

Enhancing Customer Experience and Credit Quality with Lending Digitisation

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“Efficiency is doing things right;
Effectiveness is doing the right things.”
Peter Drucker

“There is nothing quite so useless,
as doing with great **efficiency**,
something that should not be done at all.”
Peter Drucker

Agenda

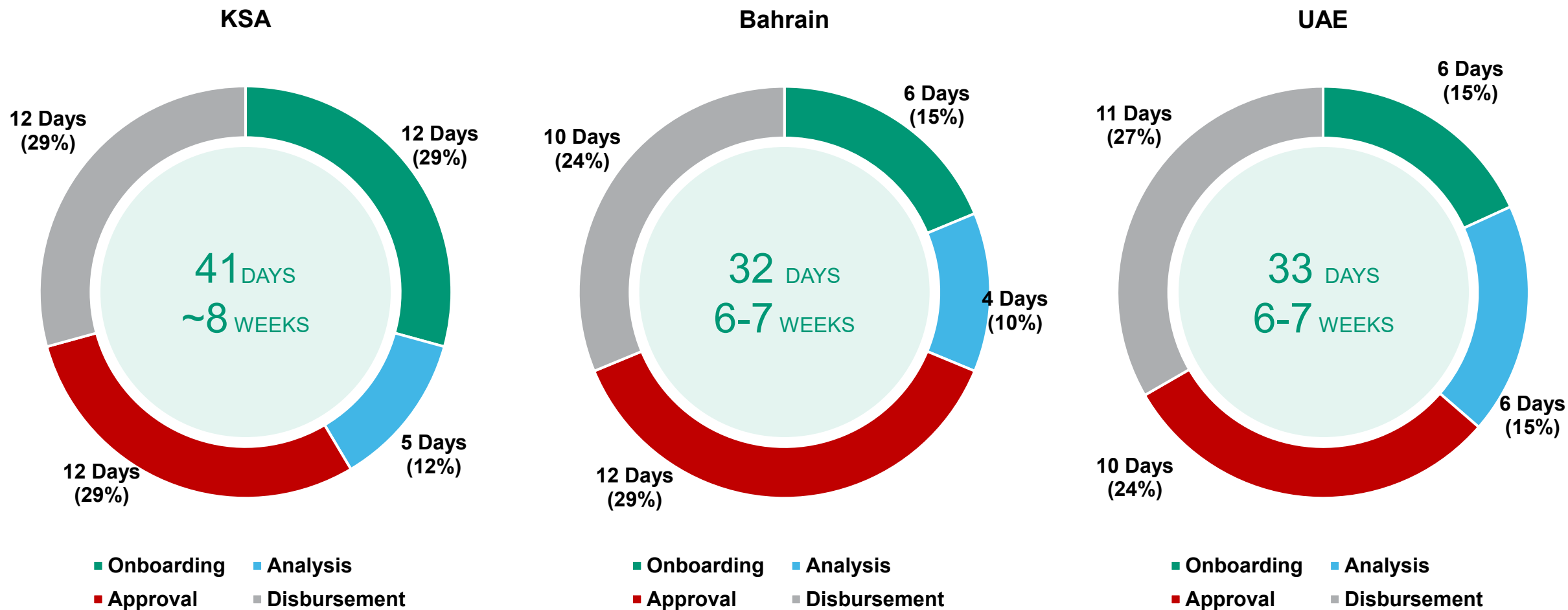
1. Introduction
2. Metrics
3. Lending Digitatisation to reduce approval turnarounds
4. 10 Elements of Design
5. Q & A

2

Metrics

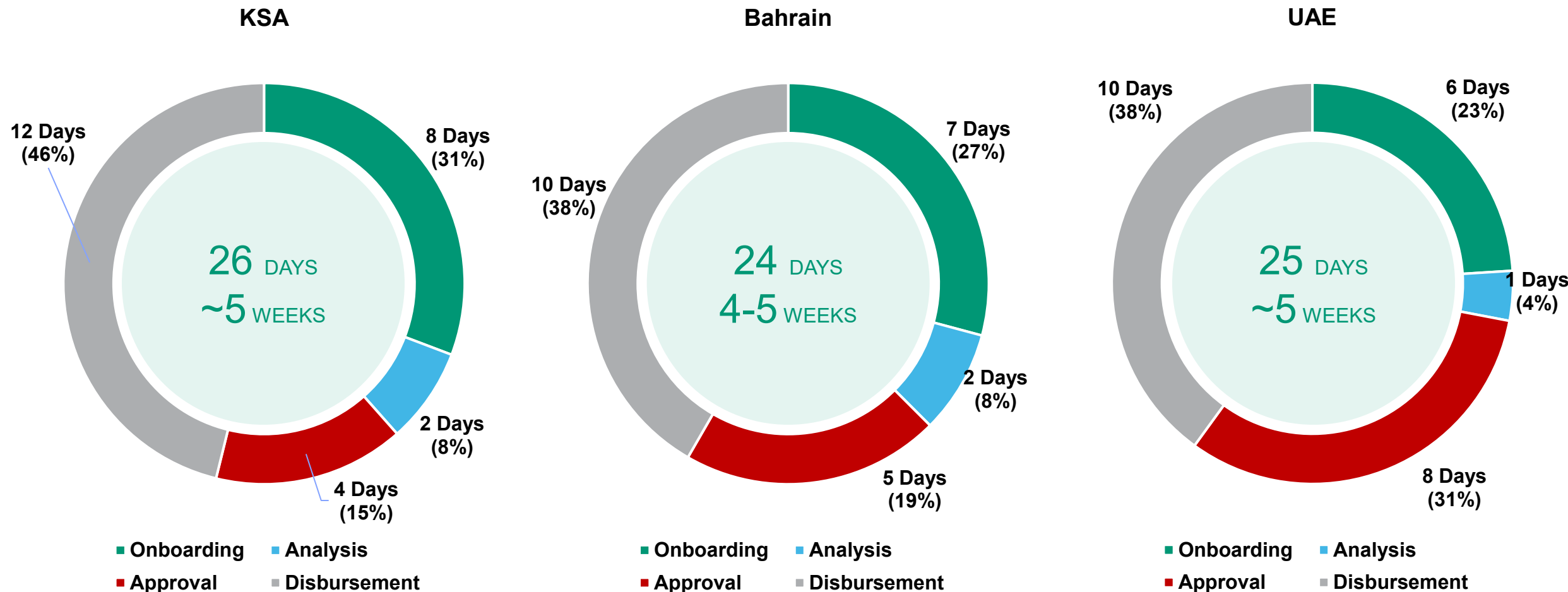
Turnaround time from initiation to approval for Corporate Accounts

It takes an average of 6-8 weeks* for the line to be released



Turnaround time from initiation to approval for SME Accounts

It takes an average of ~5 weeks* for the line to be released



slido



Where are the biggest gains to be had in improving the lending process with digitisation?

① Start presenting to display the poll results on this slide.

3

Lending Digitatisation to
reduce approval turnarounds

KYC and Compliance Processes take up time...

Improving the process take investment and foresight



Customer Identification

1-3 days

Searching list of prohibited customers
Determining intent of products/services
Is the company real?



Due Diligence

1-5 days

PEPs and sanctions screening
Internal watch lists



Enhanced Due Diligence

1-3 weeks

Adverse news & Sentiment
Researching and recording ownership hierarchies
Other relevant data



Sanctioning Process

Several hours - days

Process news alerts
Adverse media monitoring
Monitoring ownership structure
Ongoing customer information and sentiment indices



On-going Monitoring

Opportunities exist for Improving turnaround times

Seamlessly integrate critical KYC / Compliance Information into the lending process



Typical Risk Scenarios

- Business with ***Politically Exposed Persons***
- Customers based in, or conducting business in or through, a ***high-risk jurisdiction***
- Customers engaged in a business which involves ***significant cash transactions***, or associated with higher levels of ***corruption***
- ***Non face-to-face business***



Risk-Based Assessment and Mitigation

- ***Enhanced due diligence*** on high risks
- ***Governance processes*** for client acceptance
- Using ***external and internal data*** for CDD
- 3rd level of checks ***before lending decision***
- ***Documentation*** of checks in Credit Approval Forms



Integrating CDD with Lending

Customer Due Diligence integrated with Credit Assessment can provide

- ***Real 360-degree view of customer***
- ***Quicker turnaround,***
- ***Reduce operational risks*** and
- Provide ***assurance of ongoing monitoring***

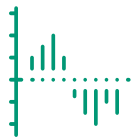
Automate the Data Collection Process

Significant opportunities for minimizing data entry and enhancing quality



Company Hierarchies

Holding Structure, Associates, Size, History, Financials and other Company Data from Orbis / BankFocus



Automated Spreading

Scan financials from pdf or image documents to interpret and spread financial information using AI / machine learning



News Information / Credit Sentiment

Scan news and other articles and interpret the tone to generate credit sentiment scores for your customers; stream adverse media for early warning



Client Requests

Import data from customer portals and automate facility structuring and deal terms



