



Webinar: Building Credit Scorecards in a Data Scarce Environment

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CREDIT SCORECARDS

DEVELOPING IN A DATA SCARCE ENVIRONMENT



FLOW

Scoring family and Credit scorecards

How are scorecards traditionally built

How IFC built the scorecard for BRAC – through BRAC case study

- BRAC's business model
- Challenges in developing the scorecard
- Based on traditional credit scoring methodology the scorecard output
- New Methodology Scorecard
- Key Safeguards
- Next steps in the BRAC scorecard program

Q&A





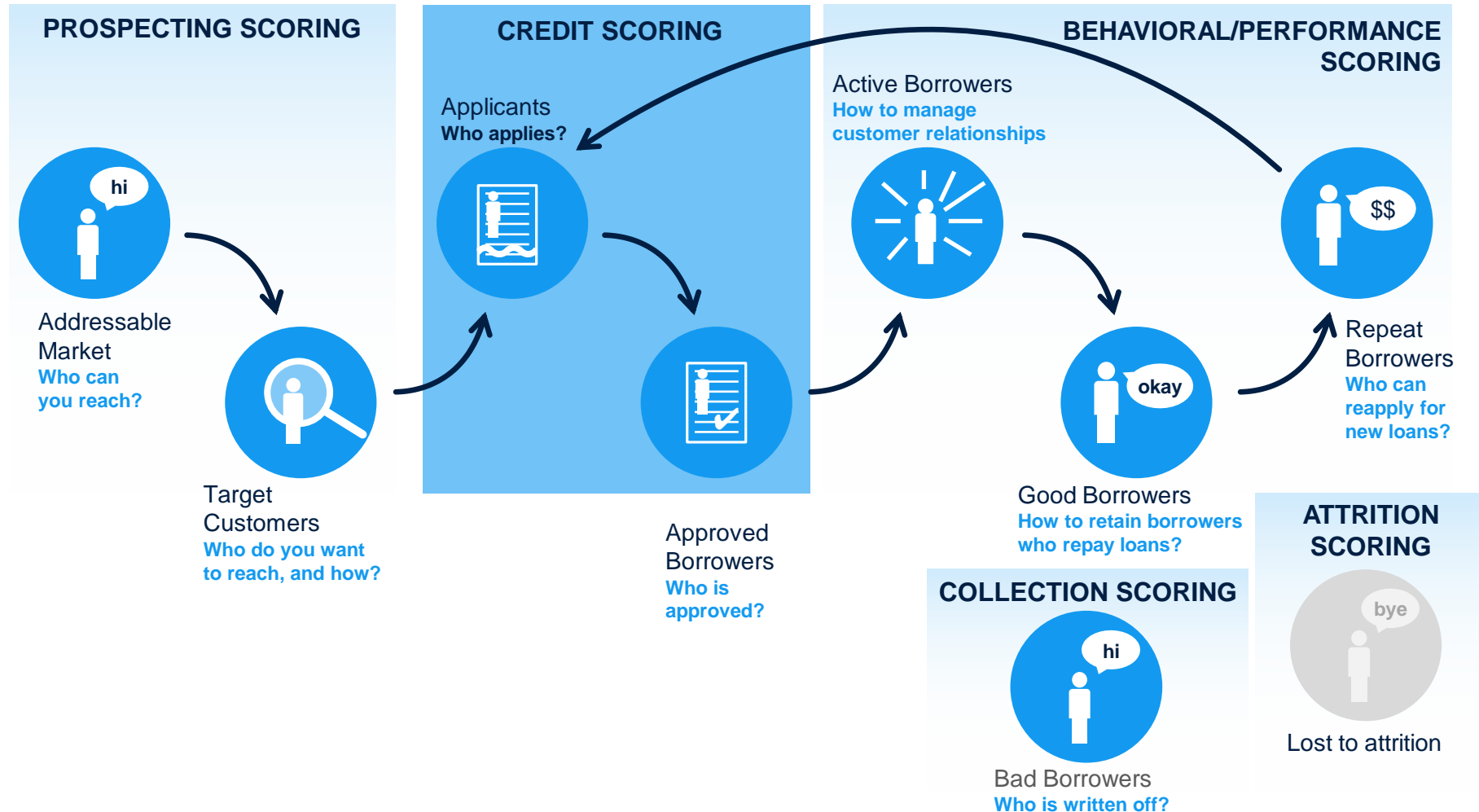
Credit Score

- Excellent
- Very Good
- Good
- Average
- Poor

SCORING?

