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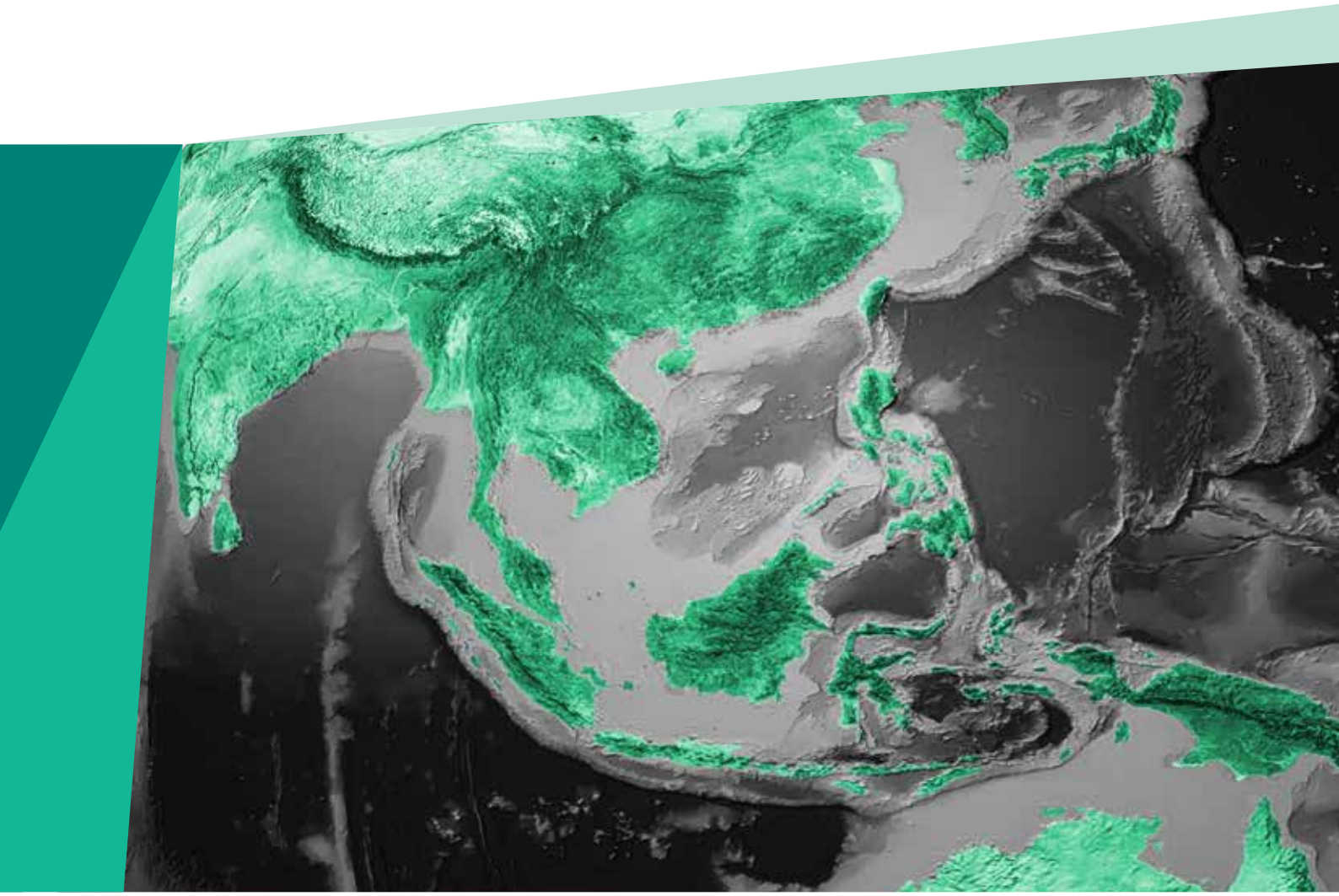

ASIA PACIFIC RISK CENTER: FINANCE AND RISK SERIES

NEXT GENERATION RISK MANAGEMENT

TARGETING A TECHNOLOGY DIVIDEND

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THE RISK MANAGER'S **CONUNDRUM**: BEING ASKED TO DO MORE WITH LESS, IN A MORE UNCERTAIN WORLD

Many drivers are shaping the context of risk management today. Macroeconomic headwinds, global geopolitical uncertainty, and ever more frequent and damaging cyber events have been in the vanguard of challenges leading to heightened risk perceptions. At the same time, investment in risk management is under pressure. The changes in banking regulation, to address shortcomings highlighted by the Global Financial Crisis, have transitioned from the uncertainty of planning stages to implementation; these coupled with low productivity growth are pressuring returns.

