6%	17.9%	19.3%	0.95%	1.54%	0.60%
(300, 320]	6,647	9,706	5,273	28	39	14	24.2%	21.1%	23.6%	0.42%	0.40%	0.27%
(320, 340]	5,339	7,701	4,406	10	13	2	19.4%	16.7%	19.7%	0.19%	0.17%	0.05%
(340, 360]	2,193	3,157	1,794	7	4	0	8.0%	6.9%	8.0%	0.32%	0.13%	0.00%
(360, 380]	406	628	332	0	1	0	1.5%	1.4%	1.5%	0.00%	0.16%	0.00%
(380, 999]	7	1	1	0	0	0	0.0%	0.0%	0.0%	0.00%	0.00%	0.00%
Total	27,503	46,040	22,370	606	1,850	266	100.0%	100.0%	100.0%	2.20%	4.02%	1.19%

Place-holder for user comments

5.2.2 Sub-segment Level Performance

The risk ranking tests were conducted on sub-segments. The results are shown in table below.

Table 5.10: Risk Ranking Outcome

		Risk Ranking (AR)			# of Default			Outcome		
		Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019
	CC	69.6%	75.0%	73.1%	294	450	72	GREEN	GREEN	GREEN
	OD	71.6%	65.1%	49.0%	239	367	96	GREEN	GREEN	YELLOW
Product Type	CC_OD	66.5%	60.2%	54.1%	73	1,033	98	GREEN	GREEN	GREEN
	With CC	69.7%	73.1%	72.2%	335	1,483	170	GREEN	GREEN	GREEN
	With OD	72.6%	62.4%	51.7%	271	1,400	194	GREEN	GREEN	YELLOW
Gender	Male	71.4%	68.5%	65.8%	455	1,370	187	GREEN	GREEN	GREEN
	Female	65.7%	73.8%	71.7%	151	480	79	GREEN	GREEN	GREEN

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e.g. Most of the sub segments remained strong in terms of risk ranking power, except for customers with OD (including customers with only OD[2]). This is due to the agressive growth pre-2019, where the bank decided to tab on customers with lower income.

5.2.3 Factor Level Performance

Table 5.11: Factors Risk Ranking Performance

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(2): Consumer OverDraft product

cohort	Risk Ranking (AR)			Test Outcome		
	Baseline	2018	2019	Baseline	2018	2019
Address Type	2.5%	1.9%	2.8%	RED	YELLOW	YELLOW
Gender	15.3%	16.6%	16.6%	GREEN	GREEN	GREEN
Education Level	23.4%	30.3%	25.2%	GREEN	GREEN	GREEN
Residential Status	13.3%	14.3%	23.1%	YELLOW	GREEN	GREEN
Years of Service	16.9%	9.4%	5.9%	GREEN	YELLOW	YELLOW
Deposits L3M	33.5%	24.5%	26.8%	GREEN	GREEN	GREEN
MOB From Credit Bureau	28.2%	35.3%	31.6%	GREEN	GREEN	GREEN
Number of New Application's Enquiries in CB in L6M	39.7%	40.6%	27.6%	GREEN	GREEN	GREEN
Ever 30+dpd in CB in L12M	13.4%	10.1%	8.1%	YELLOW	GREEN	YELLOW
Months with Cash Advance L3M	46.0%	41.2%	42.7%	GREEN	GREEN	GREEN
Partial Payment L3M	48.3%	41.8%	45.2%	GREEN	GREEN	GREEN

Place holder for user comments

e.g. From table 5.11, we see 3 factors dropped in risk ranking power. Those are 'Address Type', 'Years of Service' and 'Ever 30+ dpd in last 12 months.

Table 5.12: Address Type Factor - Distribution & Bad Rate

Bucket	Score	Count			Default			Distribution			Default Rate		
		Dev	Review		Dev	Review		Dev	Review		Dev	Review	
		Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019
01. Home	27	26,620	45,103	22,071	572	1,779	255	96.8%	98.0%	98.7%	2.15%	3.94%	1.16%
02. Others	10	883	937	299	34	71	11	3.2%	2.0%	1.3%	3.85%	7.58%	3.68%
Total		27,503	46,040	22,370	606	1,850	266	100.0%	100.0%	100.0%	2.20%	4.02%	1.19%

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Table 5.13: Years of Service Factor - Distribution & Bad Rate

