Thought Leadership

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The CRO Function in Retail Banking: From Gatekeeper to Product Designer

Part of Chartis and TCS's research series *The Future of the Risk Enterprise*

Chartis
Independent. Insightful. Actionable.

About Chartis

Chartis Research is the leading provider of research and analysis on the global market for risk technology. It is part of Infopro Digital, which owns market-leading brands such as Risk and WatersTechnology. Chartis' goal is to support enterprises as they drive business performance through improved risk management, corporate governance and compliance, and to help clients make informed technology and business decisions by providing in-depth analysis and actionable advice on virtually all aspects of risk technology. Areas of expertise include:

- Credit risk.
- Operational risk and governance, risk management and compliance (GRC).
- Market risk.
- Asset and liability management (ALM) and liquidity risk.
- Energy and commodity trading risk.
- Financial crime, including trader surveillance, anti-fraud and anti-money laundering.
- Cyber risk management.
- Insurance risk.
- Regulatory requirements.
- Wealth advisory.
- Asset management.

Chartis focuses on risk and compliance technology, giving it a significant advantage over generic market analysts.

The firm has brought together a leading team of analysts and advisors from the risk management and financial services industries. This team has hands-on experience of developing and implementing risk management systems and programs for Fortune 500 companies and leading consulting firms.

Visit **www.chartis-research.com** for more information.

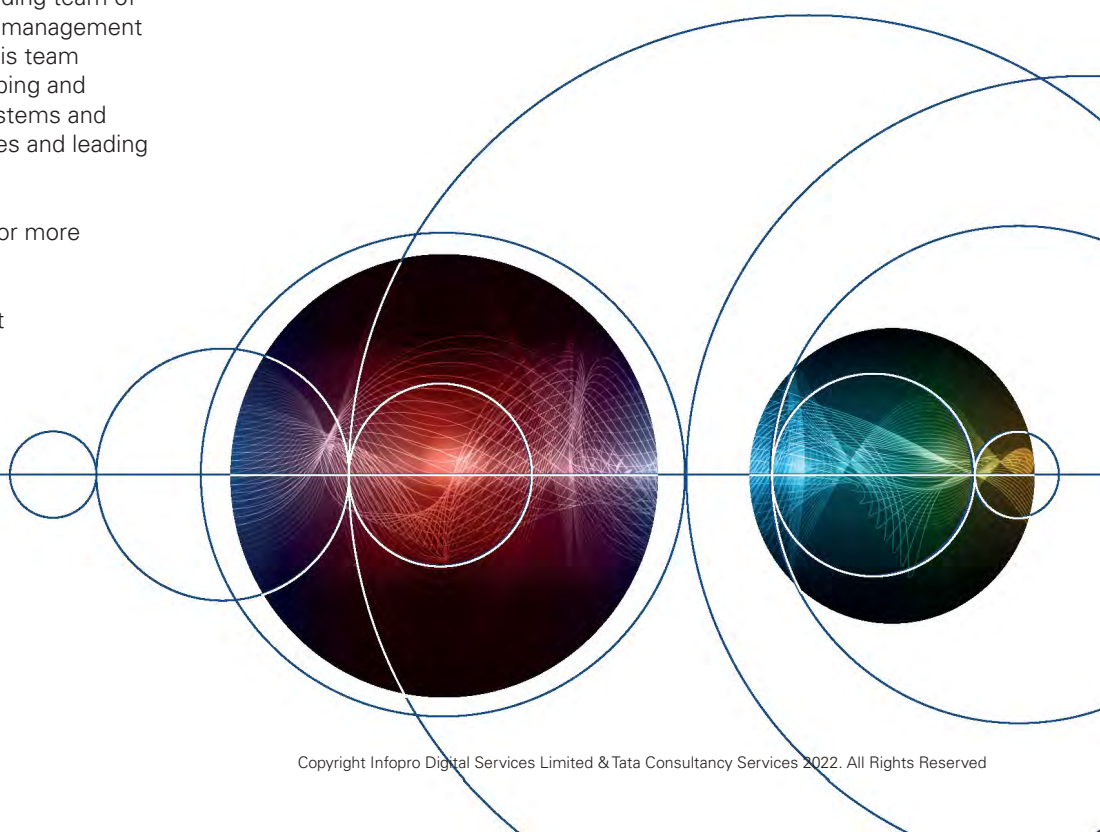Join our global online community at **www.risktech-forum.com**.

About TCS

TCS partners with 900+ clients across 46 countries, including eight of the top 10 global insurers, eight of the top 10 property and casualty insurers, the top 10 global investment banks and 12 of the top 20 global retail banks. With a comprehensive portfolio of technology-led, domain-focused processes, frameworks and solutions, TCS helps banking, financial services and insurance (BFSI) organizations respond to market changes and manage customer relationships effectively, while ensuring regulatory compliance.

Using expertise gained from working with global banks and insurers and regulatory and development institutions, as well as specialty firms, TCS has developed customizable solutions to help global BFSI organizations manage risks better, leverage ecosystems effectively, and create value for customers.