MACROECONOMIC HEADWINDS

Macroeconomic headwinds driven by global and Asian debt levels,[1] low growth, anti-globalization sentiments, increasing policy uncertainty and the hike in US interest rates, represent significant challenges. These challenges are particularly pronounced for export-dependent economies, which comprise most of Asia. As the saying goes, if China catches a cold, so does the Pacific and Australasia. Concurrently, many leading economies in Asia Pacific such as China, Singapore, and Australia are struggling to maintain labor productivity and productivity growth. Productivity-enhancing policies are required, including capital investments in new technology and workforce development. New productivity strategies will require modifications to risk management. Risk teams need to use their established capabilities to anticipate potential implications of this context, and develop new capabilities for managing risks arising from new technology.

NEW AND HIDDEN RISKS

Global perceptions of risk, as measured in Oliver Wyman's annual work with the World Economic Forum,[2] are more elevated than ever. Moreover, the interconnectedness of risks compounds their impact – geopolitical risks mean that economic shocks are both more likely and potentially more severe than previously.

At the same time, technological advancements (such as open banking, online/mobile platforms) are exposing institutions to emerging risks such as data fraud and cyber security threats, with a stark reminder served by the WannaCry and Petya ransomware attacks. Cyber threats while not a new area of risk for financial institutions represent a significant cost, with the cost of cyber-attacks forecasted to rise from $81 billion in 2016 to $2.1 trillion by 2019.[3] Strategic risk from technology that can disrupt business models also needs close attention: the "unicorns" of the digital age may become the "model T" to banking's horse.

1 Asian Nations Swimming in Debt at Risk from Fed Rate Hikes. Bloomberg 2017

2 The Global Risks Report 2017, 12th Edition

3 Asia Pacific Risk Center Marsh & McLennan Companies, 2017. Cyber Risk in Asia-Pacific

THE RENEWED REGULATORY LANDSCAPE

A "deluge of regulation" has followed the dramatic events of the Global Financial Crisis. This has created substantially increased expectations of risk management as well as raising the financial cost of risk-taking for supervised entities. Asia Pacific regulators are following international precedent with increased oversight of multiple areas including stress testing, recovery and resolution planning, cyber resilience, as well as new regulations in required capital estimation. These increasing regulatory requirements have forced banks to ramp up compliance activities, placing pressure on risk management resourcing.

The result of this context is that risk teams are being asked to do more with less, in a more uncertain world. Where regulators have agreed extra steps need to be taken to protect depositors and taxpayers, risk teams are asked to execute while constraining cost growth. Where the business landscape seems more uncertain, with dramatic changes coming from technological sources, risk teams are again expected to anticipate and solve for newer uncertainties with the same capacity. A productivity gain in risk is a critical piece in addressing this conundrum, and technology must play a key role.

TARGETING A TECHNOLOGY **DIVIDEND**

While radical technological change is part of the problem for risk management – at least in terms of the strategic threats and risks, such as the implications of cyber risks – it must also be part of the solution. Technological advancements offer a substantial opportunity for the risk function to target efficiency gains. Risk must target a technology dividend in order to maintain "match fitness" and build new capabilities, to address rising demands with limited resources.

Advanced analytics, non-traditional data, natural language processing, together with process digitization, present compelling opportunities for risk management. This includes raising productivity, greater insights produced from new technology, and potentially achieving a competitive advantage in a digital world. Although cashing in on a technology dividend in this way presents a compelling prize, it will require wholesale change in current practices. Senior leadership focus and support is critical as multiple functions will need to learn new skills and change their habits.