Bucket	Score	Count			Default			Distribution			Default Rate		
		Dev	Review		Dev	Review		Dev	Review		Dev	Review	
		Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019
01. 1 year	21	3,440	10,674	4,313	94	470	52	12.5%	23.5%	19.6%	2.73%	4.40%	1.21%
02. 2-6 years	18	11,661	18,870	9,707	328	870	131	42.4%	41.6%	44.2%	2.81%	4.61%	1.35%
03. 7-9 years	28	3,367	5,145	2,462	72	192	24	12.2%	11.3%	11.2%	2.14%	3.73%	0.97%
04. Above 9 years	40	9,035	10,710	5,503	112	303	59	32.9%	23.6%	25.0%	1.24%	2.83%	1.07%
Total		27,503	45,399	21,985	606	1,835	266	100.0%	100.0%	100.0%	2.20%	4.04%	1.21%

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Table 5.14: Ever 30+dpd in CB in L12M Factor - Distribution & Bad Rate

Bucket	Score	Count			Default			Distribution			Default Rate		
		Dev	Review		Dev	Review		Dev	Review		Dev	Review	
		Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019
01. Yes	6	2,258	6,214	2,240	129	429	48	8.2%	13.5%	10.0%	5.71%	6.90%	2.14%
02. No	28	25,245	39,826	20,130	477	1,421	218	91.8%	86.5%	90.0%	1.89%	3.57%	1.08%
Total		27,503	46,040	22,370	606	1,850	266	100.0%	100.0%	100.0%	2.20%	4.02%	1.19%

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6 Conclusion

7 Appendices

7.1 Factor Distribution

Each of 11 factors distribution and bad rate are shown in this section.

Table 7.1: Address Type Factor - Distribution & Bad Rate

| | | Count | | | Default | | | Distribution | | | Default Rate | | |
| | | Dev | Review | | Dev | Review | | Dev | Review | | Dev | Review | | |
Bucket	Score	Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019
01. Home	27	26,620	45,103	22,071	572	1,779	255	96.8%	98.0%	98.7%	2.15%	3.94%	1.16%
02. Others	10	883	937	299	34	71	11	3.2%	2.0%	1.3%	3.85%	7.58%	3.68%
Total		27,503	46,040	22,370	606	1,850	266	100.0%	100.0%	100.0%	2.20%	4.02%	1.19%

Table 7.2: Gender Factor - Distribution & Bad Rate

| | | Count | | | Default | | | Distribution | | | Default Rate | | |
| | | Dev | Review | | Dev | Review | | Dev | Review | | Dev | Review | | |
Bucket	Score	Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019
01. Male	6	16,524	26,771	12,055	455	1,370	187	60.1%	58.1%	53.9%	2.75%	5.12%	1.55%
02. Female	25	10,979	19,269	10,315	151	480	79	39.9%	41.9%	46.1%	1.38%	2.49%	0.77%
Total		27,503	46,040	22,370	606	1,850	266	100.0%	100.0%	100.0%	2.20%	4.02%	1.19%

Table 7.3: Education Level Factor - Distribution & Bad Rate

| | | Count | | | Default | | | Distribution | | | Default Rate | | |
| | | Dev | Review | | Dev | Review | | Dev | Review | | Dev | Review | | |
Bucket	Score	Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019
01. Degree & Above	38	10,961	21,403	10,310	149	388	58	39.9%	46.5%	46.1%	1.36%	1.81%	0.56%
02. Pre-Uni	36	1,605	1,575	684	24	66	14	5.8%	3.4%	3.1%	1.50%	4.19%	2.05%
03. Diploma & Cert	29	7,727	13,477	6,530	161	712	106	28.1%	29.3%	29.2%	2.08%	5.28%	1.62%
04. Others	7	7,210	9,585	4,846	272	684	88	26.2%	20.8%	21.7%	3.77%	7.14%	1.82%
Total		27,503	46,040	22,370	606	1,850	266	100.0%	100.0%	100.0%	2.20%	4.02%	1.19%

Table 7.4: Residential Status Factor - Distribution & Bad Rate

| | | Count | | | Default | | | Distribution | | | Default Rate | | |
| | | Dev | Review | | Dev | Review | | Dev | Review | | Dev | Review | | |
Bucket	Score	Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019
01. Own	32	7,056	19,476	7,672	107	626	58	25.7%	42.3%	34.3%	1.52%	3.21%	0.76%
02. Mortgage	27	13,756	9,243	5,009	301	273	40	50.0%	20.1%	22.4%	2.19%	2.95%	0.80%
03. Parent	21	4,885	10,567	5,403	125	554	77	17.8%	23.0%	24.2%	2.56%	5.24%	1.43%