TCS's Risk and Compliance unit is a focused strategic group that partners with CROs of global BFSI organizations in their transformation, innovation and regulatory change journey. With its subject-matter expertise, solutions and broader ecosystem capabilities, it has partnered with global BFSI clients in navigating the risk and compliance landscape, helping to create resilient and agile risk management capabilities.

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1. Executive summary

Working with chief risk officers (CROs) and other leading risk professionals, Chartis and TCS have undertaken an important piece of structural research and analysis that aims to understand how the CRO function[1] (or risk function) and its culture and processes are evolving. Focusing on operating processes, the research looks at the CRO function's overarching delivery mechanism, as well as the centralization and restructuring of the risk unit currently occurring in many financial institutions. Crucially, it examines the increased externalization of the risk function, its broader role, and the changing nature and impact of the services it delivers to the wider organization.

To gain a deeper understanding of the overall landscape, Chartis and TCS conducted both quantitative and qualitative research. This consisted of an extensive survey and a series of interviews and discussions focusing on CROs and risk IT staff within the risk unit as a whole.

The research and analysis is contained in a series of seven reports:

- An introductory report, *The Future of the Risk Enterprise: Enabling growth and competitive advantage*, which provides an overview of the key findings and recommendations of our research.

- Five reports that consider firms in sub-sectors of the finance industry: retail banks, universal banks, buy-side firms (asset managers, hedge funds, etc.), insurance companies and investment banks. In these we examine the specific pressures faced by firms in each sector and analyze how the risk function is evolving within each type of institution.

- A benchmarking report, *Benchmarking the Risk Function: A Framework*, which focuses on the benchmarks, roadmaps and analytical frameworks Chartis Research and TCS have built to enable financial institutions to analyze and understand where they stand relative to their peers.

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[1] *When we refer to the 'CRO function' we don't just mean CROs. CROs can now have several people reporting to them, all of whom undertake a variety of tasks, including risk IT, risk methodology, quantitative development and technology risk. The overall risk function can be relatively large in some bigger organizations and highly distributed by business, geography and functional group. Some big banks can have hundreds of CROs, with many dedicated CROs for individual business lines under a group CRO.*

2. Overview and context

In the past, retail banking customers went to a bank branch to meet and transact with someone face to face – a situation that has largely disappeared. Even before the arrival of FinTechs, retail finance was becoming an increasingly digital and industrialized business in Europe and the US, and parts of the supply chain were restructuring.

Retail products now tend to be digital, and many aspects of retail finance capabilities (even more basic functions) are increasingly analytical, with a focus on data optimization and processing speed. A broad range of automated retail finance analytics is now at firms' disposal, along with a large amount of data with many diverse applications and complex relationships.

Credit risks continue to be the central challenge for the risk office. Pre-existing models (and standard statistical techniques) have often struggled against the non-linearity inherent in generating cross-sectional aggregates. They have also had issues with analyzing and consolidating retail behavior, whether in retail banking or other retail finance activities (such as retail insurance or retail brokerage).

Dynamics and impacts

An expanded universe

The retail finance sector is being reshaped by several transformative forces, but four key overarching trends stand out:

- The wave of **digitalization** in retail finance is almost complete, and a new generation of core banking (and credit underwriting and decisioning) platforms is making significant inroads.

- **Computational costs are lower**, allowing firms to use a broader set of statistical, risk and optimization tools that can be applied in retail contexts. Previously many of these approaches could only have been applied in wholesale contexts.

- There has been a vast and rapid increase in the availability of **data**.

- **Business practices are more flexible**, and there is the possibility of mass customization.

Alternative data

A powerful force in retail finance analytics has been financial institutions' use of alternative and transaction data (see Figures 1 and 2).

Figure 1: Many types of alternative data
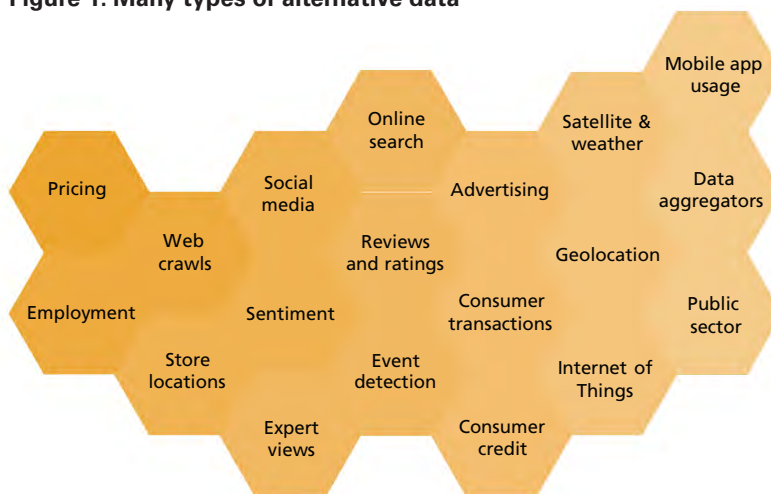
Source: Chartis Research and TCS