Getting the most from targeting a technology dividend for risk will require:

1. Comprehensively mapping the potential for efficiency gains across risk processes
2. Understanding competitive landscape and relative position to peers in use of digital risk tools
3. Targeting horizons of digital ambition for future risk management
4. Anticipating, in planning the pathway, implications for long-term talent needs and hiring and developing early
5. Ensuring consistency of the digital risk plan with global and local regulatory expectations and upgrading regulatory engagement to partner effectively on the journey

There are a myriad of places in the day-to-day activities of risk management where gains can be realized through the use of technology. It is vital to avoid a "boil the ocean" exercise. Instead, the adopted approach must be practical and affordable in the current business climate. A critical first step is to identify the priority opportunities. We recommend three major levers be considered to evaluate potential opportunities across the risk value chain, with the objective of targeting 2-3 initiatives to kick-start a broader technology pivot:

Data: Financial institutions typically suffer an embarrassment of riches with data; specifically, masses of data, but too many "sources of truth" leading to confusion, with new sources being added constantly. Banks need to materially invest in organizing their data so they can both generate deeper insights from "old" data, and gear their risk processes to benefit from new sources. New sources need to be considered, from cloud accounting, through to APIs for Open Banking, to social media, geolocation, rainfall, shipping, and more.

Analytics: Machine learning and other advanced analytics have become affordable and readily available. They are already providing dividends through applications in underwriting and collections. Developing an advanced analytics capability is table-stakes.

Processes: Time-to-money in banking is still too-often 20 days or more, even with digital banking products where real time decisions or pre-approved limits are available. Credit underwriting is just one of many risk processes where digitization offers significant opportunities for efficiency gains.

DATA

Data are being created at unprecedented volumes – over 90 percent of data currently available was created in the last five years. As the ability to manage and access this data has become better and cheaper, organizations are exploring the use of varied and novel data sources to unlock greater insights. Financial institutions are already incorporating such data into the analysis of credit assessment, AML/KYC,[4] and collections.

Concurrently, there is a drive for greater data openness – for example, both the Australian and Singapore government have launched portals that enable public access to data from government agencies,[5] and are promoting Open Banking and ever greater transparency. As part of the ASEAN Banking Integration Framework, the Philippines, Malaysia, Thailand, and Indonesia have entered into various agreements to open up the banking industry with greater financial integration across South-East Asia.

However, many banks are only scratching the surface of how they use internal and external data. For example, significant improvements in efficiency can be achieved through better mining of existing data within transaction accounts and other internal databases. A further boost from incorporating external data sources including Open Banking and beyond (e.g. social media, energy, telco, and retailers, and other financial services such as payments interchanges) will become the standard for risk insight generation in time, but need not be an immediate priority. Irrespective of the approach chosen to progress in improving data management, it is critical to select a use case. A good example is early warning of deterioration in credit quality.

4 Anti-Money Laundering (AML) and Know Your Customer (KYC)

5 Open data is the free use of data without restrictions from copyrights, or other mechanisms of control. For example, government websites publish public data in Australia (data.gov.au) and Singapore (data.gov.sg)

CASE STUDY 1

DATA TO ENHANCE CREDIT "EARLY WARNING"