Bucket	Score	Count Dev Baseline	Count Review 2018	Count Review 2019	Default Dev Baseline	Default Review 2018	Default Review 2019	Distribution Dev Baseline	Distribution Review 2018	Distribution Review 2019	Default Rate Dev Baseline	Default Rate Review 2018	Default Rate Review 2019
04. Others	13	1,806	6,754	4,286	73	397	91	6.6%	14.7%	19.2%	4.04%	5.88%	2.12%
Total		27,503	46,040	22,370	606	1,850	266	100.0%	100.0%	100.0%	2.20%	4.02%	1.19%

Table 7.5: Years of Service Factor - Distribution & Bad Rate

		Count			Default			Distribution			Default Rate		
		Dev	Review		Dev	Review		Dev	Review		Dev	Review	
Bucket	Score	Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019
01. 1 year	21	3,440	10,674	4,313	94	470	52	12.5%	23.5%	19.6%	2.73%	4.40%	1.21%
02. 2-6 years	18	11,661	18,870	9,707	328	870	131	42.4%	41.6%	44.2%	2.81%	4.61%	1.35%
03. 7-9 years	28	3,367	5,145	2,462	72	192	24	12.2%	11.3%	11.2%	2.14%	3.73%	0.97%
04. Above 9 years	40	9,035	10,710	5,503	112	303	59	32.9%	23.6%	25.0%	1.24%	2.83%	1.07%
Total		27,503	45,399	21,985	606	1,835	266	100.0%	100.0%	100.0%	2.20%	4.04%	1.21%

Table 7.6: Deposits L3M Factor - Distribution & Bad Rate

		Count			Default			Distribution			Default Rate		
		Dev	Review		Dev	Review		Dev	Review		Dev	Review	
Bucket	Score	Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019
01. No deposits	26	14,925	27,504	12,467	373	1,531	219	54.3%	59.7%	55.7%	2.50%	5.57%	1.76%
02. < \$500	1	2,318	2,309	1,114	148	101	12	8.4%	5.0%	5.0%	6.38%	4.37%	1.08%
03. [\$500,\$10k)	34	5,465	9,798	5,228	68	182	34	19.9%	21.3%	23.4%	1.24%	1.86%	0.65%
04. \$10k & Above	39	4,795	6,428	3,558	17	36	1	17.4%	14.0%	15.9%	0.35%	0.56%	0.03%
Total		27,503	46,039	22,367	606	1,850	266	100.0%	100.0%	100.0%	2.20%	4.02%	1.19%

Table 7.7: MOB From Credit Bureau Factor - Distribution & Bad Rate

		Count			Default			Distribution			Default Rate		
		Dev	Review		Dev	Review		Dev	Review		Dev	Review	
Bucket	Score	Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019
01. <= 1 year	10	4,063	10,668	3,849	189	882	97	14.8%	23.2%	17.2%	4.65%	8.27%	2.52%
02. 2-3 years	25	7,973	10,985	6,455	203	497	97	29.0%	23.9%	28.9%	2.55%	4.52%	1.50%
03. 4-9 years	30	10,220	16,914	8,492	169	369	51	37.2%	36.7%	38.0%	1.65%	2.18%	0.60%
04. >= 10 years	36	5,247	7,473	3,574	45	102	21	19.1%	16.2%	16.0%	0.86%	1.36%	0.59%
Total		27,503	46,040	22,370	606	1,850	266	100.0%	100.0%	100.0%	2.20%	4.02%	1.19%

Table 7.8: Number of New Application's Enquiries in CB in L6M Factor - Distribution & Bad Rate

| | | Count | | | Default | | | Distribution | | | Default Rate | | |
| | | Dev | Review | | Dev | Review | | Dev | Review | | Dev | Review | |
Bucket	Score	Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019
05. No CB	42	5,256	679	482	38	8	5	19.1%	1.5%	2.2%	0.72%	1.18%	1.04%
01. No enquiry	41	7,828	15,397	9,740	92	223	58	28.5%	33.4%	43.5%	1.18%	1.45%	0.60%
02. 1-2	37	10,748	18,932	9,146	234	621	125	39.1%	41.1%	40.9%	2.18%	3.28%	1.37%
03. 3-4	28	2,564	7,077	2,936	119	460	78	9.3%	15.4%	13.1%	4.64%	6.50%	2.66%
04. >= 5	1	1,107	3,955	66	123	538	0	4.0%	8.6%	0.3%	11.11%	13.60%	0.00%
Total		27,503	46,040	22,370	606	1,850	266	100.0%	100.0%	100.0%	2.20%	4.02%	1.19%