WHAT IS CUSTOMER SCORING?

Scoring happens at various stages of the credit delivery cycle. For each stage, a different scoring model with different sets of data variables are used



SUCCESSFUL CREDIT SCORING TRANSLATES TO HIGHER PROFITS



Increase in proportion of good



Faster decision making



Risk based pricing



Lower losses leading to increased investments



Higher sales and credit productivity



Deepening penetration in niche segments

Traffic Sources Overview



- Direct Traffic
3,097.00 (40.43%)
- Search Engines
2,910.00 (38.04%)
- Referring Sites
1,642.00 (21.47%)

Map Overview



Visitors Overview



Visitors
2,958

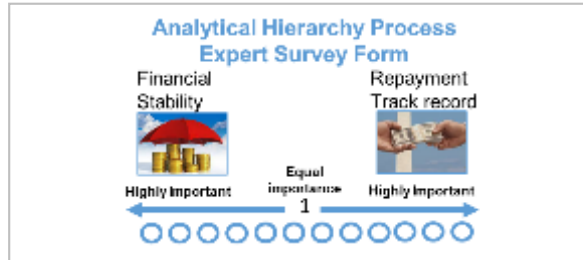
Content Overview

Page	Pageviews	Visitors
Home	1,200	1,000
Products	800	700
Services	600	500
Contact Us	400	300
Privacy Policy	200	150

HOW ARE SCORECARDS BUILT?

DATA MATURITY DETERMINES THE DEVELOPMENT METHODOLOGY

Expert Scorecards

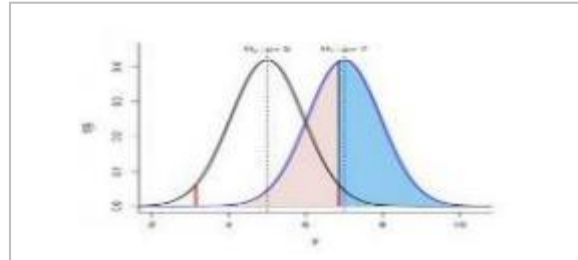


- AHP is structured technique for organizing and analyzing complex decisions, based on mathematics and psychology.
- Analytical Hierarchy Process (AHP) to quantify experts' opinions



No / poor quality data

Hybrid Scorecards

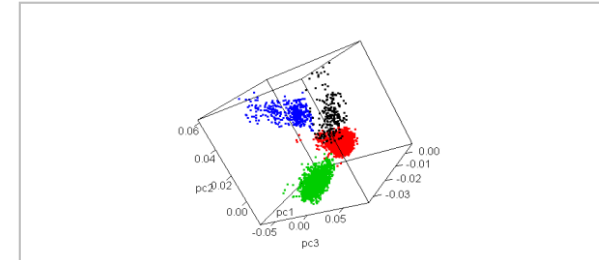


- Identify relative importance of risk variables similar to the expert scorecard
- Use data for hypothesis testing to validate expert opinion and fine-tune the scorecard



Some data or sample size not sufficient

Data Driven Scorecards



- Use machine learning and advanced statistics



Good quality data with sufficient sample

EXPERT SCORECARDS

- Build a scorecard relying on AHP
- Going forward start capturing new variables
- Deploy it alongside regular underwriting
- Validate over time
- Calibrate weights of the variables
- Continue iteration over time
- Scorecard ready for independent usage

HYBRID SCORECARDS

Option 1

- Build a statistical scorecard using existing data
- Sense check with Experts
- Start capturing new expert variables
- Deploy it alongside regular underwriting
- Monitor performance and Validate over time
- Calibrate weights of the variables
- Continue iteration over time
- Scorecard ready for independent usage

Option 2

- Build a statistical scorecard using existing data
- Deploy it alongside regular underwriting
- Monitor performance and Validate over time
- Calibrate weights of the variables
- Continue iteration over time
- Scorecard ready for independent usage



BRAC CASE STUDY

BRAC BANK – SINCE 2001...

To serve the **“Missing Middle”** and to work as a catalyst for the vibrant yet unbanked SME sector of Bangladesh, our **Chairperson, Sir Fazle Hasan Abed** founded **BRAC Bank** in **2001** with institutional shareholding of **BRAC, ShoreBank & IFC**.