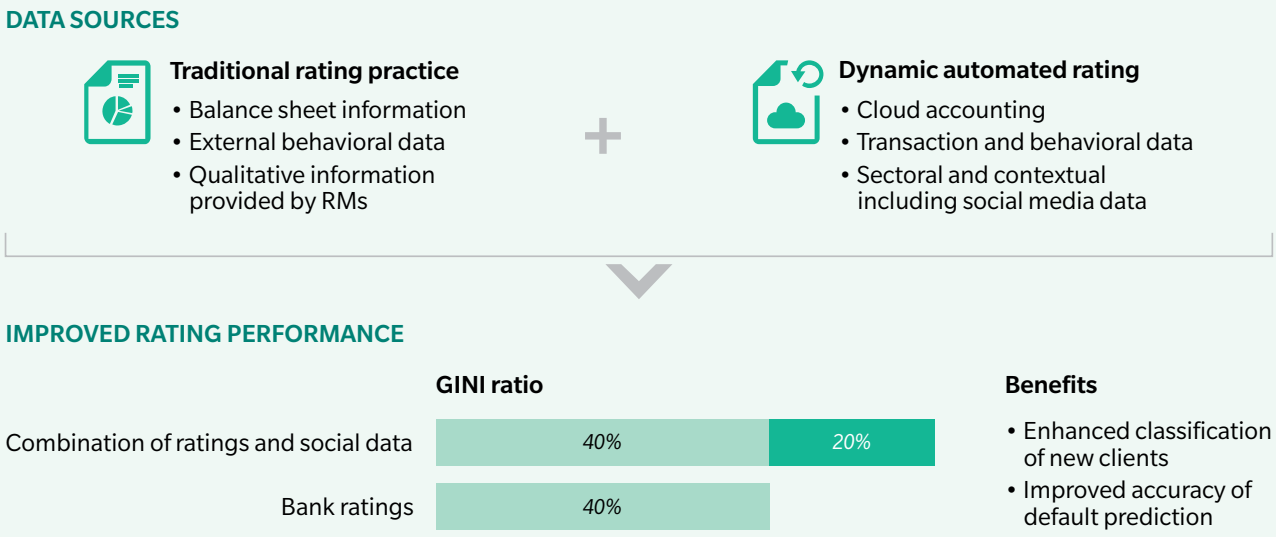
Many banks face challenges in proactively identifying non-performing clients. Typically, this is driven by traditional rating models, which rely on financial data (for example, balance sheet information, and credit bureau reports), and qualitative information provided by relationship managers. Financial factors are calculated annually, requiring detailed financial spreading analysis, leading to significant workload and cost. Non-financial factors are typically determined by the branch and underwriting teams through manual and subjective analysis. None of this provides a real time, forward looking view.

In addition to ratings, banks monitor early warning signals of potential worsening of client creditworthiness. These typically include stock-price or sector alerts, or proxy indices. Although these types of indicators provide valuable insights on increased risk for each client, their horizon is often too short to take any pre-emptive action. Corrective action requires a set of more forward-looking indicators.

Transaction data, social media, and other sources can drive much closer to real time customer level risk insights, and produce dividends both in problem loan management and in lowering initial underwriting costs. Banks are already using transaction and cloud accounting data to produce faster, more reliable risk assessments for small business customers. Extending the scope of this and working towards including "sentiment analysis" techniques and other methods will produce better risk estimates faster and more cheaply than today. These risk estimates can be maintained much closer to real time in an automated fashion, and produce more forward-looking measures of risk.

In our client work, we have found social media data to provide predictive measures of enhanced default risk up to six months ahead of traditional indicators.

EXHIBIT 1: EARLY WARNING RATING SYSTEM



Source Oliver Wyman analysis

ANALYTICS

Regulation has constrained the application of advanced analytics in banking. Pillar 1 tools for Basel 2 credit purposes have almost universally been based on logistic regression or simple stratification. Yet the mass availability of open source software that enables machine learning and advanced analytics, and the leap in predictive power afforded by these approaches, mean that change is coming.

Machine learning, natural language processing, and self-learning algorithms are not just coming to risk management, they are already here. Credit risk modeling is being significantly improved, card firms are driving fraud discovery down to milliseconds, and natural language processing is revolutionizing conduct monitoring forensics, and optimizing debt collection rates.