Table 7.9: Ever 30+dpd in CB in L12M Factor - Distribution & Bad Rate

| | | Count | | | Default | | | Distribution | | | Default Rate | | |
| | | Dev | Review | | Dev | Review | | Dev | Review | | Dev | Review | |
Bucket	Score	Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019
01. Yes	6	2,258	6,214	2,240	129	429	48	8.2%	13.5%	10.0%	5.71%	6.90%	2.14%
02. No	28	25,245	39,826	20,130	477	1,421	218	91.8%	86.5%	90.0%	1.89%	3.57%	1.08%
Total		27,503	46,040	22,370	606	1,850	266	100.0%	100.0%	100.0%	2.20%	4.02%	1.19%

Table 7.10: Months with Cash Advance L3M Factor - Distribution & Bad Rate

| | | Count | | | Default | | | Distribution | | | Default Rate | | |
| | | Dev | Review | | Dev | Review | | Dev | Review | | Dev | Review | |
Bucket	Score	Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019
01. 0	35	22,367	36,105	18,512	232	745	111	81.3%	78.4%	82.8%	1.04%	2.06%	0.60%
02. 1-2	15	1,332	2,822	1,043	93	393	51	4.8%	6.1%	4.7%	6.98%	13.93%	4.89%
03. 3	1	1,752	4,249	1,581	180	532	74	6.4%	9.2%	7.1%	10.27%	12.52%	4.68%
04. N.A	17	2,052	2,864	1,234	101	180	30	7.5%	6.2%	5.5%	4.92%	6.28%	2.43%
Total		27,503	46,040	22,370	606	1,850	266	100.0%	100.0%	100.0%	2.20%	4.02%	1.19%

Table 7.11: Partial Payment L3M Factor - Distribution & Bad Rate

| | | Count | | | Default | | | Distribution | | | Default Rate | | |
| | | Dev | Review | | Dev | Review | | Dev | Review | | Dev | Review | |
Bucket	Score	Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019	Baseline	2018	2019
01. 0	39	9,287	22,429	11,845	51	330	54	33.8%	48.7%	53.0%	0.55%	1.47%	0.46%
02. 1	38	6,101	6,503	2,998	39	201	13	22.2%	14.1%	13.4%	0.64%	3.09%	0.43%
03. 2	31	3,393	3,882	1,649	68	191	21	12.3%	8.4%	7.4%	2.00%	4.92%	1.27%
04. 3	9	6,561	10,359	4,642	342	948	148	23.9%	22.5%	20.8%	5.21%	9.15%	3.19%
05. N.A	10	2,161	2,867	1,236	106	180	30	7.9%	6.2%	5.5%	4.91%	6.28%	2.43%
Total		27,503	46,040	22,370	606	1,850	266	100.0%	100.0%	100.0%	2.20%	4.02%	1.19%

7.2 Chronology

Date	Category	Details
Oct 2015	Model	Model version 1 implemented. To have a better tool to assess customer credit risk, the bank had develop the a model suite for Consumer Unsecured Lending segment. It comprised of an application scorecard, a behaviour scorecard and PD/EAD/LGD segmentation models. The newly developed scorecards and segmentation models had achieved excellent risk ranking power, with AR of 71% for the Ascore, 85% for Bscore and 80% for PD models.
Dec 2015	Business Strategy	With the new models implemented in Oct 2015, business has refined the acceptance criteria as following: - For CC, the Ascore cut-off score is 200 - For OD, the Ascore cut-of score is 230
Dec 2016	Business Strategy	After a year in-use of the model suite, the scorecards risk ranking power was reviewed and the results was still at excellent level. The overall portfolio performance was also at good level with default rate less than 1.5%, better than expected. Hence, business decided to growth the volume for Consumer Unsecured Lending products by revised the following: - For CC, the Ascore cut-off was lower down to 180 for customers with monthly income more than USD 3,000. For others, the Ascore cut-off is still 200 - For OD, the Ascore cut-off was also lower down to 180 for curstomers with monthly income more than USD 3,000. For those income from USD 2,000 to USD 3,000, the Ascore cut-off is 200. For the remaining, the Ascore cut-off remained at 230
Mar 2017	Collections	The Bscore was applied into Collections strategies. Where customers with delinquent status will be prioritised by their Bscore, i.e. Collections team will work on them first while those customer with higher Bscore will be sent a reminder SMS

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Thank you.