Since Inception

- No. of loan disbursed: 500,000
- Disbursed Amt: US\$ 5,243m
- Collateral Free: 70%

Portfolio (May'16)

- SME portfolio: US\$ 806m
- Collateral-free: **US\$ 369m**
- Customers: 112,024

Customer Touch Points

- 449 SME Unit Offices
- 181 Branches

Number of Staff

- Total SME Staff: 2,560
- CRO/Loan Officers: 1,735

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- ✓ BRAC Bank holds **37% market share** of collateral-free Small Business portfolio of the industry
 - ✓ In 2015, BRAC Bank disbursed **63%** of all **collateral-free loans** of the **industry**.
 - ✓ **88%** of monthly Small Business loan disbursement of BRAC Bank is **collateral-free**

HOW WE DO IT? - BRAC BANK'S UNIQUE SMALL BUSINESS MODEL



Sourcing of Customers

- Loan Officer/CRO gather business data from customer.
- Provide basic due diligence data to Area Credit Manager



Initial Evaluation (Screening)

- Area Credit Manager does an initial review based on due diligence data & plans visit if positive.
- Area Managers visit the new customers



Credit Risk Analysis

- Area Credit Manager does a credit analysis onsite & gives credit decision on the same day.
- Loan Officer completes documentation



Document Check & Disburse

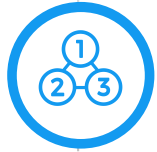
- Checks all documents
- Informs doc deficiencies (if any) to Loan Officer.
- Disburse the loan if found OK



Servicing (Collection)

- The Loan Officer is responsible for collections up to 150DPD
- Special Asset Management (SAM) team takes over from 150DPD

CHALLENGES OF THE MODEL



1 Financials re-created by ACM and kept in hard copies. Many variables not captured in the system

2 No standard set of variables used by all



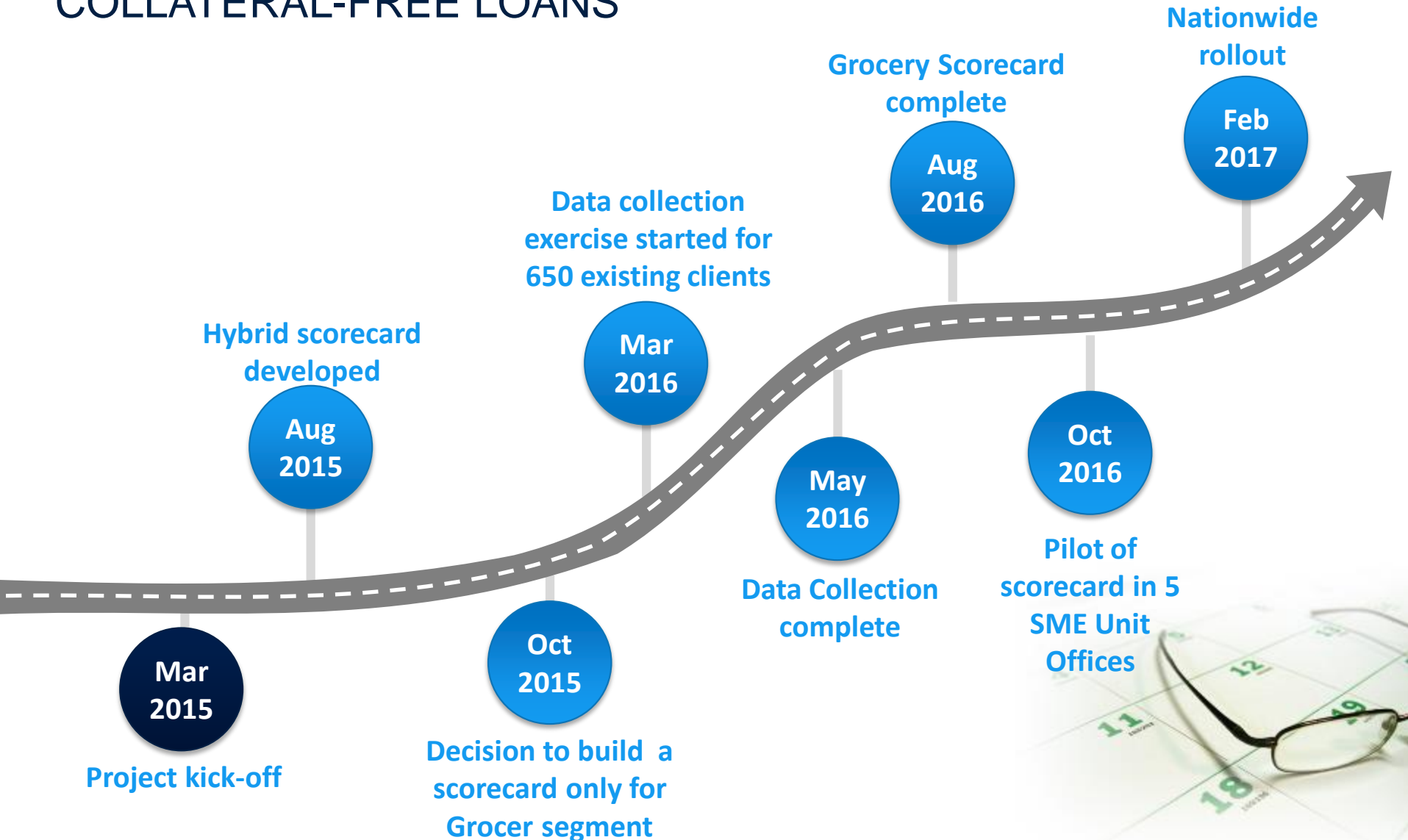
3 'Gut' Feeling of ACM without uniformity