Figure 2: Customer perspectives and alternative data
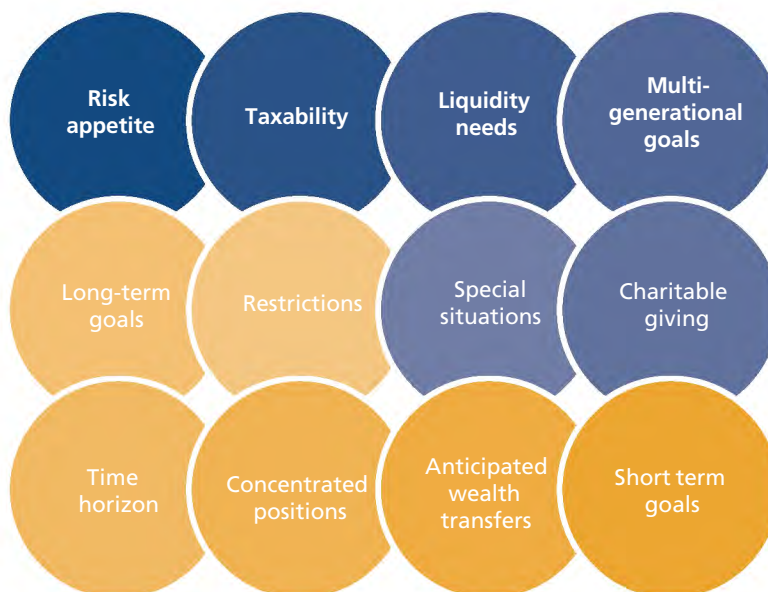
Source: Chartis Research and TCS

The range and variety of decision-making tools and models in retail finance analytics is extremely varied, and the mathematical specification of these models can be extremely complex. Goal definition, for example, or managing the portfolio in the

context of anticipated fund transfer, can become very complicated. For firms, ensuring that they have the relevant data to enable the computational infrastructure to handle these complex non-linear decisions is equally non-trivial. In fact, one of the key dynamics in retail finance is the building of a digital infrastructure that can enable non-linear decisions such as those outlined above.

Three evolutionary themes

Against this background, we have identified three themes that stand out in the evolution of retail risk analytics, an area which is becoming increasingly complex (see Figure 3):

- Retail pricing optimization

- Retail credit scoring

- Retail behavioral models and aggregation

Behavioral dynamics: increasingly embedded in models

Behavioral dynamics are becoming increasingly embedded within banking credit models and credit portfolio management tools. Behavioral models leverage data gleaned from the implied risks of traded assets, specifically securitized retail products. This ability to leverage data is the main reason why several prepayment data suppliers now increasingly sell their models to retail and commercial banks.

Figure 3: Retail analytics – increasingly complex
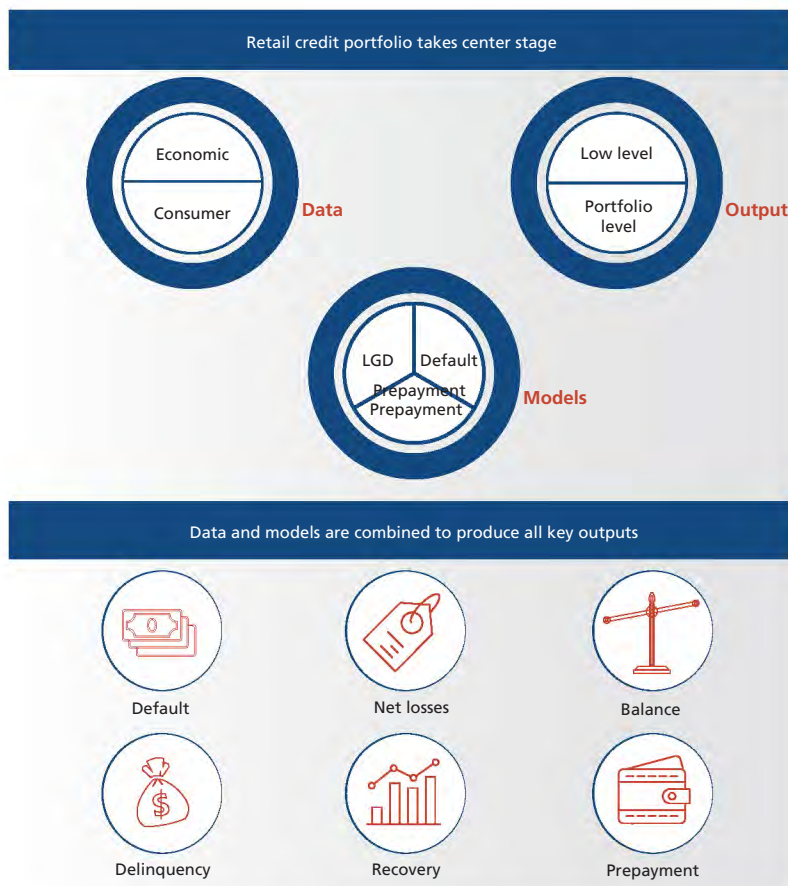
Source: Chartis Research and TCS

3. The evolving role of the CRO function

The impact of the trends and dynamics outlined previously on the retail value chain has been stark. As the value chain is largely an automated analytical activity, the risk function is playing a key role in the industrialization of retail finance. In this context, risk professionals and senior retail and consumer finance executives expect the risk function to play a critical role across the retail banking value chain (see Figures 4 and 5).