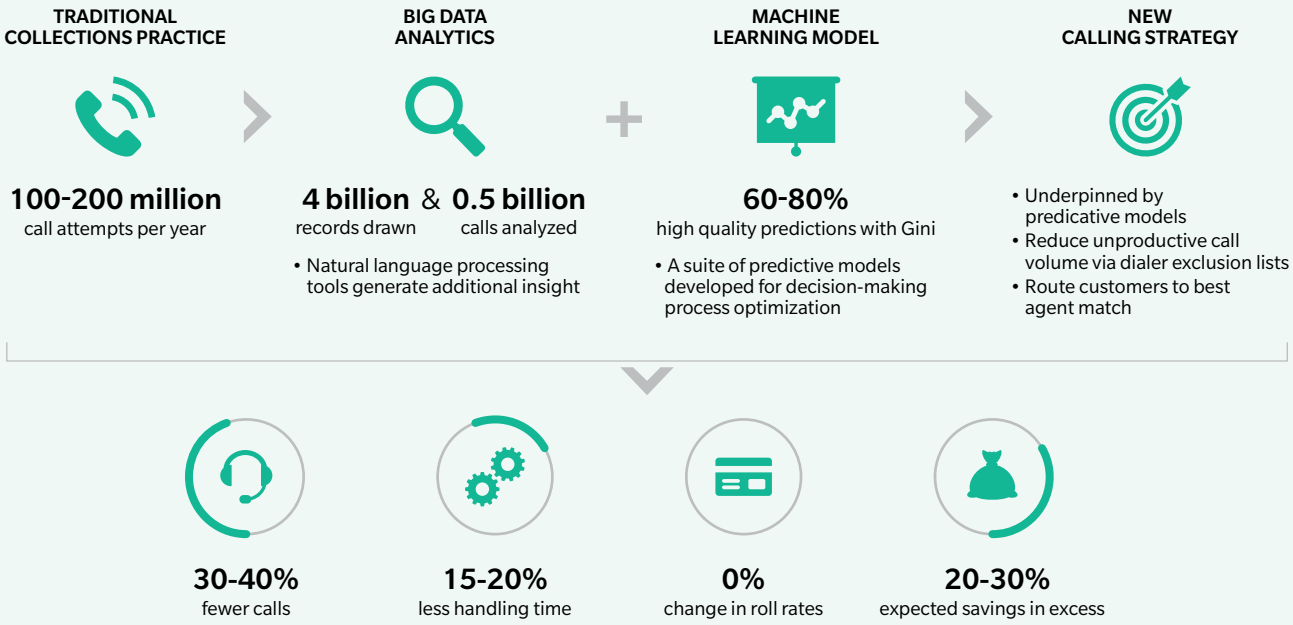
CASE STUDY 2

ADVANCED ANALYTICS APPLICATION IN COLLECTIONS

Optimizing repayment collection rates is a never ending task. Traditional collections practice involves a high volume of calls, where a vast number are unsuccessful. Many banks are trying to move to a "self-serve" or "single contact" model. Getting there quickly requires rich insight into when and how each customer will respond to different forms of outreach.

Machine learning models have an important role to play. Using natural language processing and advanced analytics, Oliver Wyman has built collections strategies that lower call volume by over 30 percent, at constant or improved recovery rates. Efficiency gain of this magnitude directly benefits the collections bottom line.

EXHIBIT 2: ADVANCED ANALYTICS IN COLLECTIONS EXAMPLE



Source Oliver Wyman analysis

PROCESSES

Many risk processes in traditional financial institutions are still heavily paper-based, with large numbers of manual interventions and long turnaround times. Inconsistency in process standards and a lack of streamlining lead to variations in service levels and a heavy reliance on people and "bricks & mortar" networks. Digitization is already being applied by financial institutions as a cornerstone of productivity strategy. Yet risk processes in credit, which typically represents the majority of a bank's risk capital, too often remain stubbornly manual.

Credit automation will become the norm for financial services. Sometimes this will mean identity only lending. Sometimes it will require just a handful of keystrokes. Leaders are already building this future: FinTechs such as OnDeck and Kabbage, and banks including National Australian Bank and Wells Fargo have gone public on their time-to-decision in SME lending. Other innovators are bringing this to staple products such as mortgage.

Multiple risk processes have large potential for digitization, such as market risk control automation, stress testing or ICAAP, or compliance and reporting, just to name a few. Digitization also provides opportunity to create new risk monitoring processes for managing emerging or hidden risks. For example, conduct risk has become a key risk for financial institutions driven by the recent spate of conduct issues in Europe and US, but more recently by conduct issues in other markets including Asia-Pacific. By combining machine learning and transaction data, financial institutions are already able to automate conduct monitoring for mortgage underwriting.