Customer Onboarding

Pre-screening

Information
Gathering

AML/KYC



Credit Analysis

Spreading/Scoring

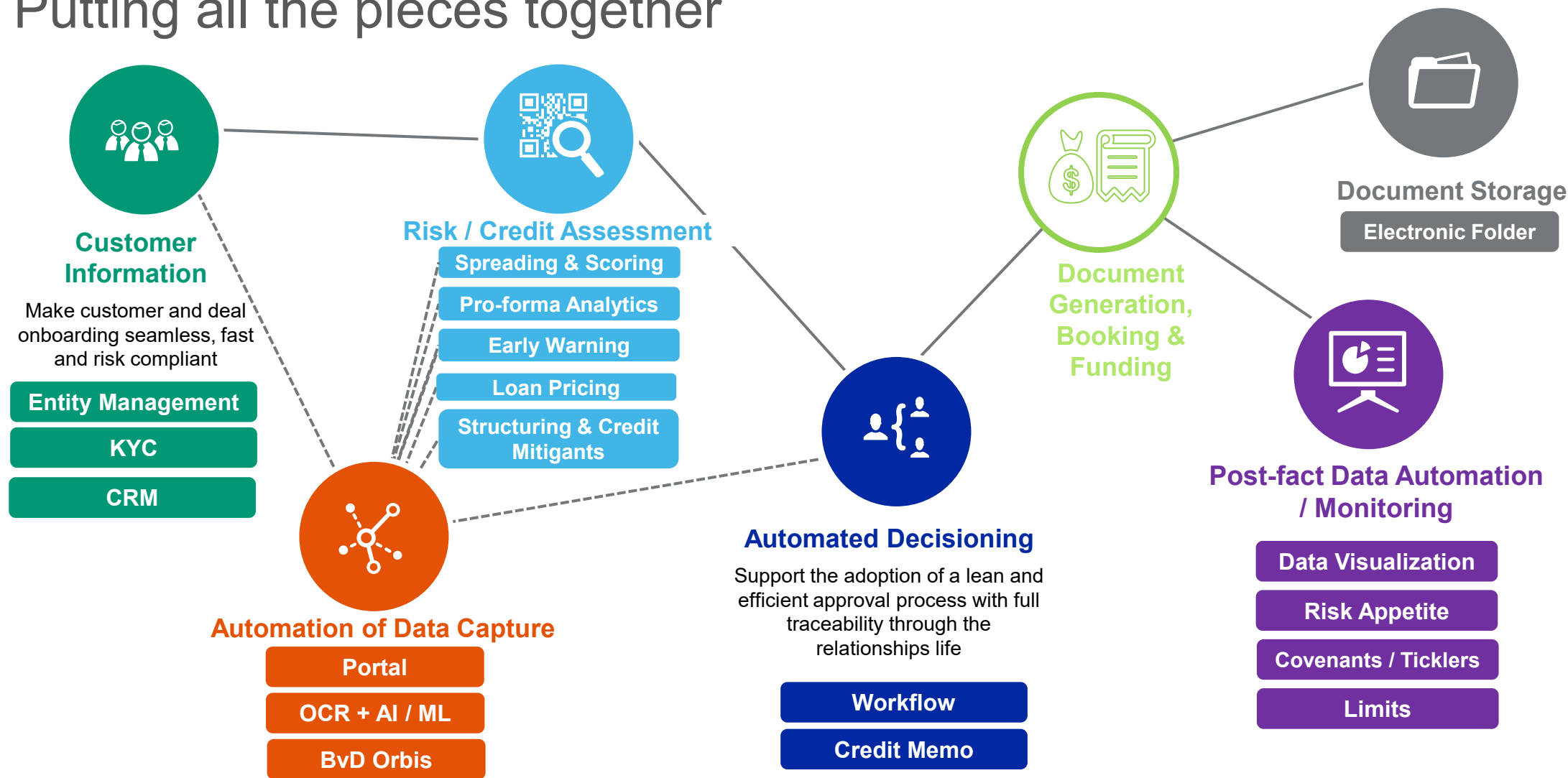
Structuring

Pricing

Credit Origination & Servicing Process

Streamlining the end-to-end process

Putting all the pieces together

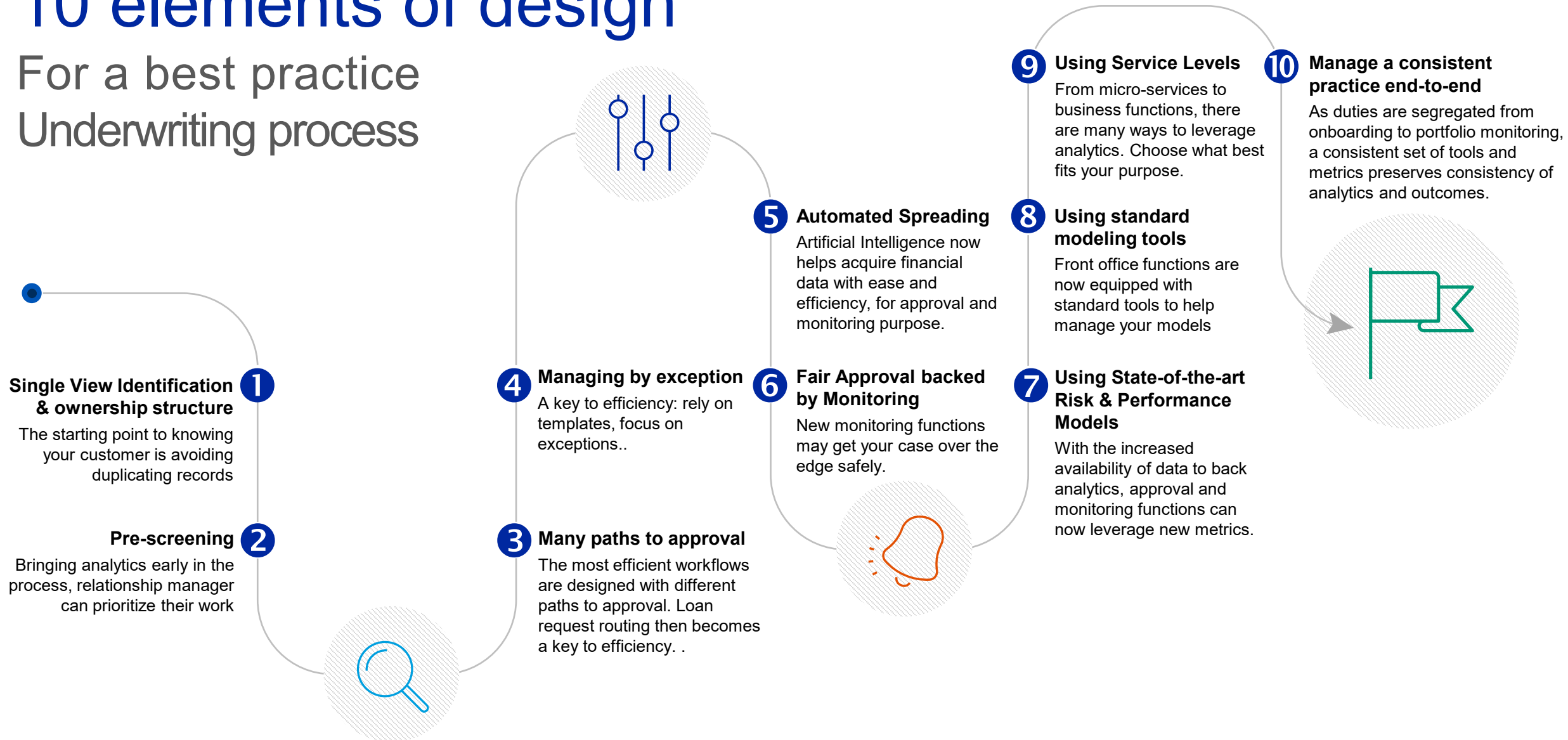


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10 Elements of Design

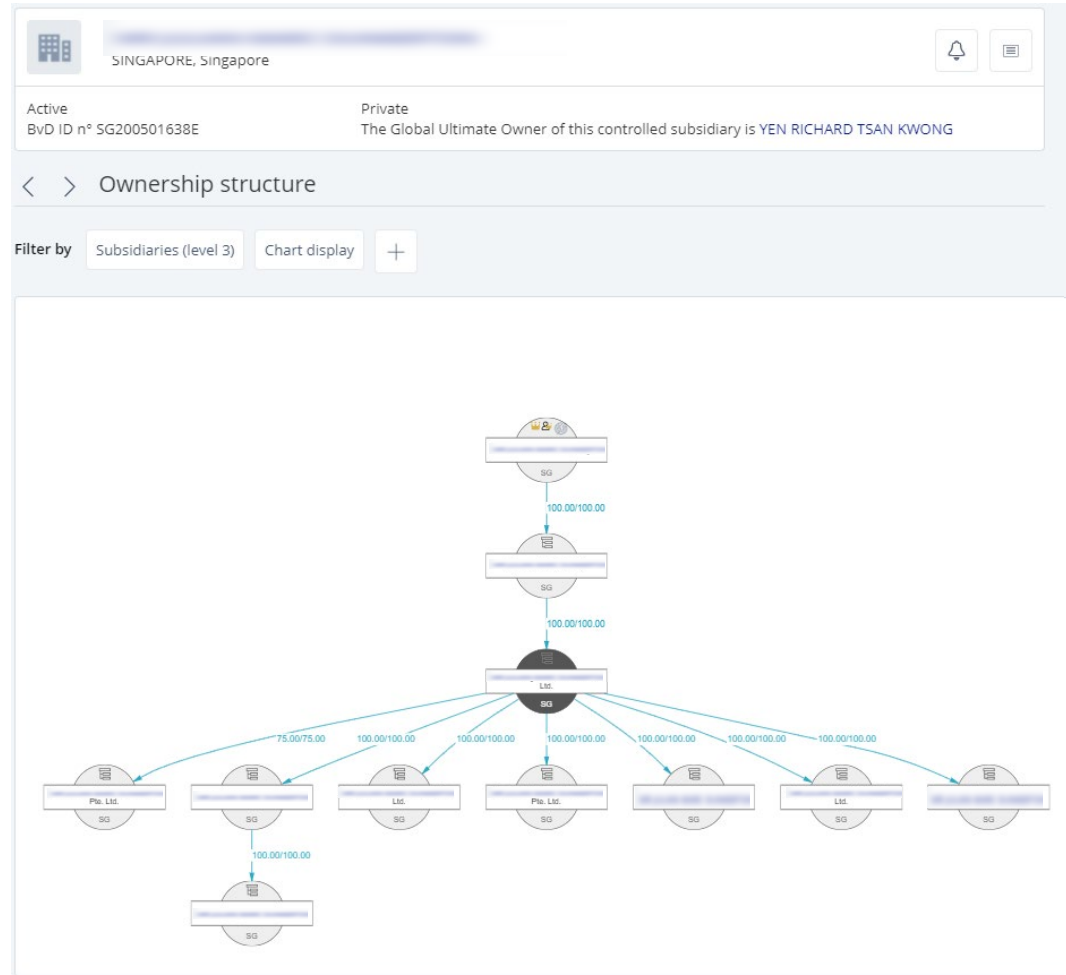
10 elements of design

For a best practice Underwriting process



① Single View Identification & ownership structure

The starting point to knowing your customer is avoiding duplicating records

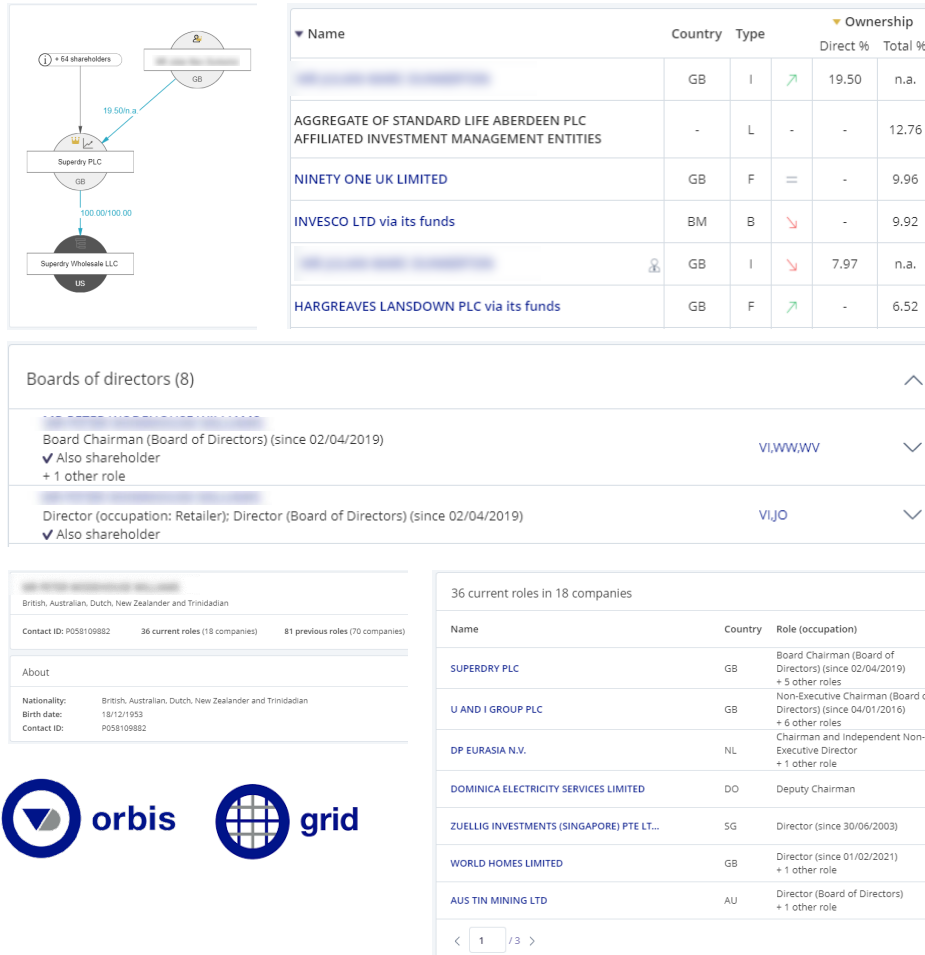


- » Most institution leverage the Tax ID
 - ... yet, ownership structure is difficult to capture.
- » Parent Entities are often overseas.
 - ... using tax IDs demands a worldwide view.
- » So, we thought we would look up all the credit bureau data worldwide and give you access to the entire corporate structure and ultimate ownerships of your borrower, based on a universal Single View Identifier
- » Many clients use it for AML & KYC

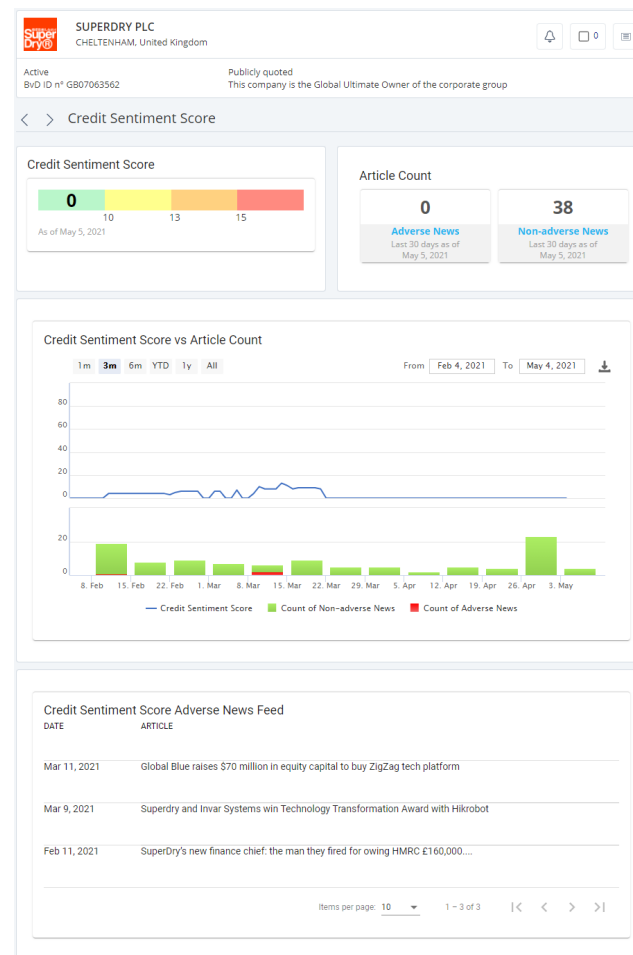
2 Pre-screening

Bringing analytics early in the process, relationship manager can prioritize their work