They now expect it to demonstrate several capabilities, including incentive design, product design, capital allocation, the operationalization of risk and a growing focus on non-financial risk (see Figures 6, 7 and 8). A significant number of respondees felt that the CRO function has strong inputs into product design and management, which include new product development, product control, and strategy and appetite management.

Figure 4: A more critical role for the risk function

Q18: Name the touchpoints/interactions in the risk value chain where the CRO function can have a significant impact on delivering a competitive advantage

Audit	25%
New products/services development (wholesale)	21%
Front office	20%
Strategy and appetite alignment	19%
Product control	19%
Valuation services	18%
Legal operations	17%
Economic and business strategy function	15%
New product/service development (retail)	9%

Source: Chartis Research and TCS

Figure 5: A critical role for the risk function across the value chain

Challenges across the retail banking analytics value chain

Retail risk analytics value chain

Environmental scan	Risk views	Onboarding	Portfolio monitoring	Reporting and control
• Peer analysis • Proxy risk measures • Industry-level analysis • Alt. data • Securitization market analytics • Capital market links	• Risk rating scores • Segmentation analytics • Risk profiling • Behavioral modeling • Pricing and optimization	• Documentation analytics (structured to unstructured data conversion) • Behavioral modeling analysis • Risk profiling • Profitability analysis	• Early warning • Portfolio analytics • Portfolio optimization and attribution	• Manage the complete IFRS 9/CECL/stress testing workflow across all asset classes • Stress testing models

Key challenges across the value chain	• Semantic data management • Heterogeneous database and lack of internal modeling expertise • Array database	• Regulatory-driven models (CECL/IFRS 9/stress testing) • Multi-dimensional data stores • Event-driven frameworks • Proxy functions; ML/heuristic optimization

Source: Chartis Research and TCS

Figure 6: The changing nature of the risk function

Q15: Across risk types, what structural changes do you foresee in one year? (Tick all that apply)

- Incorporation of AI in standard analytical methodology
- New type of personnel
- New organization position (closer to front office)
- Commercialization of capabilities with close working relationships, clients and third parties
- Centralization and utilization
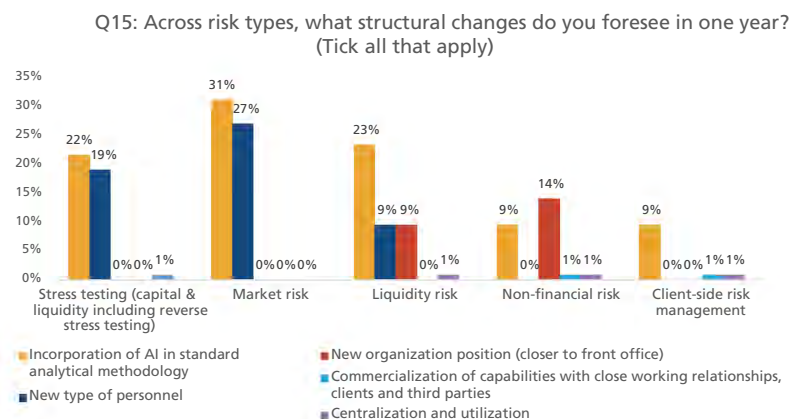
Source: Chartis Research and TCS

Figure 7: Product and risk roles – increasingly intertwined

Q24: What capabilities are prioritized in your organization in delivering competitive advantage?

Capability	Percentage
Agility in risk and compliance management to support product or service launch	60%
Risk-based optimization of capital	31%
Risk-based tracking of business KPIs and interventions	22%
Risk culture and governance culture	21%
Alignment of business strategy and risk appetite	12%
Management commitment and risk-based incentives	10%
Risk marketplace to create new revenue streams	10%

Source: Chartis Research and TCS

Figure 8: More customer- and product-centric

Q9: What are the business touchpoints where risk functions can significantly influence associated competitive advantage KPIs?

Touchpoint	Percentage
Capital and liquidity optimization	69%
Customer lifecycle management	69%
Business expansions and M&A	67%
Product/service design and sales	57%
Investor management	24%
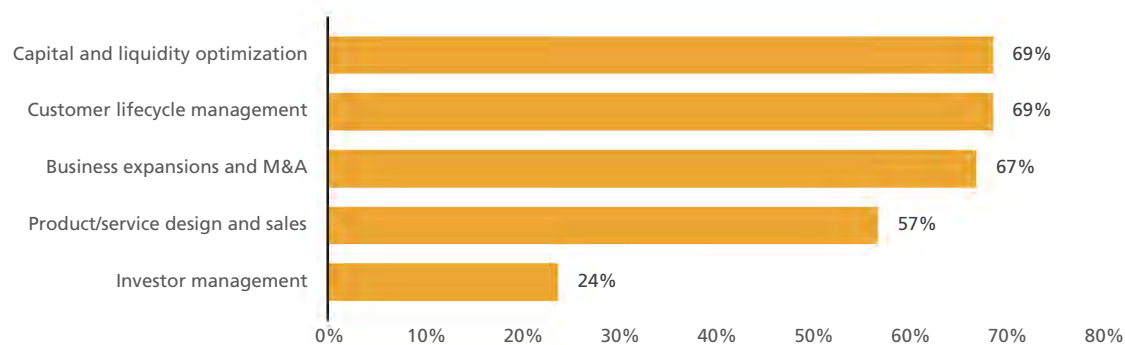
Source: Chartis Research and TCS