CASE STUDY 3

DIGITAL CREDIT

Traditional loan applications involve a lengthy process and require applicants to provide significant amounts of documentation from various sources, such as banking statements and business registration files. With customers increasingly demanding simpler processes and faster approval times, multiple FinTechs and several financial institutions have responded by creating near real time, digital underwriting centered on three features.

RADICAL SIMPLICITY

A redesigned and simplified application process, aligned with customer needs instead of just digitizing current paper-based processes. Convenient channels for access anytime, anywhere.

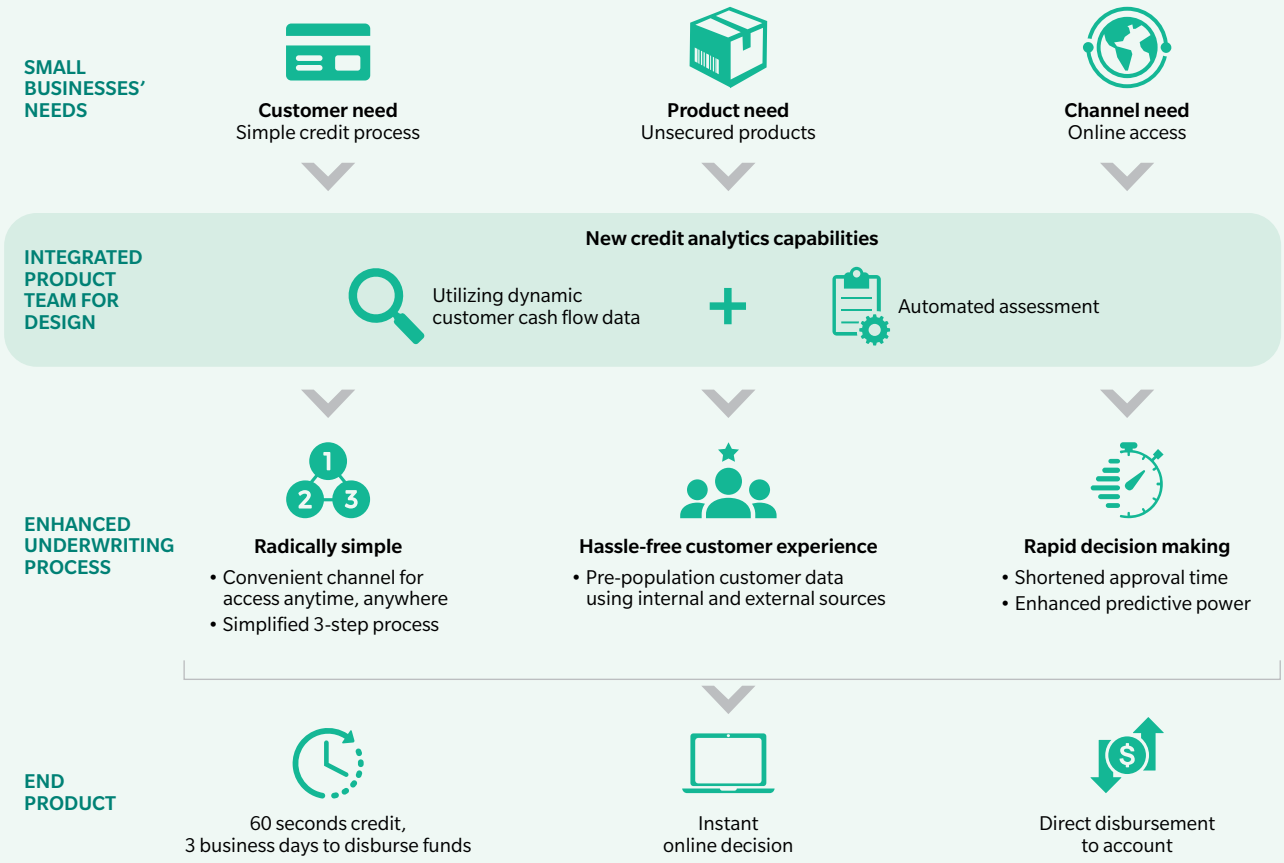
CUSTOMER EXPERIENCE THAT IS "HASSLE-FREE"

Pre-population of most information required, by integrating customer data from internal and external sources. Customers rarely required to provide (or validate) information that the bank already has.