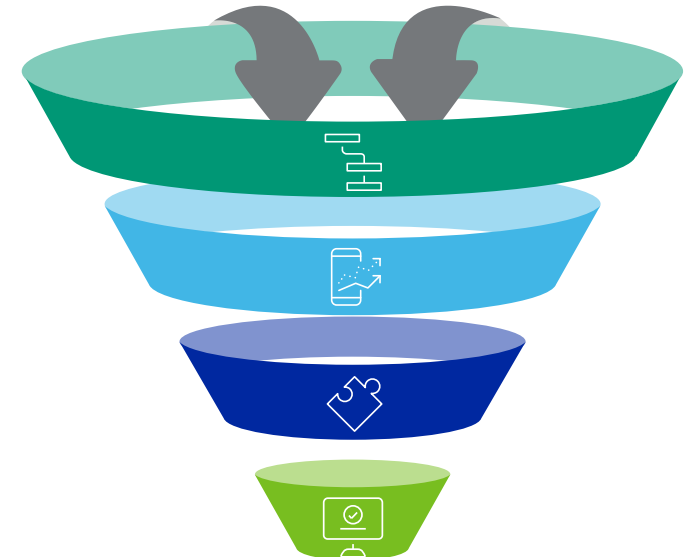
» Ownership & Directors



» Credit Sentiment

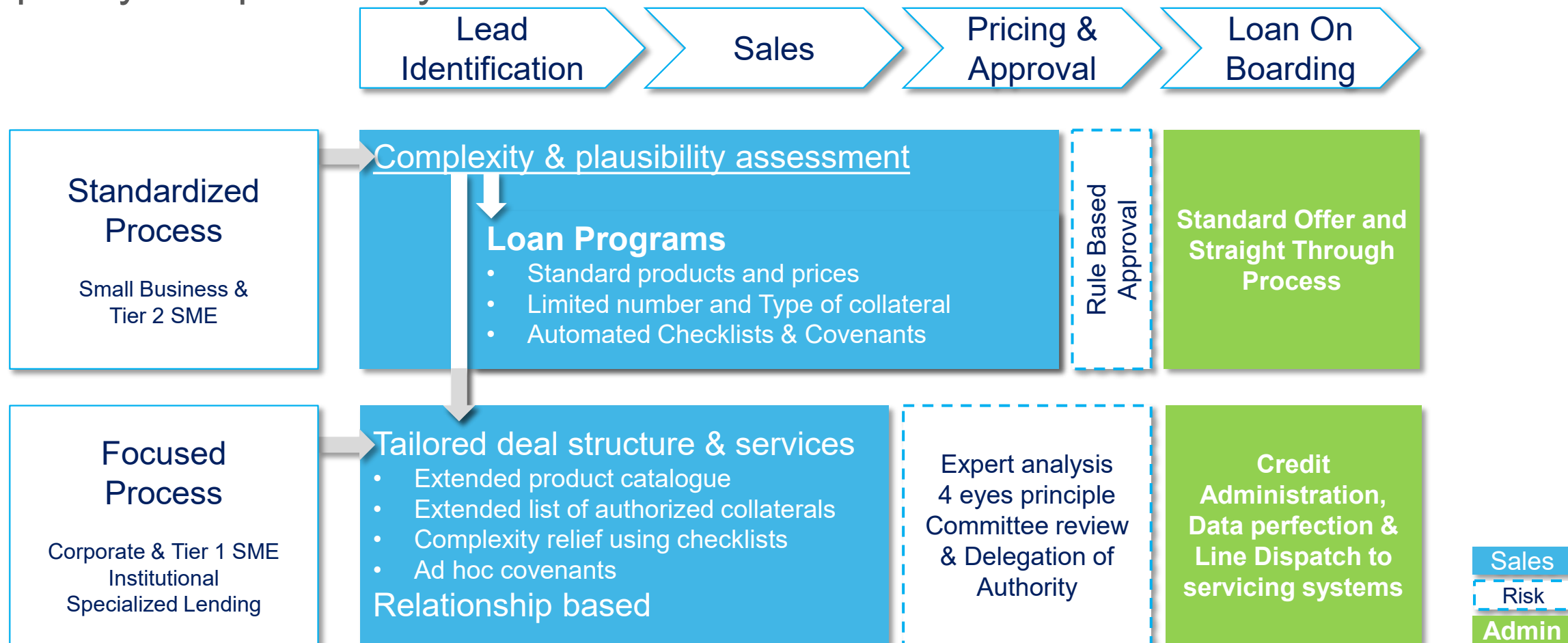


» Financial & ESG score



③ Many paths to approval

The most effective workflows have different paths to approval according to complexity and plausibility



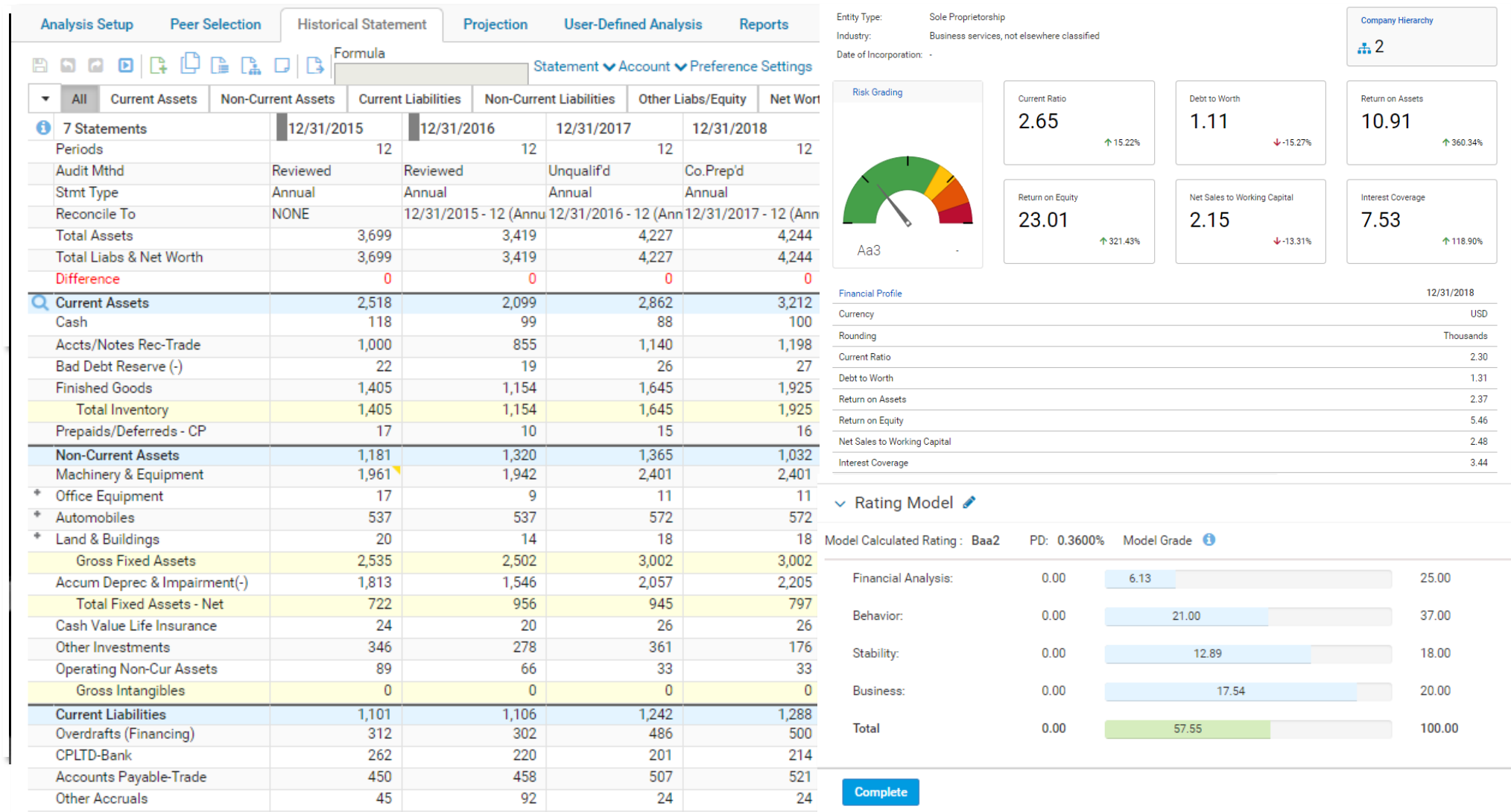
④ Managing by exception

A key to efficiency: rely on templates, focus on exceptions.



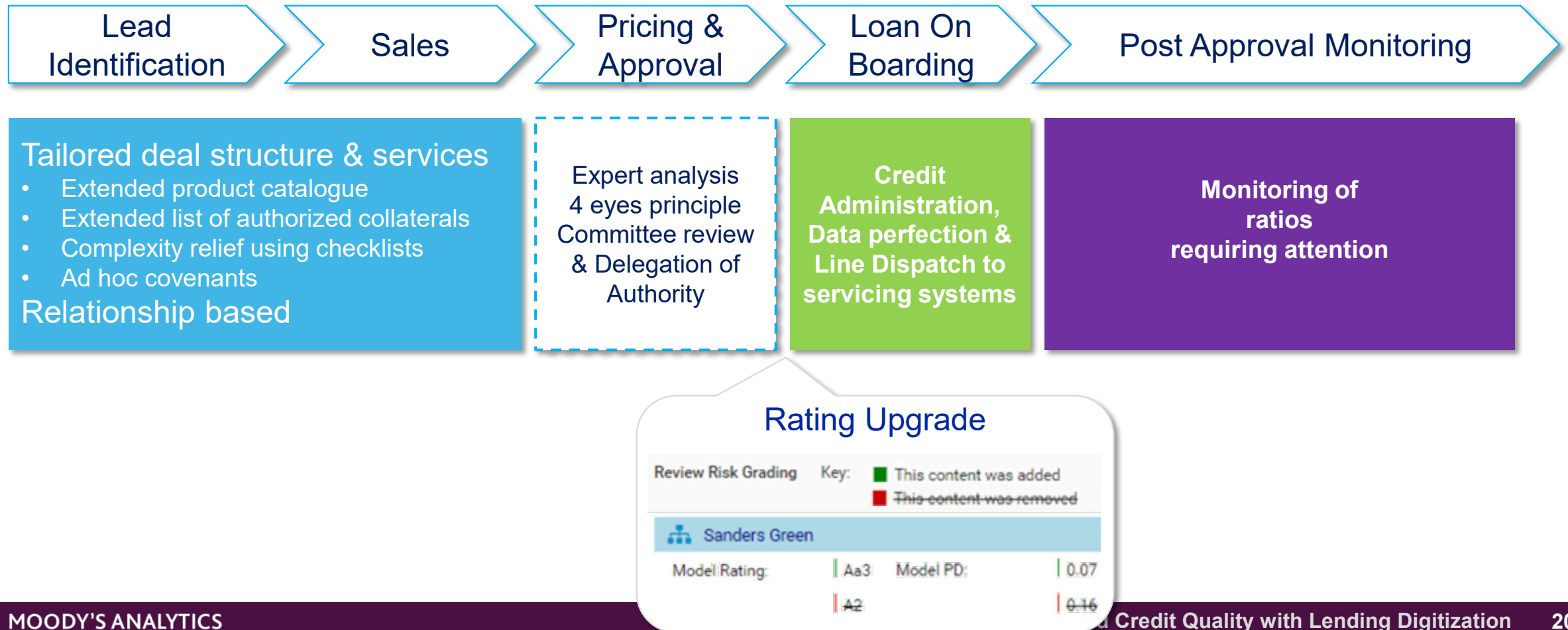
⑤ Automated Spreading

AI helps acquire financial data with ease and efficiency, for approval as well as monitoring.



⑥ Fair Approval backed by Monitoring

With the increased availability of data to back analytics, approval and monitoring functions can now leverage new metrics.



Credit Monitoring

Early Warning Framework

Building Blocks of EWS Framework

Signals & Data

- » Internal and external data
- Signals should combine the following:
 - Financial
 - Behavioral
 - Macroeconomic outlook
 - Alternative information: credit sentiment, ESG...