4 Not sure if we should trust data in the system



Codify Collective Wisdom

SCORECARD DEVELOPMENT JOURNEY FOR COLLATERAL-FREE LOANS



THE FIRST HYBRID SCORECARD HAD LOW DISCRIMINATION POWER

Variables
Education Status
District of Business
Tenor of the Loan
Years of current business operating
Total Business Liabilities to Annual Sales
Number of Employees
Family member involved in business
Applied loan amount to guarantors assets
Applied loan amount to annual sales
Total Business Experience of the entrepreneur

Statistic	Total
KS	19.09
Gini	25.66

NEW APPROACH LEVERAGES BEHAVIOR OF EXISTING CLIENTS



	Actual Sample	Factored Sample
Good	488	2,680
Bad	162	162
Total	650	2,842

Statistic	Total
KS	59%
Gini	71%

NEW HYBRID GROCER SCORECARD

Hybrid Scorecard Variables	New Scorecard Variables
Education Status	Number of Similar businesses within 25 meters radius
District of Business	Total annual income
Tenor of the Loan	Quality of Lifestyle
Years of current business operating	Is there a storeroom?
Total Business Liabilities to Annual Sales	Years operating in current premises
Number of Employees	Annual Sales
Family member involved in business	Siblings stay with borrower
Applied loan amount to guarantors assets	Quality of Business Premises
Applied loan amount to annual sales	Borrower total business experience in years
Total Business Experience of the entrepreneur	Does the store have a refrigerator?
	How many times has the customer traveled abroad?
	Level of Borrower's education
	Does the business provide credit to customers?
	Loan to Sales ratio
	Does the business maintain financial ledger?