QUICK DECISIONS

Advanced analytics built into the decision framework, employing new data sources.

EXHIBIT 3: ADVANCED CREDIT UNDERWRITING PROCESS



Source Oliver Wyman analysis

HORIZONS OF CHANGE

Fully benefitting from the digital revolution will mean a complete change in risk management processes, people, systems, and data. However, this should not prevent organizations from getting started given the attractive returns that can be gained. These are illustrated in the examples above of highly targeted interventions that have compelling business cases that build towards a future state.

Nevertheless, the organizational implications of digital for risk management cannot be fully ignored. A truly digital risk function will look very different. Thinking today about the people implications is of high value given the timeframes over which change can be achieved in human systems. We see three horizons of change for the risk organization in the context of digital opportunities:

LEVEL 1 – TRADITIONAL RISK FUNCTION OPTIMIZATION

Most financial institutions have undertaken multiple initiatives to streamline and automate their existing risk value chain. Although traditional strategies such as automation and near/offshoring remain a major source of efficiency gains, the full value chain of core risk activities including risk governance remains in-house. We have seen 15-20 percent efficiency gains typically achieved through what could be termed "traditional" optimization.

LEVEL 2 – PROGRESSIVE RISK FUNCTION FOUNDATION

Once an advanced risk data and IT architecture is in place, the importance of individual and organizational capabilities to extract insight from them and manage these systems becomes paramount. Coding skills and capabilities in advanced analytics will be essential. Risk leadership will require a mix of traditional risk and analytics background, but with strong capabilities in managing technology and operations. Laying the foundation for the human capital and career path implications of this phase early will be vital.