Triggers & Thresholds

- » Provide sufficient “early warning” for action
- » Calibrated based on sector and portfolio
- » Linkage to clear follow up actions & monitor progress

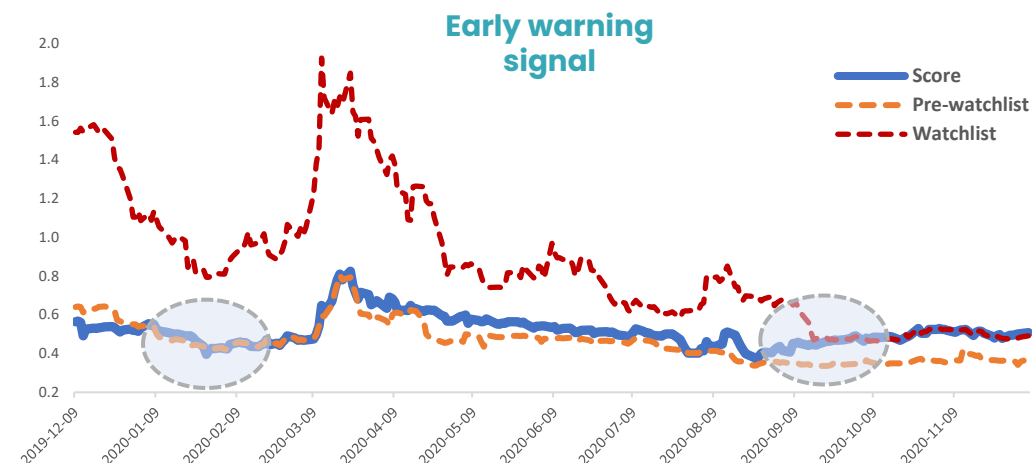
Analytics

- » Behavioral models
- » Nowcasting & forecasting of financials
- » Forecast and linkage to Macroeconomic scenarios
- » AI models

Monitoring & Deployment

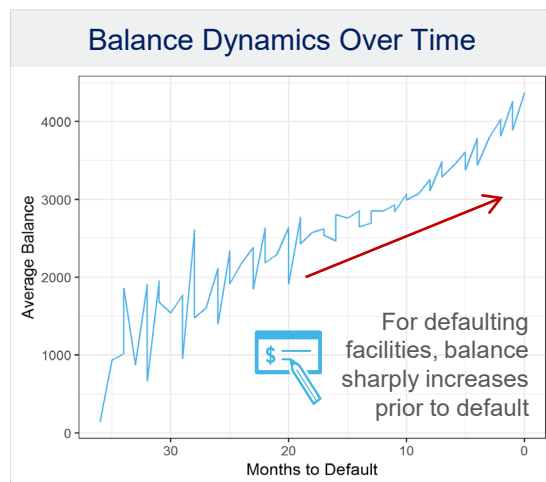
- » Dashboards for easy monitoring
- » Customized for portfolios and jurisdictions
- » Drill down for portfolio as well as obligor view
- » Linkage to the NPL management framework

Early Warning System			
Portfolio Library			
<input type="checkbox"/> Portfolio Name		Total Exposure	Early Warning Score
<input type="checkbox"/> Portfolio 9	VIEW RESULTS		<div><div></div></div>
<input type="checkbox"/> Portfolio 8	VIEW RESULTS	\$60,599	<div><div></div></div>
<input type="checkbox"/> Portfolio 7	VIEW RESULTS		<div><div></div></div>
<input type="checkbox"/> Portfolio 6	VIEW RESULTS	\$1,110	<div><div></div></div>
<input type="checkbox"/> Portfolio 5	VIEW RESULTS		<div><div></div></div>
<input type="checkbox"/> Portfolio 4	VIEW RESULTS		<div><div></div></div>
<input type="checkbox"/> Portfolio 3	VIEW RESULTS	\$100,123,458	<div><div></div></div>
<input type="checkbox"/> Portfolio 2	VIEW RESULTS		<div><div></div></div>
<input type="checkbox"/> Portfolio 1	VIEW RESULTS		<div><div></div></div>



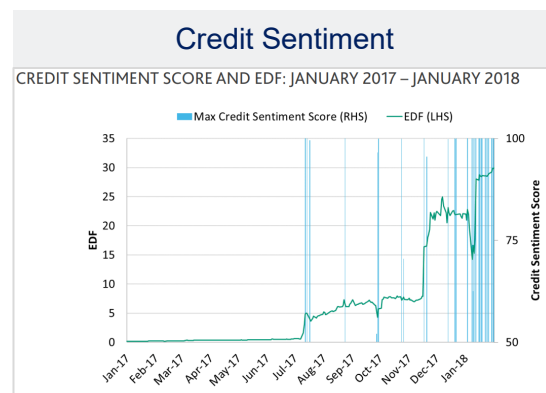
7 Using Non-Traditional Models

With the increased availability of data to back analytics, approval and monitoring functions can now leverage new metrics.



Transactional and Behavioral Data

- » Average spending across time and its deviation from average
- » Value per purchase and its deviation from average
- » Number of transactions in specific time window and its deviation from average
- » Balance dynamics over time and its deviation from average and trend
- » Utilization rate increase
- » Addictive behavior
- » Overdraft



Parsing curated source of financial news, early warning emerges from key words

- » Filter : News source from curated providers are filtered based on context, repetition, etc.
- » Score : Machine learning models assigns a score based on historical frequency and occurrence of negative outcomes.
- » Aggregate : Using a Bayesian rating scheme we aggregate according to frequency and duration

Leveraging News and External Market Opinions

Credit Sentiment Scores

Credit Sentiment Scores highlight the average credit relevant sentiment in the news stories over a recent period

Use it to:

1. Become more efficient – by quickly assessing the available credit related news and its impact
2. Gain an early warning – by tracking and spotting deteriorating credit-related news trends
3. Provide an explanation – quickly identify news articles that explain issues



Pillars of effective Early Warning Solution

CL covenants and ownership module

Operational indicators.

Includes factors related to covenants structure, management and ownership change as well as concentration risk.

Moody's research and forecasted third-party indicators

Third-party indicators.

Integrate factors provided by external sources.

CL has financials data for corporates and SMEs

Through-the-Cycle Indicators.

Information originating from balance sheet, income and cashflow statements.

06

01

05

Early Warning Risk Factors

02

04

03

CL data module has fields to capture all info

Financial and Behavioral Information.

Income Statement, Balance Sheet, Ratios Bureau data, data related to delinquency, utilization, updated LTV, point-in-time PD, bureau score etc

Moody's Credit Sentiment Score; ML tools of supervised and unsupervised learning

Machine learning and AI.

Utilize alternative sources of data and AI algorithms to identify hidden patterns and sentiments in the data.

Macro data and forecasts are provided for more than 100 countries incl Turkey

Macroeconomic Factors.

Information related to the health of the operating environment including short-term forecasts of key indicators.

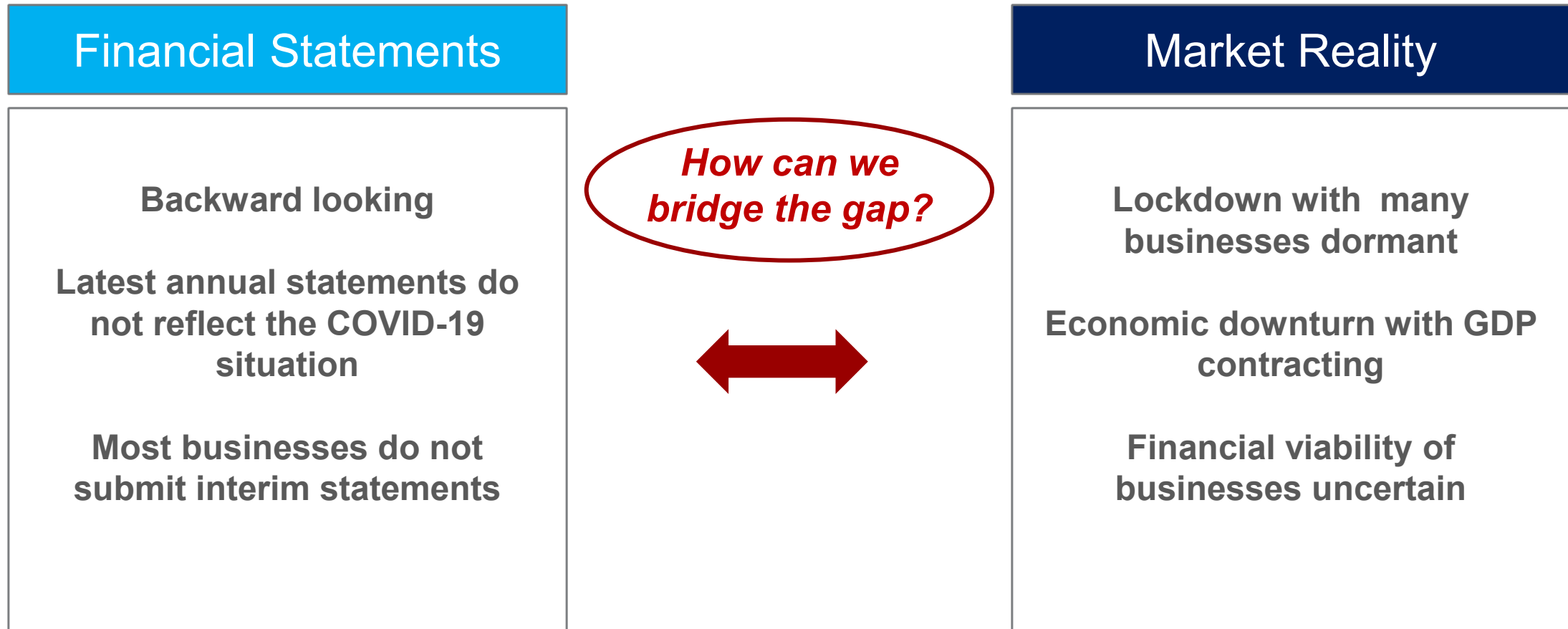
Indicators Based on Balance Sheet Statements

Most data are stored in CreditLens

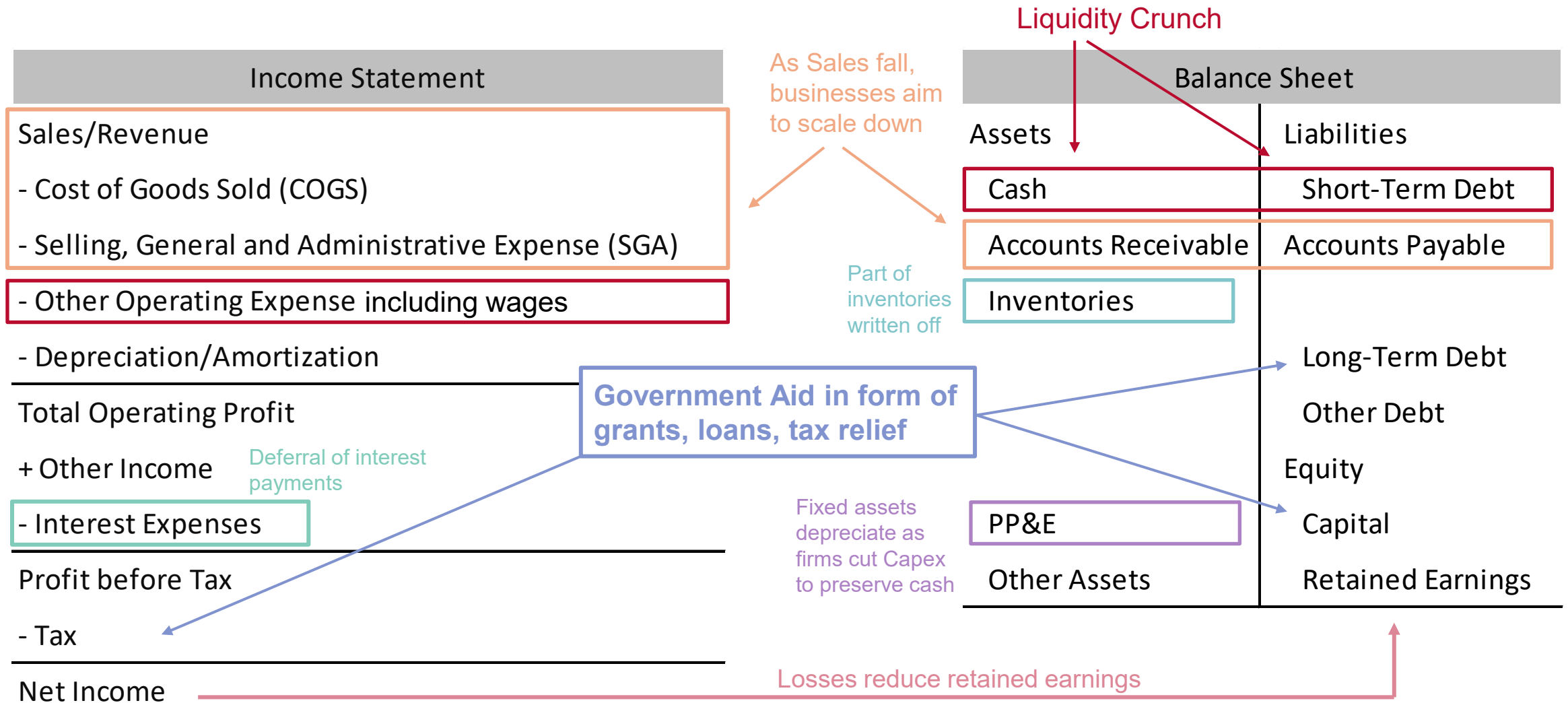
Liquidity	Leverage	Profitability	Activity	Coverage
Current Ratio	Tang Net Worth Growth(%)	Return on Assets and Equity	Sales Growth	Interest Coverage
Quick Ratio	Debt/Equity	Operating Margin	Accounts Receivable Days	Debt Service Coverage Ratio
Cashflow dynamics	Debt/Total Worth	EBITA / EBIDTA Margin	Inventory Turnover	Cash Coverage [(EBIT + Non Cash Expense)/Interest Expense]
Cash to Assets ratio	LT Debt/Net Fixed Assets	Net Profit Margin	Accounts Payable Days	EBITDA/Interest Exp + CPLTD
Net Sales / Working Capital	Debt/EBIDTA	Return on capital employed	Net Sales/Total Assets	Price earnings ratio
FCF / Adjusted Debt	Debt to Book Capital	Earnings per share	Profit Before Taxes/Total Assets	Debt and payment collection period

Risk analysis during the COVID-19 pandemic

Big gap between financial statements and market reality



How are the financials expected to change?