Further 3 Scorecards being built to cover the entire portfolio

KEY SAFEGUARDS WITH THIS APPROACH

Data Collection

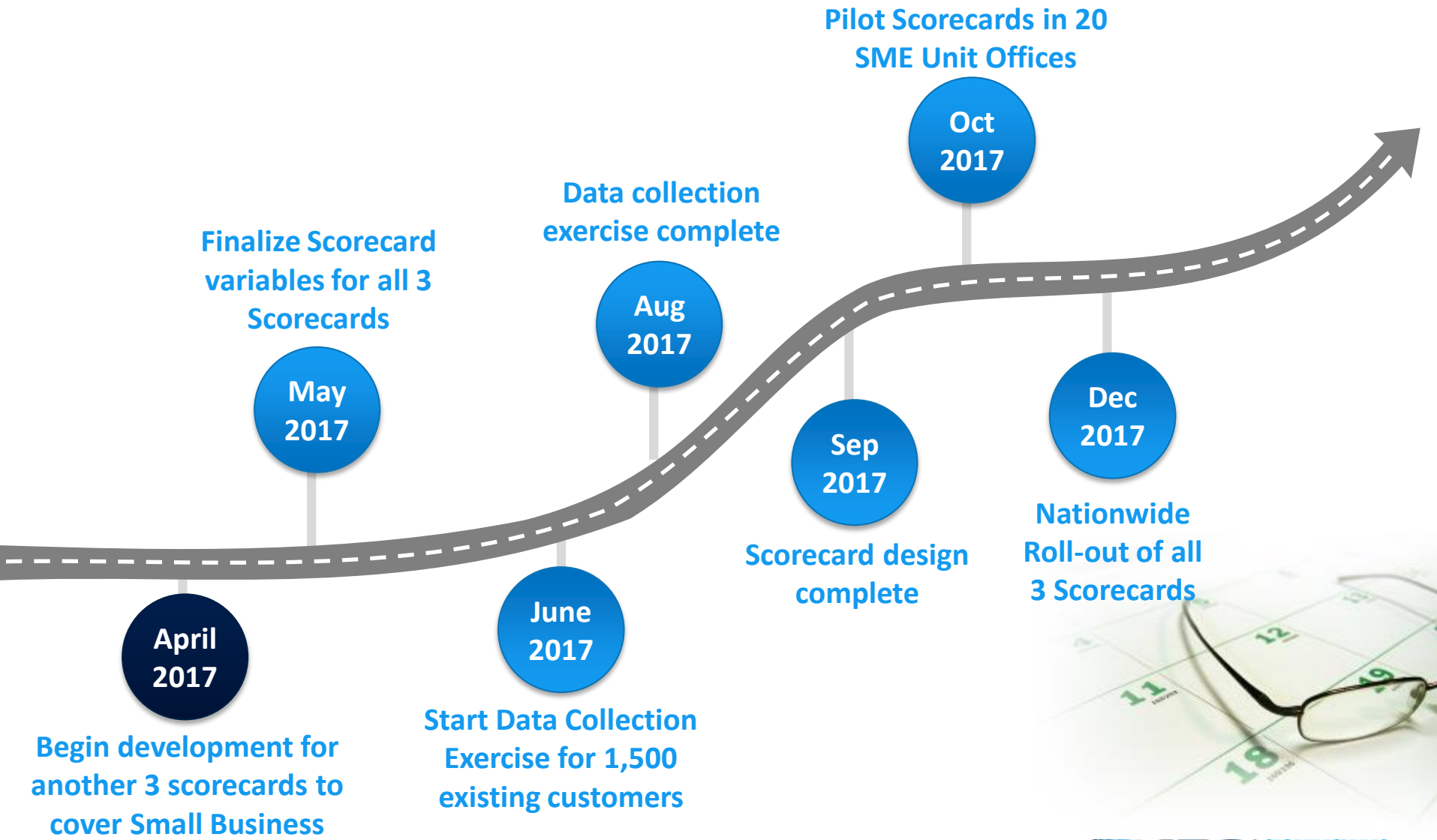
- Use Experts to list variables
- Aware of selection bias – worst customers data not available
- Quantify responses
- Create templates for subjective variables
- Underwriters should not collect Data
- Train Data collectors

Scorecard Validation

- Two different methodologies employed – Bootstrapping and Out of sample.



THE ROAD AHEAD - SCORECARD





THANKS! OPEN FOR DISCUSSION

CURRENT STATUS OF GROCERY SCORECARD

1,580

Total
Cases
Scored

1,457

Total
Approval

92%

Approval
Rate

Decision Mismatch
(Only 1%)