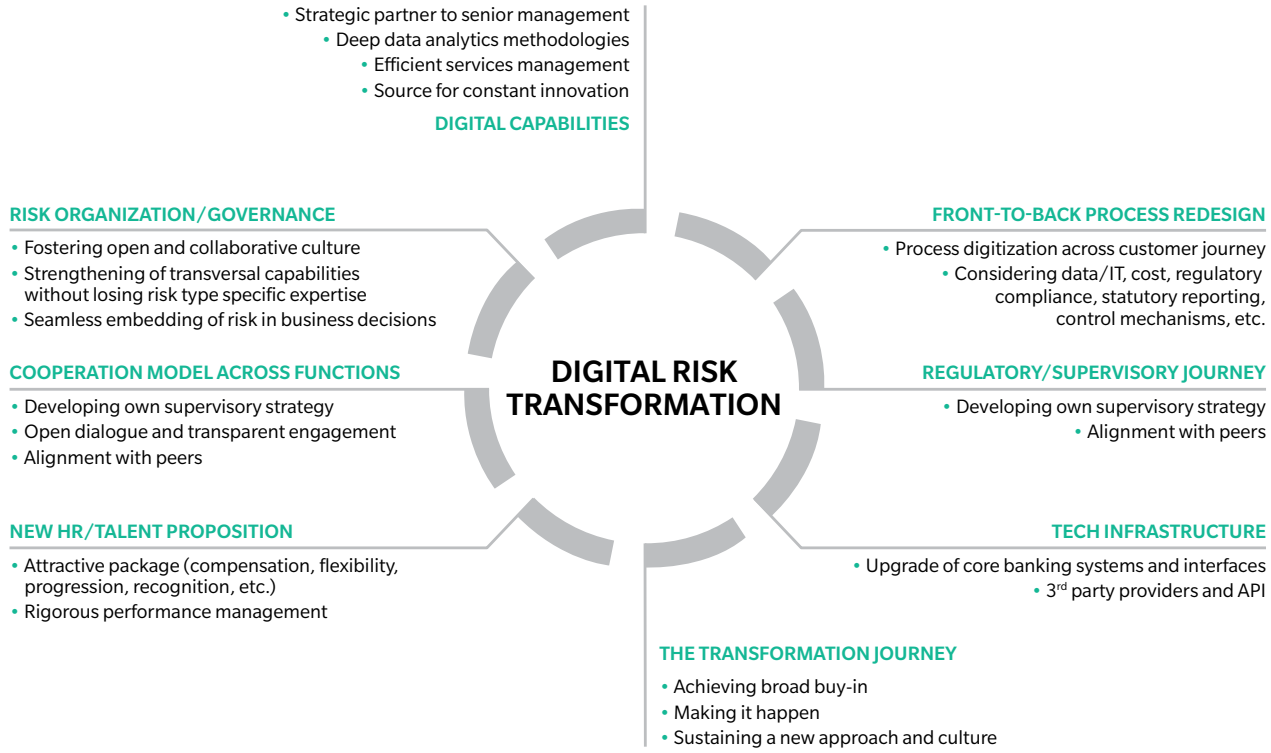
LEVEL 3 – FULLY DIGITIZED RISK FUNCTION

Ultimately many risk processes, which today are at the heart of bank's value proposition, may no longer remain owned by them. While many different scenarios can be envisaged, one more likely scenario is risk "stacked in the cloud". In this scenario, organizations no longer need a fully in-house risk management function. The bulk of risk analysis and processes is outsourced to third parties. Vendors and utilities leverage larger scale and latest technology to provide standardized solutions, risk estimates and releases through APIs. Importantly however, oversight and control remains in-house. The focus of risk shifts to "scanning the horizon" activities to identify new risks and manage vendors, providers and interfaces. Team sizes in any area of high human touch will diminish, resulting in expected 60-70 percent efficiency gains. The lead candidate area for headcount reduction will likely be credit, as risk decisions are increasingly supported by analytics.

Compliance will be a fast follower, as automation and analytics streamline tasks. Talent will become an important differentiator in leaner risk teams, composed of fewer, more broadly skilled people. Risk managers will need to be proficient in directing teams executing advanced analytics, manage external partnerships with SaaS providers, while acting as advisors to business as they do today. Process-based jobs with standardized tasks, defined inputs and outcomes, will be fewer. Instead, insight-based roles, where risk teams will operate under uncertainty, will represent a greater proportion of tasks.

As expected, higher levels of ambition in digitizing risk will entail larger transformation and investment. However, the upside opportunity is similarly very high. For a typical medium-sized bank, this is expected to translate into cost savings in the tens of millions along with higher levels of effectiveness, oversight, and insight generation. However, as shown in Exhibit 4, the complete transformation journey will be complex with multiple interlinked elements. As such, the organizational implications need to be carefully and proactively anticipated and managed.

EXHIBIT 4: DIGITAL RISK – NEEDS AND OPPORTUNITIES FOR TRANSFORMING RISK MANAGEMENT



Source Oliver Wyman analysis

GETTING **STARTED**

Technology is already a game changer for risk, and investment in digital risk enablement is essential to remain relevant. FinTechs are using it, while leading banks have fully digital products and divisions. The time for risk function to act is now. There are five major steps to get started today:

1. **Launch "quick wins" and longer-term efforts based on a digital risk activity map.** Understand the potential for efficiency gains across risk processes. Prioritize high impact and quick win areas. Launch a shortlist of initiatives to establish and fund the longer term ambition
2. **Scan the competitive landscape to understand current positioning in comparison to peers.** The global industry, including FinTechs and non-financial services firms, should be well understood to develop transferrable insights, and to anticipate where to partner and where to compete
3. **Define the digital ambition for risk and vision for the future of risk management.** Strategy and positioning for the future should be outlined and communicated with key stakeholders to ensure alignment
4. **Establish required talent model and implement recruitment strategy.** Understand and anticipate the long-term talent needs and implement recruitment strategy and training schedules to support the future vision
5. **Align regulatory strategy and relationship.** Continuously monitor global and local regulatory changes relating to emerging technologies (such as changes in risk management practices, use of cloud data, cyber risk management, data security and privacy laws) to understand the potential consequences. Regulators should be kept abreast of the organization's thinking, given the shared incentives by both stakeholders for a stable system with well-managed risk. Digital change brings material uncertainty, and regulatory bodies will need to be comfortable with an organization's response plan

Oliver Wyman is a global leader in management consulting that combines deep industry knowledge with specialized expertise in strategy, operations, risk management, and organization transformation.

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