Adjusting Financial Statements

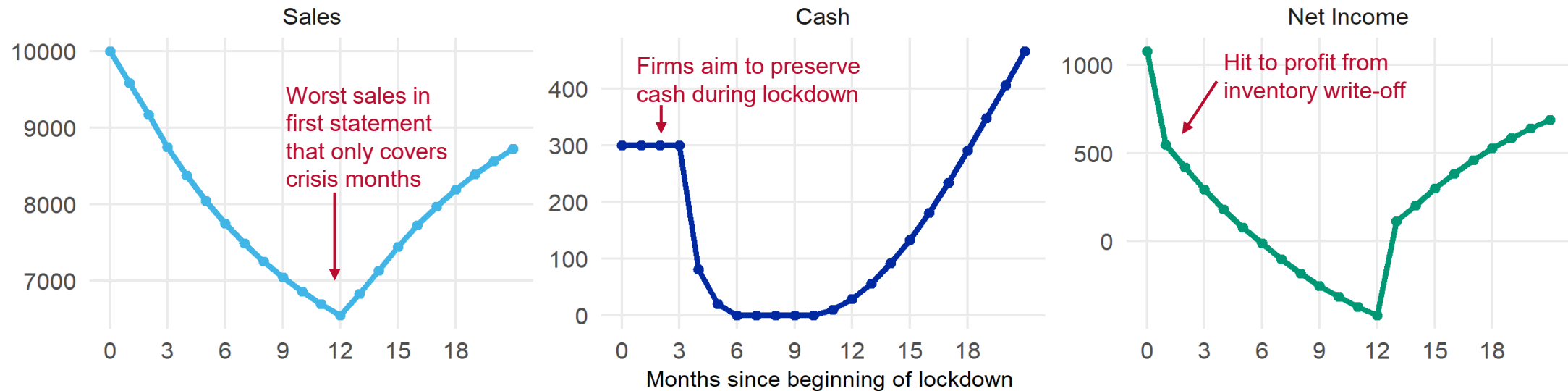
Is it just about the stress impact from COVID?

Impact of COVID
Stress

Recovery Modeling

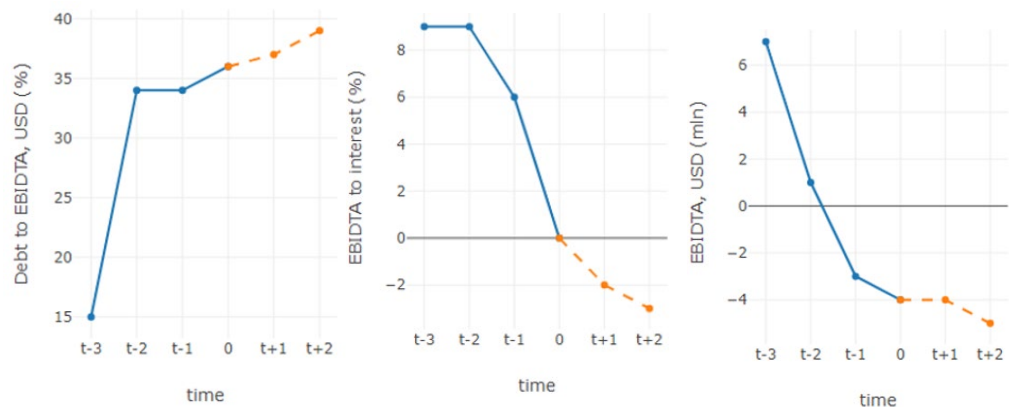
Sector
Considerations

Variable Paths

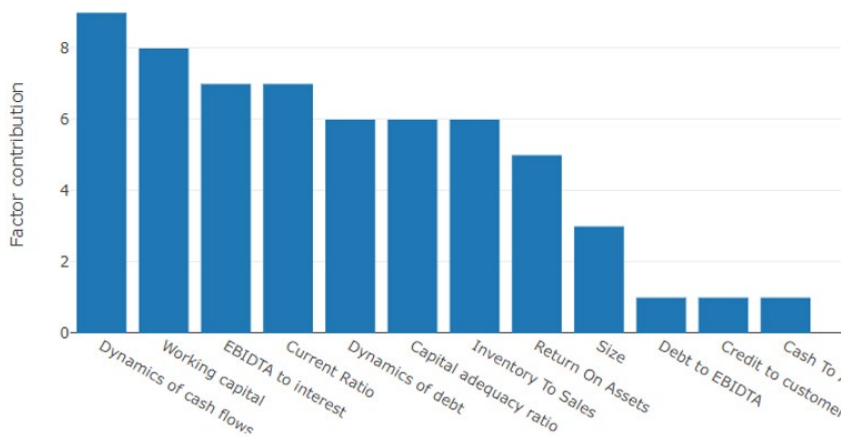


Dynamic Contribution of Through-the-Cycle Factors

Examples of Ratios and their projections



Contribution analysis



Sharp Products LLC

Analysis Setup Peer Selection Historical Statement Projection User-Defined Analysis Reports

Worst Case ▾ Projection Variables Current Assets Non-C Quick Assumptions Linear Regression Calculate Projection Variables Surplus/Deficit Allocation Create Proforma Restore Proforma Projection Information

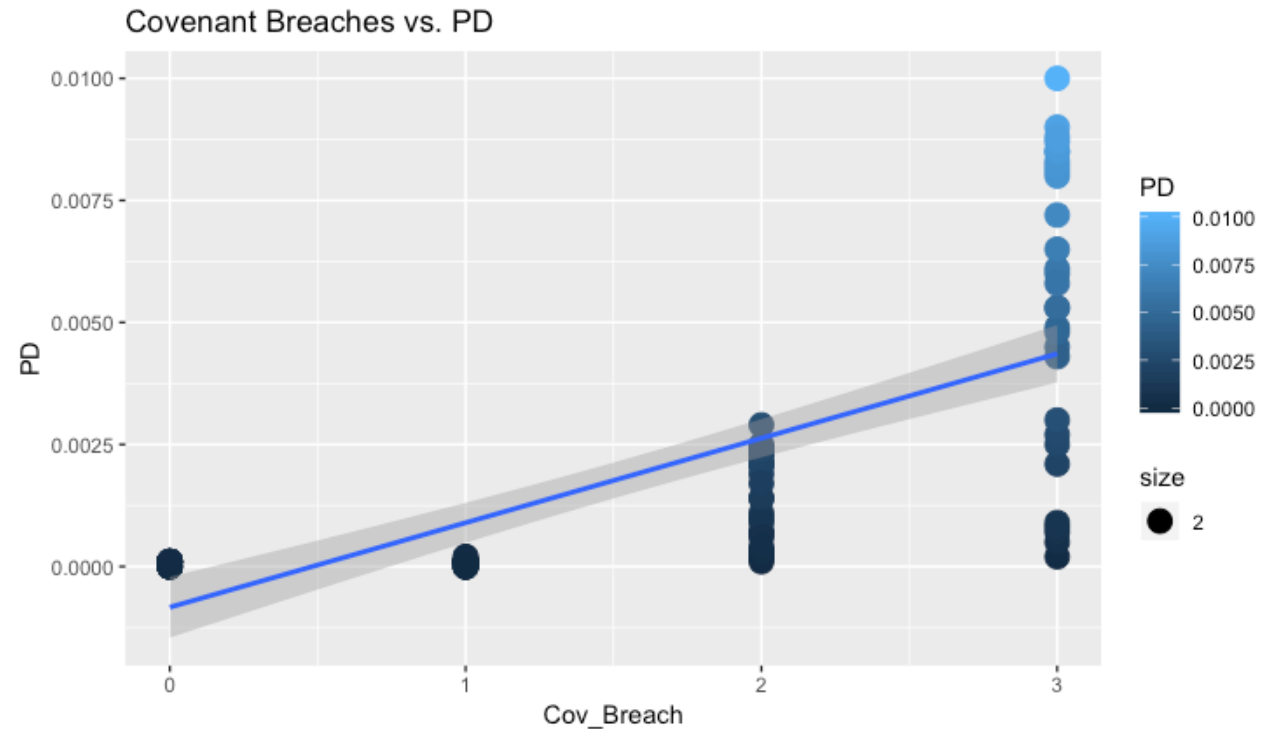
Projection Assumption	12/31/2016	12/31/2019	12/31/2020
2 Statements	12	12	12
Periods	12	12	12
Audit Mthd	Unqualif'd	U	U
Accountant			
Analyst			
Stmnt Type	Annual	Annual	Annual
Accounting Standard			
Status	Reviewed	Reviewed	Reviewed
Consolidation	Unconsolidated	Unconsolidated	Unconsolidated
Currency	USD US Dollar	USD US Dollar	USD US Dollar
Restated	Restated	Restated	Restated
Surplus		0.00	0.00
Deficit		0.00	0.00
Inflation		0.00	0.00
Reconcile To	12/31/2015 - 12	12/31/2016 - 12	12/31/2017 - 12

Projection Variables	12/31/2015 - 12	12/31/2016 - 12	12/31/2017 - 12	12/31/2018 - 12	12/31/2019 - 12
Annual Sales Growth (%)	n/a	-0.26	-47.50	-23.88	5.00
Gross Margin (plus Depr) (%)	34.73	33.01	34.00	33.18	35.00
Operating Expense (excl Depr) (%)	24.80	24.67	26.00	26.36	26.96
Net Accounts Receivable Days	36.63	48.94	97.99	61.19	61.19
Inventory Days on Hand (excl Depr)	77.46	107.87	244.05	500.00	143.13
Accounts Payable Days (excl Depr)	30.74	33.25	66.05	43.35	43.35
Cash/(SG&A + COGS) (%)	1.32	1.16	2.49	1.66	1.66
Capital Spending	n/a	500	0	250	250
Misc Balance Sheet Growth Rate	n/a	23.63	0.40	12.01	12.01
Misc Income Statement Growth Rate	n/a	-0.26	-47.50	-23.88	-23.88
Depreciation Rate (%)	n/a	9.52	4.93	7.22	7.22
Depreciation Rate to Accumulate	n/a	9.52	4.93	7.22	7.22
Effective Tax Rate (%)	31.64	31.09	34.92	32.55	32.55
Interest Expense Rate (%)	n/a	11.56	4.63	8.10	8.10