09

Scorecard – N
ACM - Y

09

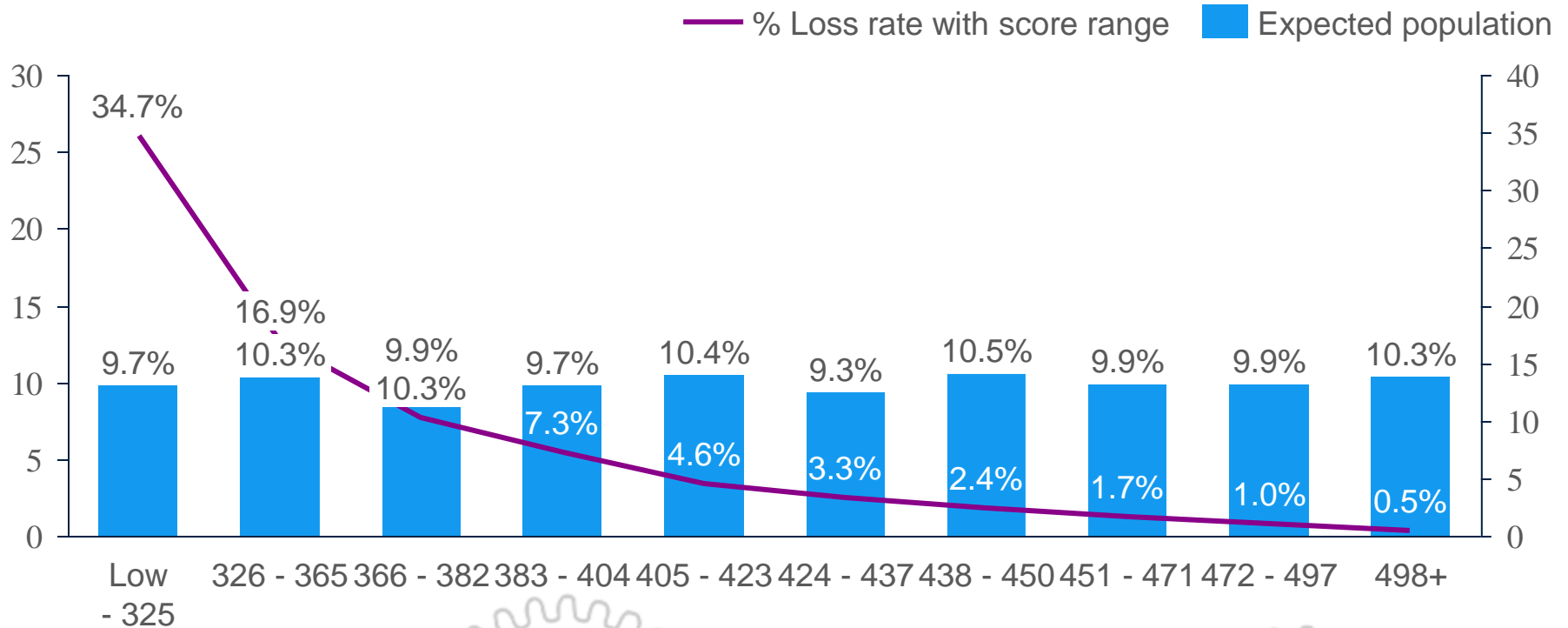
Scorecard – Y
ACM - N

- No of units – All 449
- Scorecard integrated into excel CAM
- All scorecard CAMs stored centrally
- ACMs abide by scorecard decisions



SCORECARD SHOWS HIGH DISCRIMINATION WITHIN SCORE RANGES

Loss Rates & Expected Population per Score Range



CREDIT SCORECARD – CONTINUOUS IMPROVEMENT CYCLE

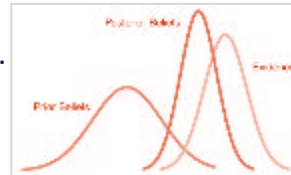
Credit Scorecard v1.0 Implementation

- Implement the expert / hybrid scorecard model



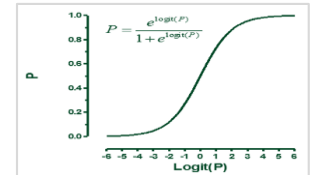
Monitor & Recalibrate the Scoring Model

- Validate the scores against quick mortalities and non-starters and identify multivariate patterns
- Test the stability of the through the door population and scorecard characteristics
- Recalibrate the score-points (priors) using the collected data in loan origination and management systems (LOS/LMS).



Rebuilt Scorecard with New Evidence

- Initiate a fresh scorecard creation based on the novel variables (traditional and alternate data sources)
- Usage of machine learning and advanced statistics to develop a fresh scoring model
- Test and validate the model



0 - 3 Months



3 - 12 Months



12 - 30 months



Data Collection Process

- Ensure robust data collection across through-the-door population
- Collect data from alternate sources including credit bureau, phone, web, GPS, customer behavior for other products etc.



Recalibrated Scorecard v1.5

- Implement recalibrated model with fine tuned score points but the same characteristics as v1.0



Credit Scorecard v2.0

- Implement credit scorecards with new characteristics both traditional and alternate data sources