Figure 9: Doing more with less to improve capabilities

Q14: What are the capability uplifts that can significantly influence/deliver competitive advantage?

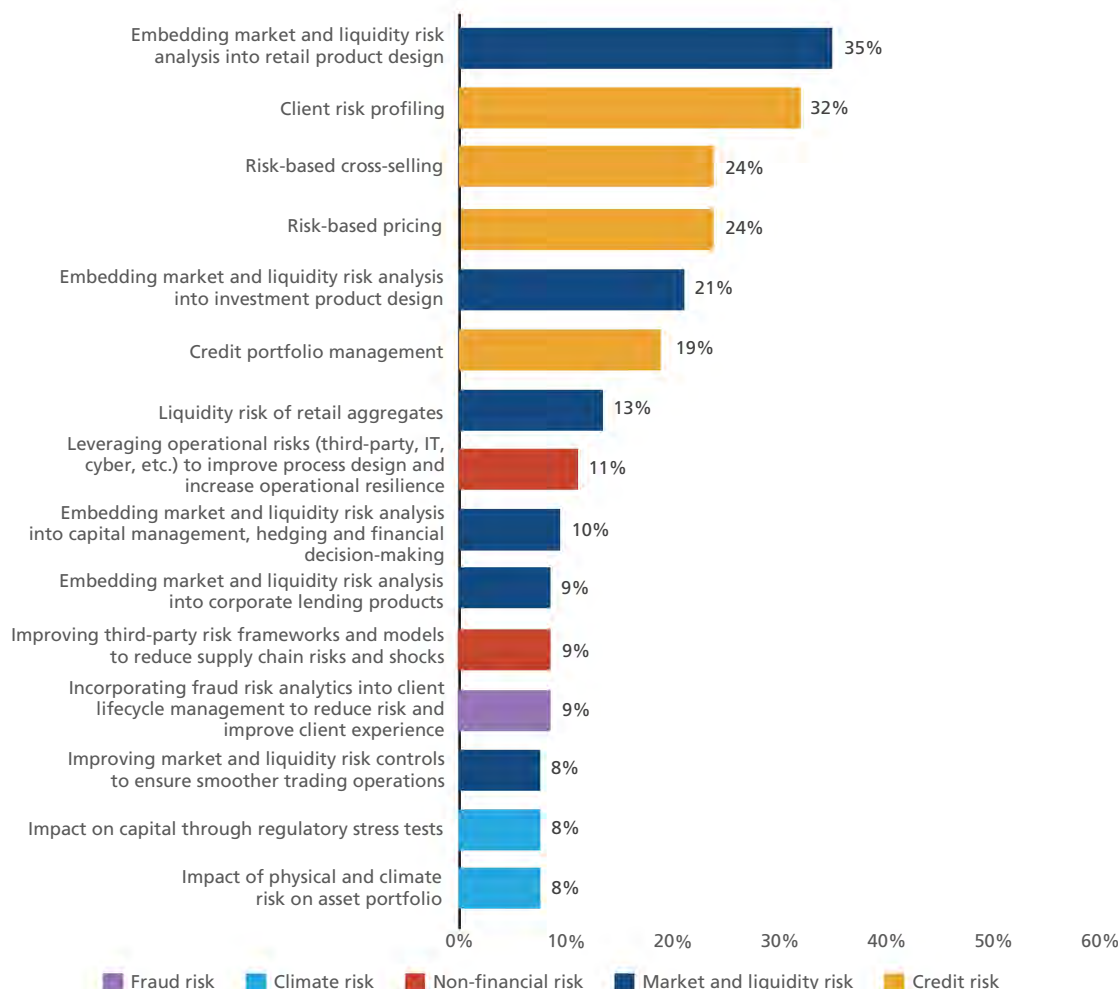| Capability	Value
Embedding market and liquidity risk analysis into retail product design	35%
Client risk profiling	32%
Risk-based cross-selling	24%
Risk-based pricing	24%
Embedding market and liquidity risk analysis into investment product design	21%
Credit portfolio management	19%
Liquidity risk of retail aggregates	13%
Leveraging operational risks (third-party, IT, cyber, etc.) to improve process design and increase operational resilience	11%
Embedding market and liquidity risk analysis into capital management, hedging and financial decision-making	10%
Embedding market and liquidity risk analysis into corporate lending products	9%
Improving third-party risk frameworks and models to reduce supply chain risks and shocks	9%
Incorporating fraud risk analytics into client lifecycle management to reduce risk and improve client experience	9%
Improving market and liquidity risk controls to ensure smoother trading operations	8%
Impact on capital through regulatory stress tests	8%
Impact of physical and climate risk on asset portfolio	8%