5 Statements, 0 Hidden, Rounding: Thousands

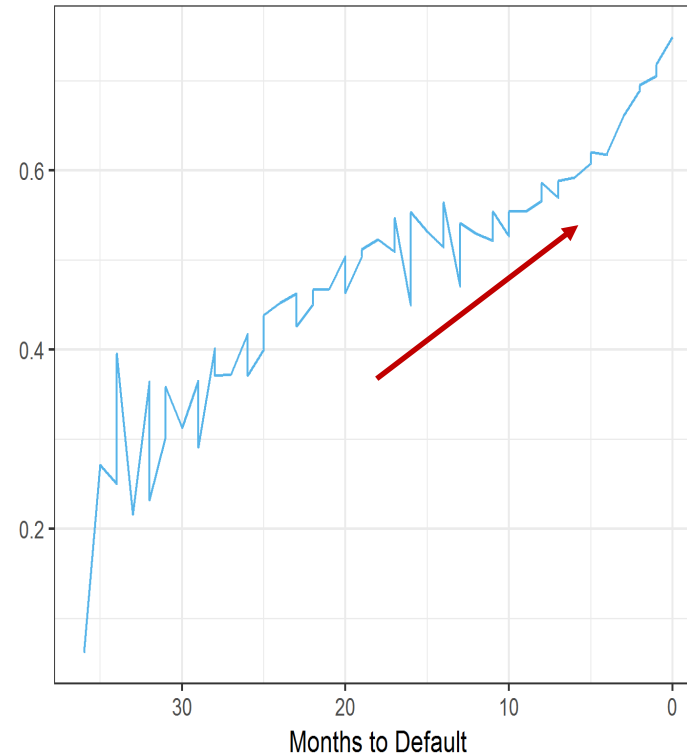
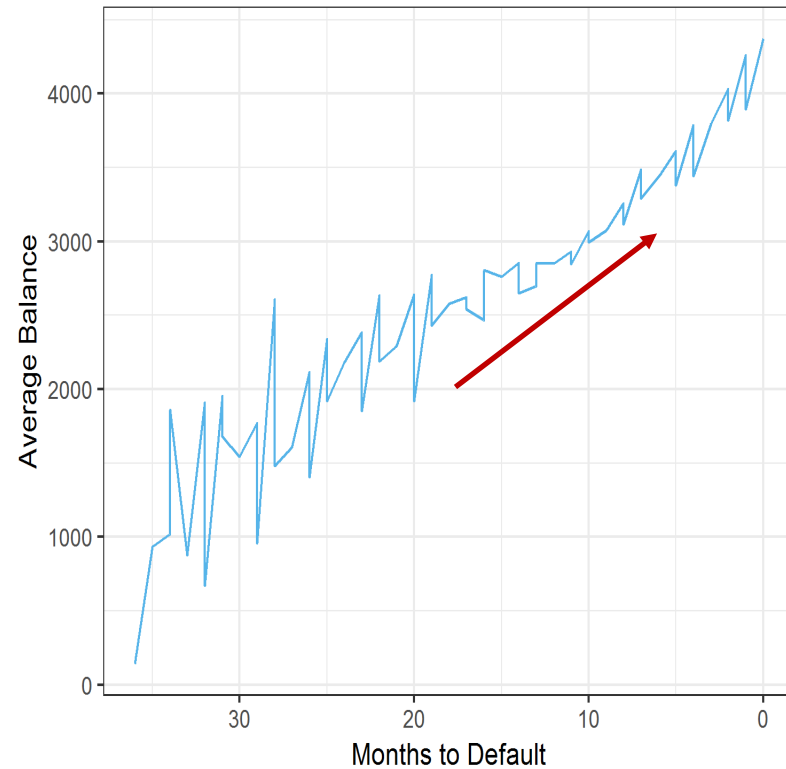
Covenant breaches or delays are clear signs of distress

Our analysis indicates that PD doubles with the first covenant breach or delay and increases by almost 5 times with a second breach or delay



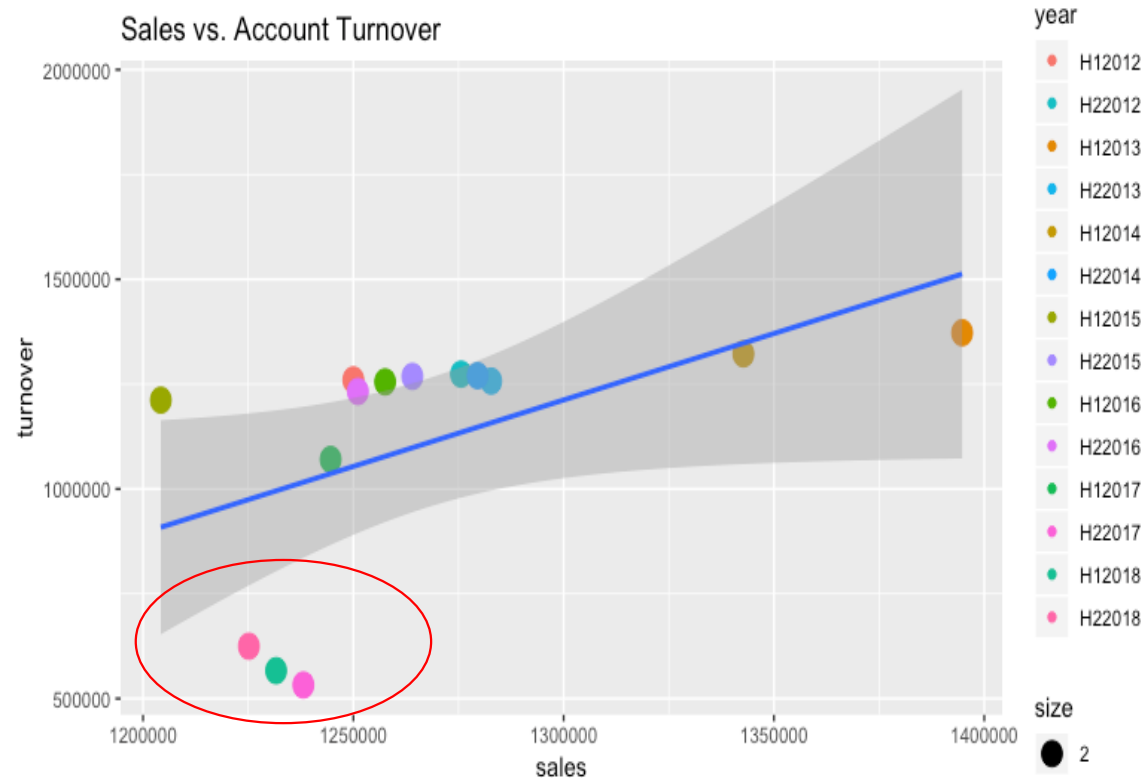
Utilization rate, credit and debit turnovers, transaction data

For defaulted facilities, the balance sharply increases prior to default.



Account Conduct

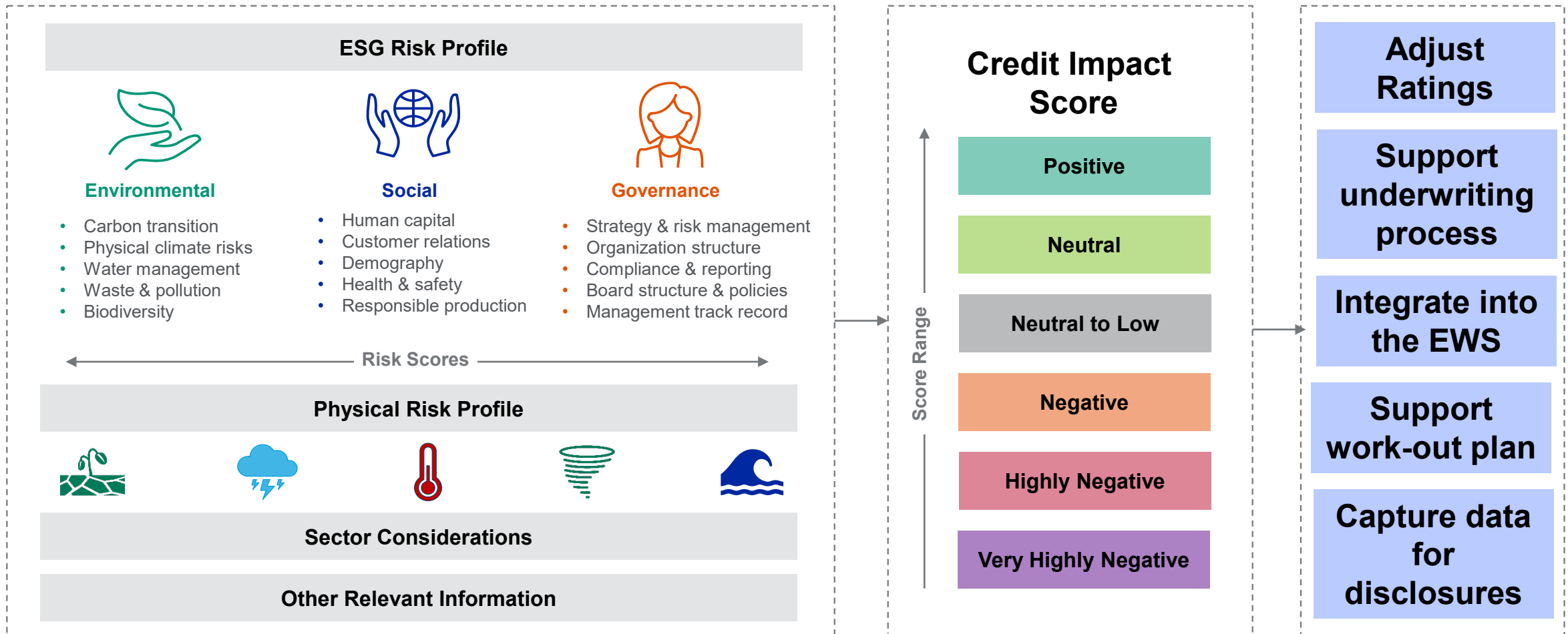
Verify sales turnover vs. account credits (unsupervised learning)



Recent data points (**H22017**, **H12018** and **H22018**) of accounts migrating to default indicate significant reduction in the account turnover vs. total sales

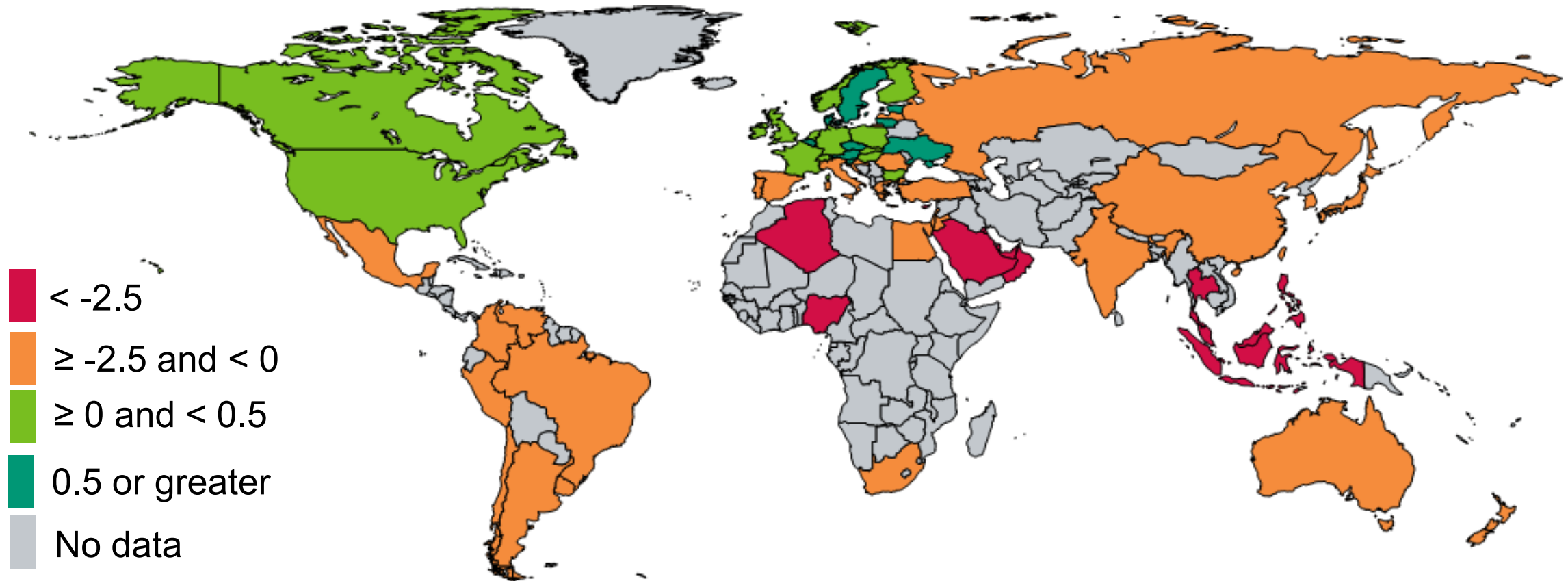
ESG elements have become more relevant

Apply ESG strategy to loan assessment, underwriting and pricing



Differential Impacts on Geographies / Countries

% change in real GDP in 2048 assuming RCP 8.5



Source: Moody's Analytics

Scorecards can bridge the risk modelling gap

Scorecard notching can be applied in the near term

Physical Risks

Heat Stress
Wildfires
Extreme precipitation
Hurricanes & Typhoons
Sea level rise
Water Stress

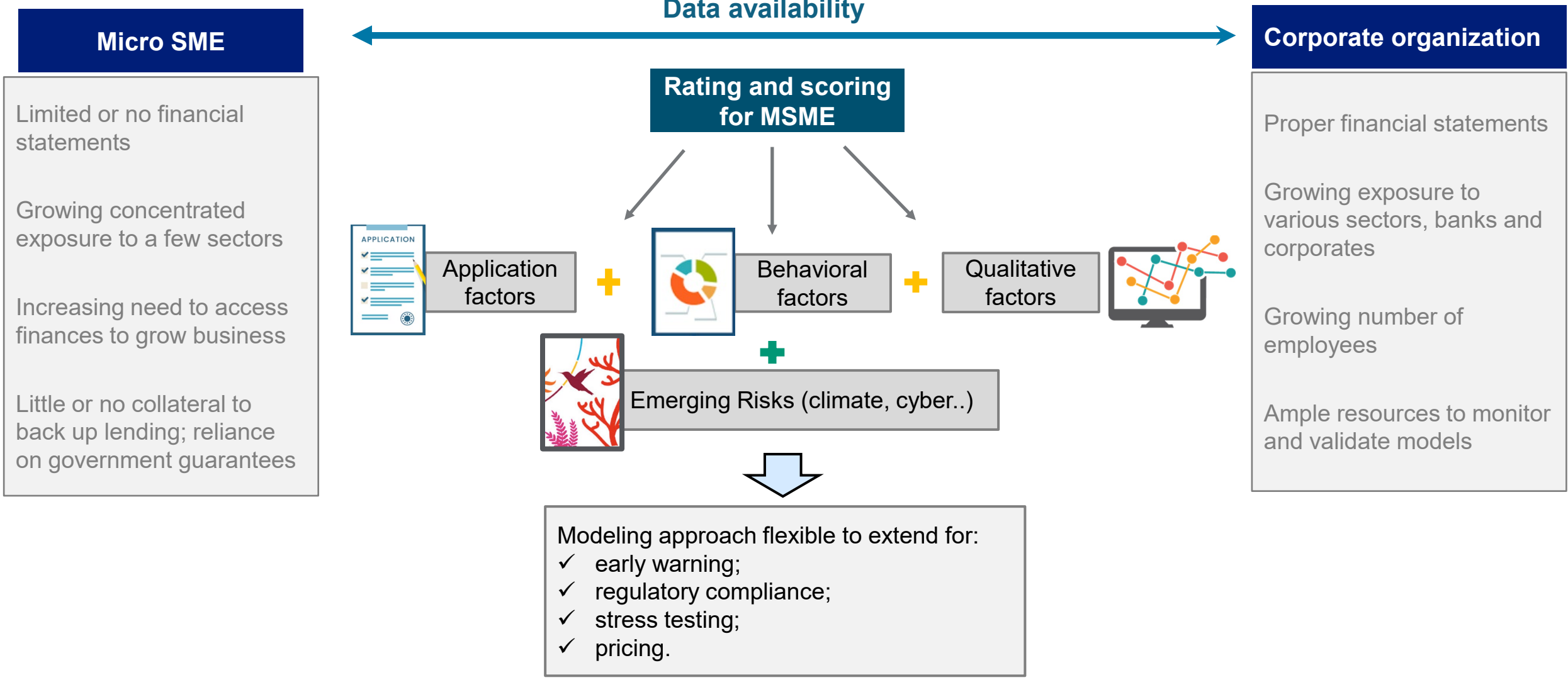
Transition Risks

GVA by SIC/NACE sector
Greenhouse gas emissions by sector
Emissions price (carbon price)
Cropland
Pasture land
Primary energy price: Oil, Gas, Coal, etc.

Hypothetical Scorecard PD Notching - Wildfires

Frequency	> 3 per yr	1-3 per yr	1 every 2-3 yrs	< 1 every 4 yrs
Scorecard impact				
High	+3.0%	+1.8%	+0.6%	+0.1%
Medium	+1.7%	+1.1%	+0.6%	+0.2%
Low	+1.0%	+0.8%	+0.05%	+0.0%
Opportunity	-1.6%	-0.6%	-0.2%	-0.05%

Consistent and flexible models are key

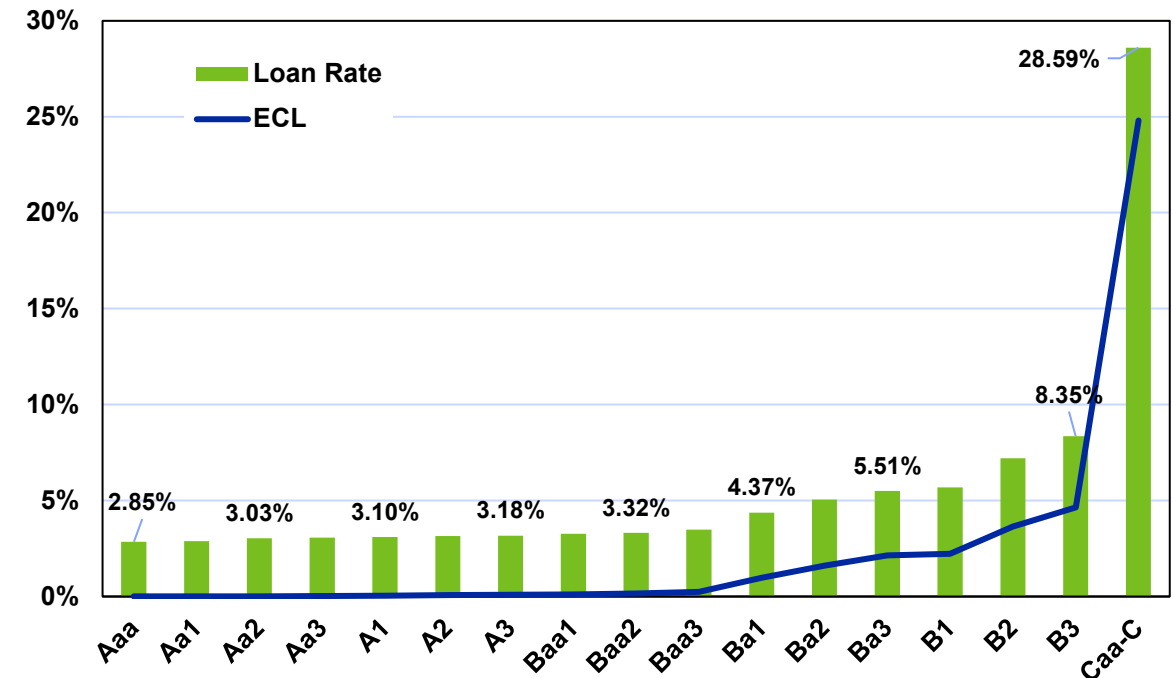


Pricing Profitable SME Loans

Risk-adjusted pricing and RAROC

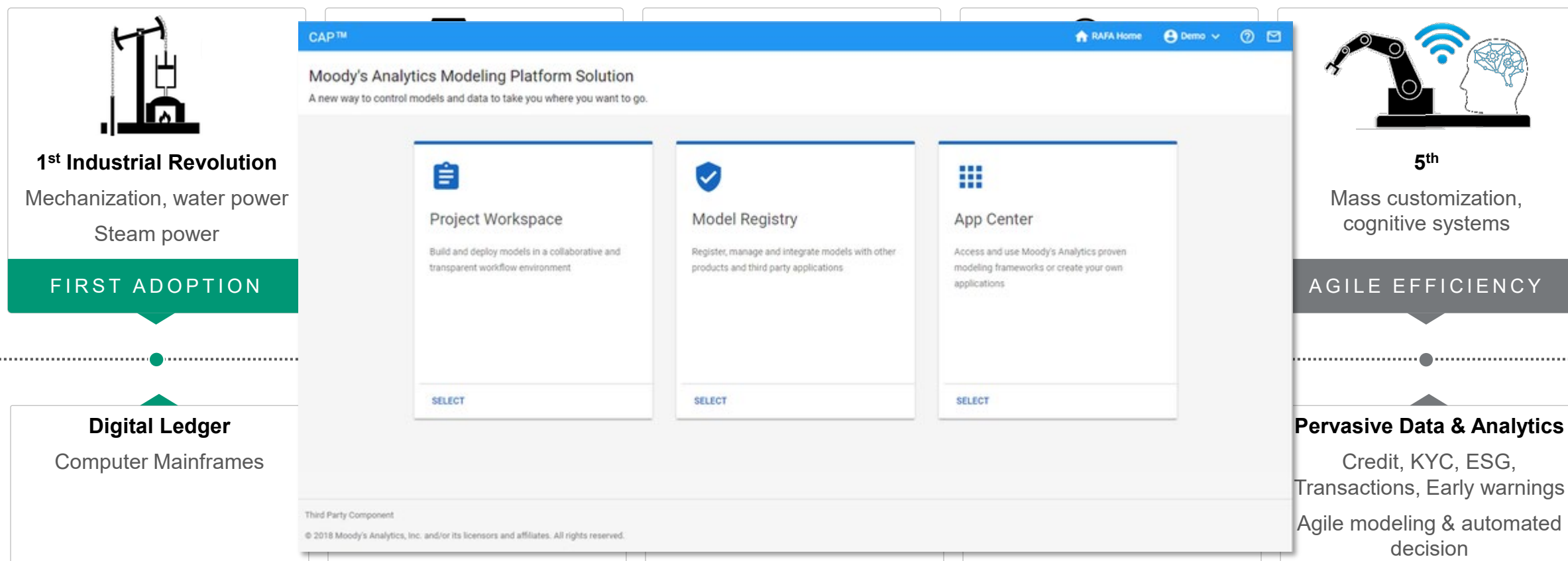


Rating Scale	EL	Capital Cost (WACC 8%)	Funding Cost	Margin	Loan Rate
1 (Aaa)	0.01%	0.05%	0.80%	2%	2.85%
2+ (Aa1)	0.01%	0.08%	0.80%	2%	2.89%
2 (Aa2)	0.02%	0.22%	0.80%	2%	3.03%
2- (Aa3)	0.03%	0.23%	0.80%	2%	3.06%
3+ (A1)	0.05%	0.25%	0.80%	2%	3.10%
3 (A2)	0.07%	0.29%	0.80%	2%	3.16%
3- (A3)	0.09%	0.29%	0.80%	2%	3.18%
4+ (Baa1)	0.11%	0.36%	0.80%	2%	3.27%
4 (Baa2)	0.16%	0.36%	0.80%	2%	3.32%
4- (Baa3)	0.24%	0.45%	0.80%	2%	3.49%
5+ (Ba1)	0.98%	0.59%	0.80%	2%	4.37%
5 (Ba2)	1.61%	0.65%	0.80%	2%	5.06%
5- (Ba3)	2.14%	0.57%	0.80%	2%	5.51%
6+ (B1)	2.23%	0.65%	0.80%	2%	5.68%
6 (B2)	3.64%	0.76%	0.80%	2%	7.20%
6- (B3)	4.65%	0.90%	0.80%	2%	8.35%
7-10 (Caa-C)	24.81%	0.99%	0.80%	2%	28.59%



⑧ Using standard modeling tools

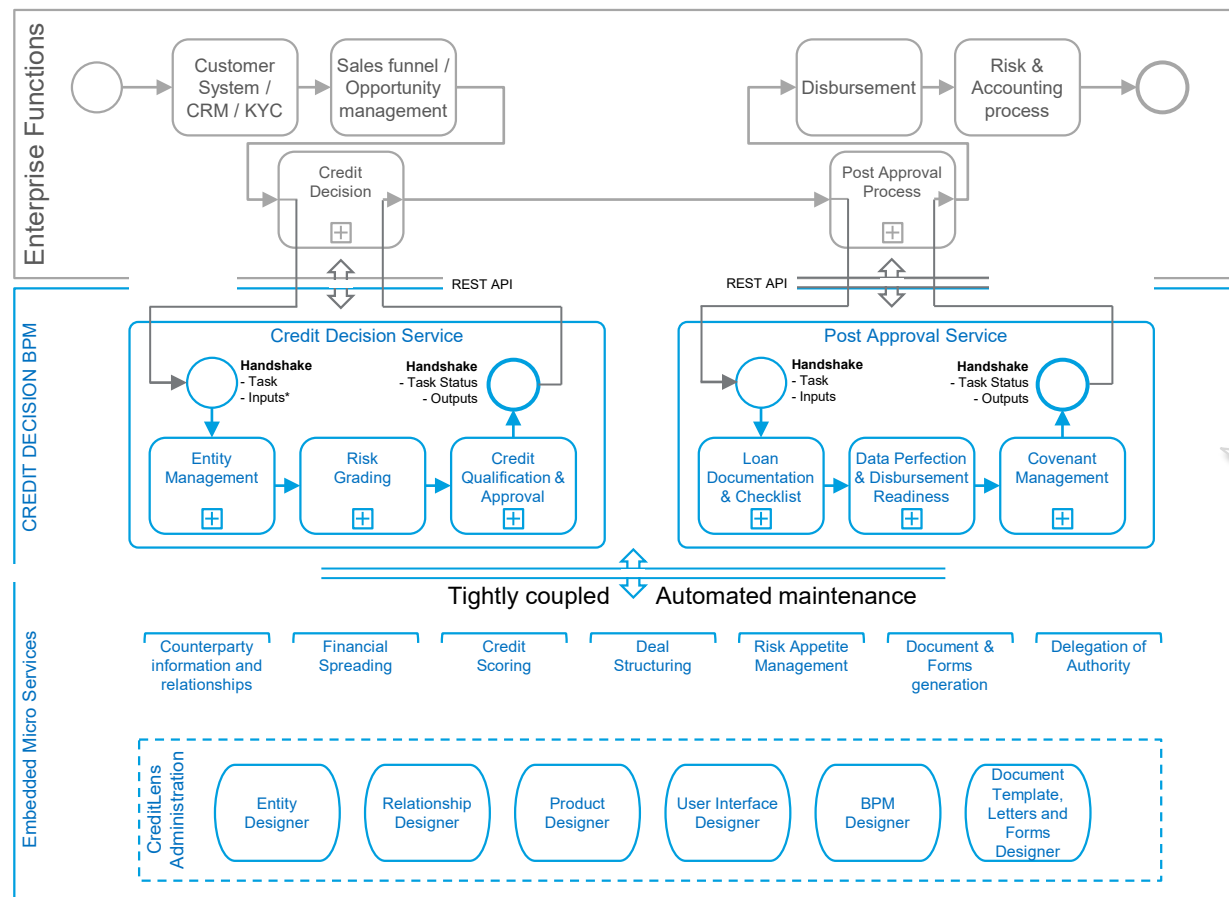
Agile efficiency puts the emphasis on model design, calibration and streamlined deployment



Pricing models, Risks Assessment and monitoring models are deployed to front office,
In native statistical languages such as R or Python

⑨ Using Service Levels

From micro-services to business functions, there are many ways to leverage analytics. Choose what best fits your purpose.