Legend: Fraud risk · Climate risk · Non-financial risk · Market and liquidity risk · Credit risk
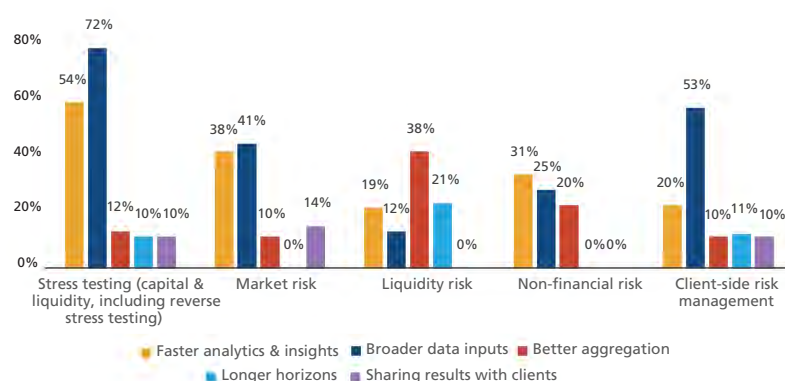
Source: Chartis Research and TCS

As highlighted by our research, the central theme in this shift is 'doing more with less', with a focus on financial crime and technology risk, including cyber and third-party risk (see Figures 9 and 10). Crucially, credit risk is the pivot around which the retail risk function and related capabilities revolve.

The CRO function's growing involvement with actual product design, alongside widespread improvements in data analytics, is having a direct impact on behavioral models, pricing optimization and credit scoring in retail banking. Data streaming from various risk functions can now be embedded into credit models and tools.

Figure 10: Delivering operational and competitive advantage

Q11: How can the operational framework for each of the risk types be improved to deliver a competitive advantage?

	Faster analytics & insights	Broader data inputs	Better aggregation	Longer horizons	Sharing results with clients
Stress testing (capital & liquidity, including reverse stress testing)	54%	72%	12%	10%	10%
Market risk	38%	41%	10%	0%	14%
Liquidity risk	19%	12%	38%	21%	0%
Non-financial risk	31%	25%	20%	0%	0%
Client-side risk management	20%	53%	10%	11%	10%

Source: Chartis Research and TCS

The non-linear approach

To achieve this functional integration, the key challenge for firms will be enabling AI tools to operate within the context of existing financial market models and theories. The simplest theoretical integration entails using AI as a replacement for linear statistical and optimization requirements (see Figure 11). This involves keeping theoretical frameworks constant but adding a layer of non-linearity through various styles and types of AI tools, such as deep learning (DL), evolutionary programming (EP) and Tabu searches (see Figure 12).
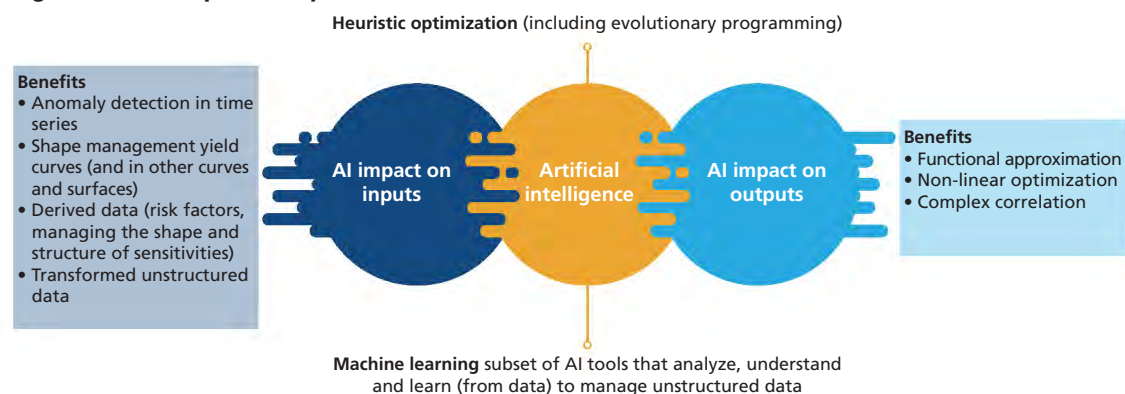
As our survey found, the value of this approach is that it preserves a high level of explainability, albeit at the cost of some coherence (see Figure 13). In some