Low level delegation

Exposing detailed data and services to enterprise view means
Complex and costly maintenance

Service Level Configuration

Services exposed to Enterprise View can be configured, to Avoid micro-management And micro-maintenance

10 Manage a consistent practice end-to-end



PROSPECTING

Addressable Market: Who can you reach?

Target Customers: Who do you want to reach and how?



ONBOARDING

Approvals: Who is approved and under what conditions?

Offering: What loan features to offer and what should be the price?



MONITORING

Good borrowers: How to retain borrowers who repay?
Who can reapply for new loans and cross-sell additional services

Low quality borrowers: What is the strategy to manage?
Support / Exit / Mitigate



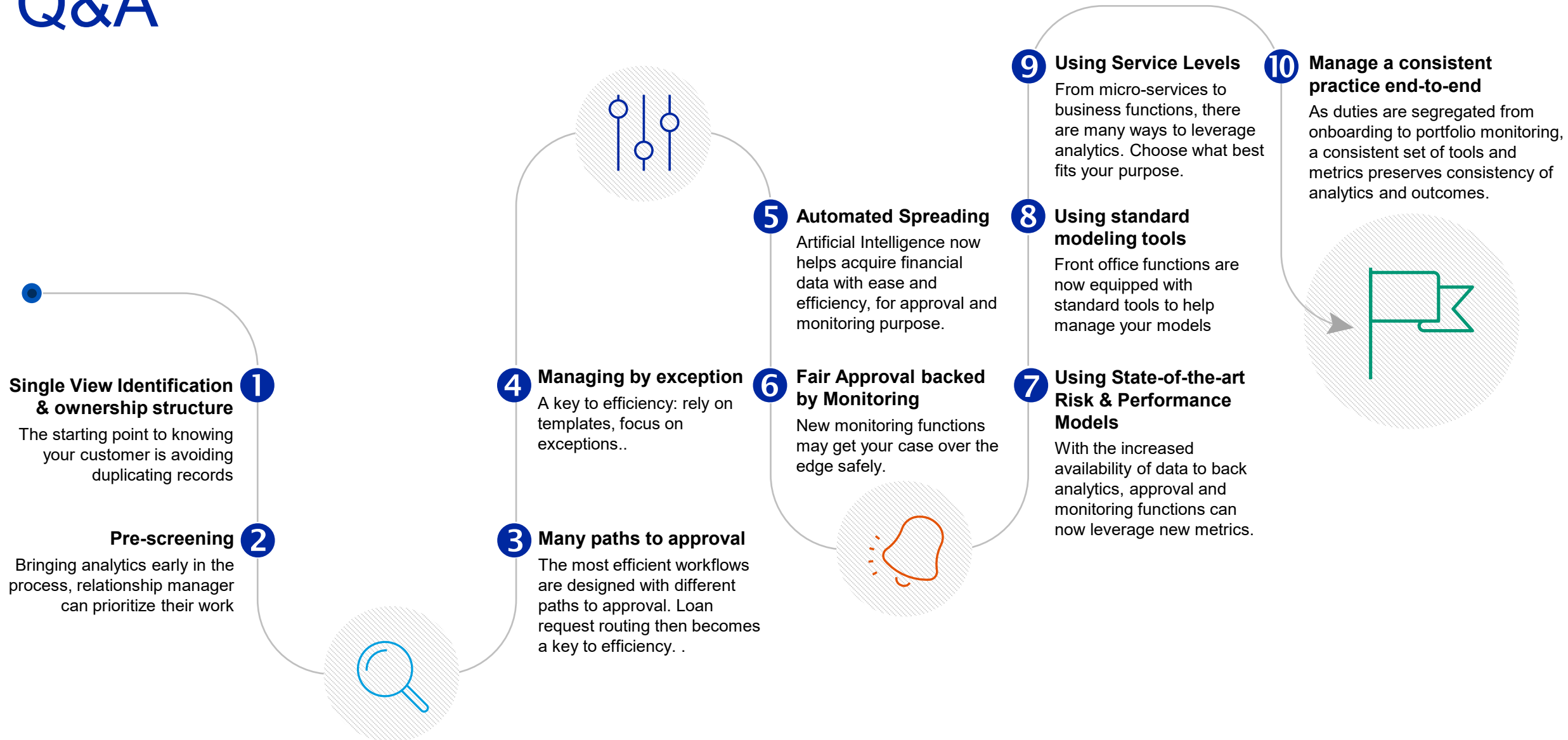
PORTFOLIO DECISIONS

Risk Profile: Refine cut-offs and acceptance criteria

Portfolio decisions: Make changes to market targeting and sectors to expand on

Feedback loop to ensure business model in line with strategic business & risk objectives

Q&A



Four cases of innovation best practice

Accenture showcases four instances of innovation best practice in SME banking: virtual / bot RMs, faster loan approval and automated e-invoicing, additional (non-banking) advice and support services, and sponsoring social communities

VIRTUAL RMs

One UK bank already offers its customers a choice of 'instant access' virtual RM, available by telephone or instant messaging, or a face-to-face relationship with an RM, available by appointment.

FASTER DECISIONING / eINVOICING

Numerous companies offer rapid online loan decisioning through greater use of STP and automation. In the same vein, several major UK banks are offering e-invoicing services, which alleviate working capital issues by enabling business customers to draw down funds more rapidly.

As banks seek to reduce the time it takes to deliver services, many may consider assessing real time account opening. Banks may allow customers to open accounts online, by partnering with key organisations such as utility companies or governments, that allow for rapid KYC (know your customer/know your SME) to confirm address and identity details automatically.

ADVICE & SUPPORT

One mid-sized UK bank offers its customers access to a tiered range of advice and support offerings, from basic credit control templates, online business management tools, and newsletters, through to HR, Health & Safety and legal advice tools, discounts on business software, and representation to local, national and European Government.

The flexibility of such a system is a key factor driving uptake. As businesses grow, the level of support available grows with them, rendering the difficult transitioning phase from small to medium, or medium to large less likely to result in a switch away to a competitor.

SOCIAL COMMUNITIES

There have been various social media ventures in recent years, where companies have allowed others to access their customer base with digital advertising.

Results have been mixed, but SME banks have a unique opportunity to use their online presence to market their own products and services as well as those of their SME customers.

Not only does this allow SMEs to reach new potential customers, but the idea could be leveraged further to offer exclusive deals and money saving vouchers.

How can we Help in Straight Through Processing ?

Origination

- Customer Details and Interactions
- Initial Credit Assessment
- Initial Term Sheet



01

Onboarding

- Document Collection, Verification & Storage
- Customer Due Diligence (KYC / AML)



02

Credit Risk Assessment

- Financial Analysis
- Customer Qualitative Assessment
- Industry, Regulatory &
- External Factor Assessment
- Obligor Rating



03

Deal Structuring & Risk-Based Pricing

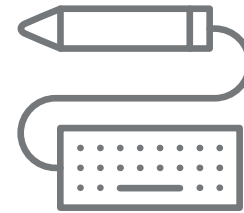
- Structure Facilities & Collaterals
- Define Pricing
- Calculate RAROC and adjust pricing



04

Facility Rating & Expected Loss

- Allocate collaterals to facilities optimally
- Calculate Facility Rating & LGD
- Compute Expected Loss



05

Approval & Post Approval Processes

- Automated Delegation of Authority
- Individual / Committee Based Approvals
- Post-approval documentation and disbursement



06

CreditLens can support innovation across the board

REAL-TIME / SAME TIME

- Real time integration across all channels (channel-agnosticism)
- Real time processing of credit applications

(360°) CUSTOMER VIEW

- Ability to combine Customer Due Diligence with News, Social Media, Bureau & regulatory data and information collected in-person in a meaningful manner

TRANSPARENT ("GLASS") BANKING

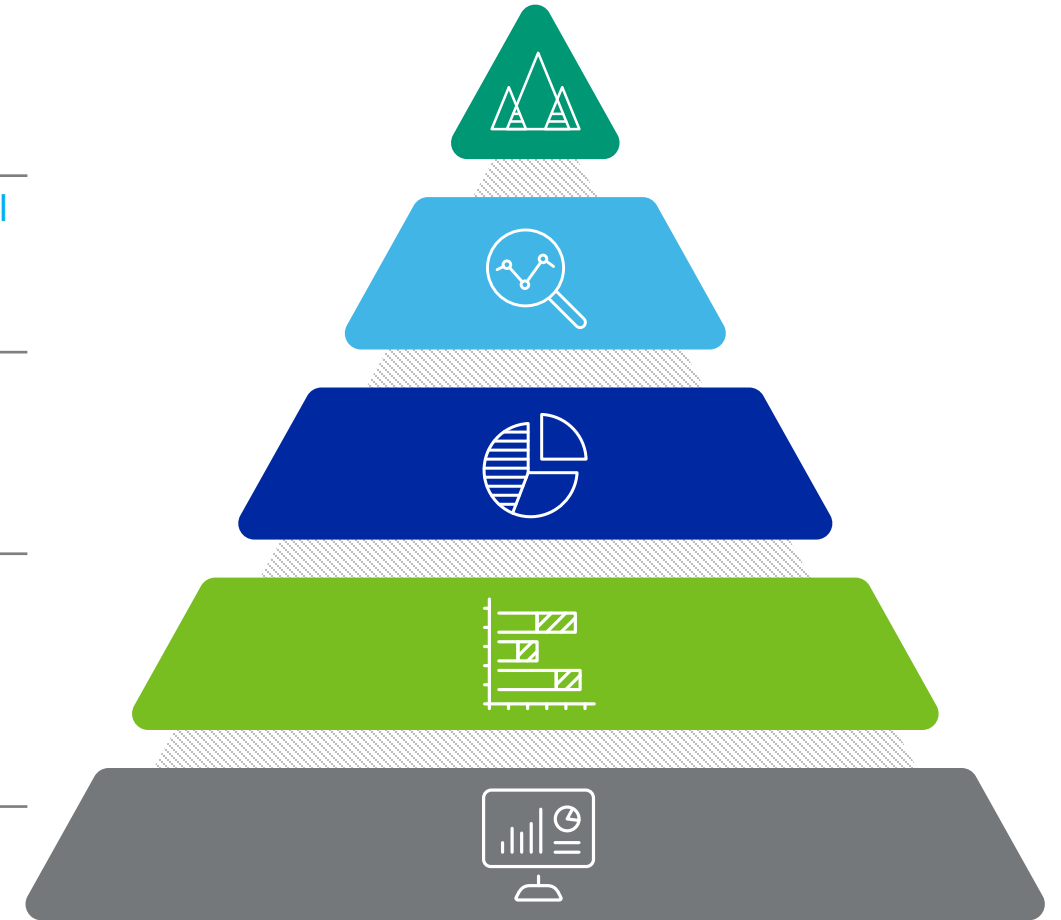
- Customer is able to self-service end-to-end (e.g. check on the progress of their loan application)

SOPHISTICATED ANALYTICS

- Using large volumes of data that banks can/will be able to collect on customers is a major asset
- Leverage data to develop finer psychographic segmentation, customised products, real time, location-dependent offers or alerts

TAILORED / PRODUCTS

- Ability to offer highly customised products and services
- Customer control / self-design of products and services
- Customised pricing and processes



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Area you think will have the greatest impact?

① Start presenting to display the poll results on this slide.



MOODY'S
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