Figure 11: A convergence of techniques
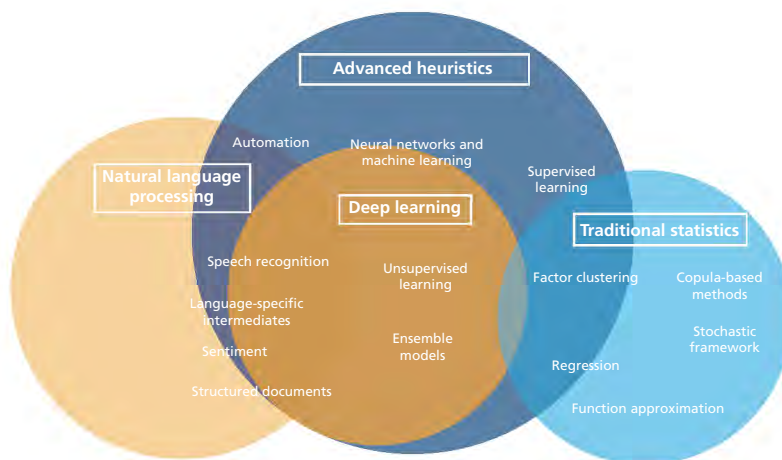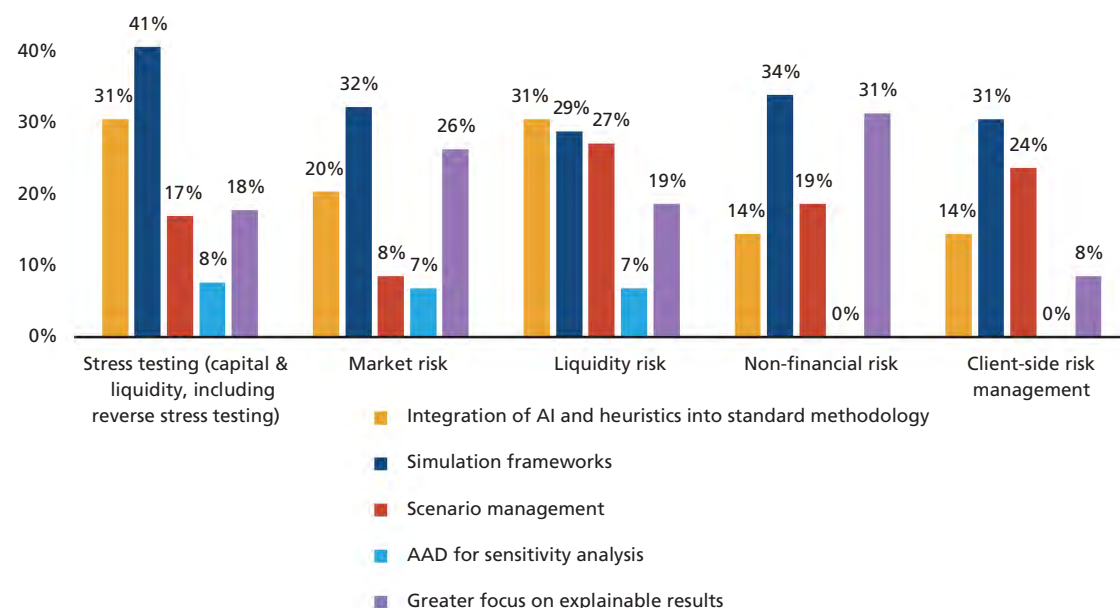

Source: Chartis Research and TCS

Figure 12: AI's impact on systems

Source: Chartis Research and TCS

Figure 13: A focus on explainability

Q12: How can the methodological framework for each risk type be improved to deliver competitive advantage?

Source: Chartis Research and TCS

contexts where inherent non-linearity means that considerable adjustments already have to be made to the inputs (such as a 'smile curve' in options markets), using faster, non-linear interpolators may make models theoretically more consistent. This is also the case in most portfolio optimization contexts with non-linear assets (such as derivatives or fixed-income products or physical commodities).

Essential tools: dynamic pricing and price optimization

Price optimization and client strategy management technologies are increasingly sophisticated activities that can enable banks (and other retail finance providers) to optimize their portfolios. They can incorporate a wide variety of external transactional and alternative data, as well as internal client perspectives and constraints (such as environmental, social and corporate governance [ESG] and portfolio considerations).

Price optimization is a multi-faceted strategy that covers a variety of entities, including product versions, terms and conditions (T&Cs) and coverage levels. These facets are stitched together with AI and machine learning (ML) tools, which factor in the optimal uptake price and maximized profitability (see Figure 14). Firms can leverage non-standard data from external and internal sources. Traditionally, price optimization strategies have had more salience in North America, although they are spreading worldwide as banks digitalize, leverage broader optimization strategies and embed more sophisticated risk profiles into the process.

Most institutions regarded the CRO's office as helping in customer-facing functions by enabling key analytical facets of those strategies. IT was seen as a consumer-facing function, and in analytical decision-making (portfolio recommendation in retail broker dealers, financing strategy in mortgage finance, etc), firms thought it was imperative that these 'advisory', 'planning' and fidiuary activities were risk-aware. Different institutions were at different levels of sophistication in what could be considered as their activity set.

Figure 14: Dynamic pricing – using AI to stitch the components together
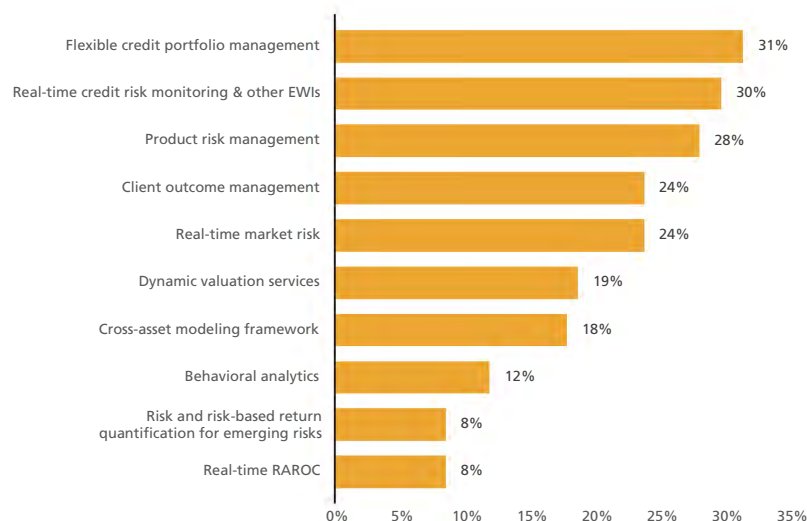

Source: Chartis Research and TCS

Integrating the risk function into product and consumer-facing functions

Figure 15 illustrates different branches of banking (such as wealth strategies and tax planning), highlighting how retail finance has many linkages, especially to the wholesale sector. Equally, retail analytics (such as credit scoring, behavioral analytics and risk profiling) are increasingly being linked across the enterprise, and more aggregated models are emerging (see Figure 16).

The various types of retail activities (such as credit strtgeies, tax and estate planning, lifestyle advice, etc.) can, and often should, interact. There are, however, many analytical, data, technological and privacy bottlenecks, although successfully integrating different aspects of financial advisory and planning/retail finance can yield significant rewards.

Figure 16: Building broader analytics

Q17: What capabilities require enrichment and extensions into adjacent new areas?

Capability	Percentage
Flexible credit portfolio management	31%
Real-time credit risk monitoring & other EWIs	30%
Product risk management	28%
Client outcome management	24%
Real-time market risk	24%
Dynamic valuation services	19%
Cross-asset modeling framework	18%
Behavioral analytics	12%
Risk and risk-based return quantification for emerging risks	8%
Real-time RAROC	8%

Source: Chartis Research and TCS

Figure 15: Retail finance – not an isolated entity

Retail banking is not isolated, but linked to other branches of banking, financial advisory and investment management
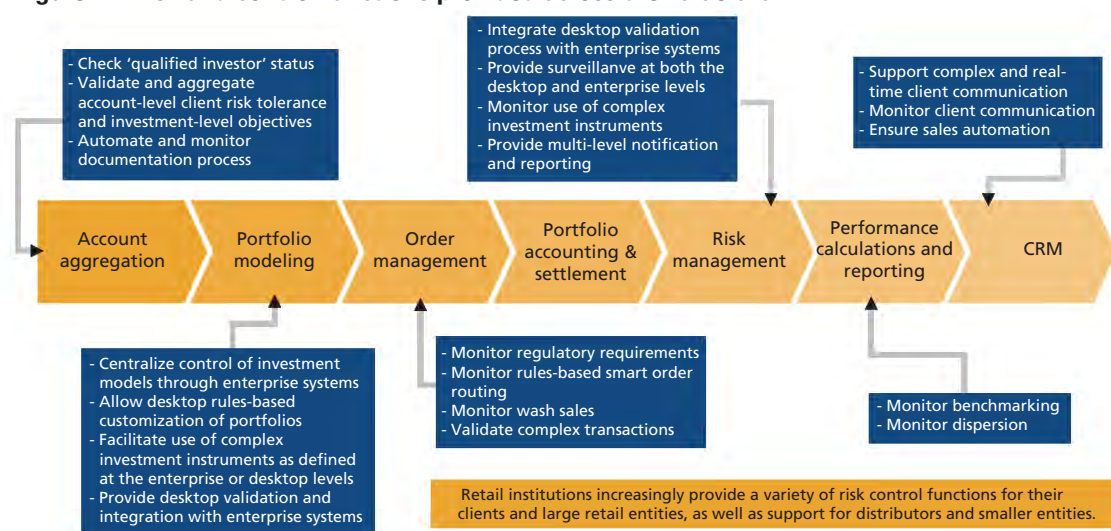

Source: Chartis Research and TCS

Retail externalization and centralization in financial planning and wealth management

Retail institutions increasingly provide a variety of risk control functions for their clients and large retail entities, as well as support for distributors and smaller entities (see Figure 17).

Figure 17: Risk and control functions provided across the value chain

Source: Chartis Research and TCS

4. The way forward

Across the entirety of this research we have explored strategic shifts in the way that risk departments and functions are being organized, how they are interacting with other business groups, and how far they and their institutions have moved toward commercializing and externalizing the risk function and its activities. This has involved an analysis of the mechanism by which risk units are involved, directly or indirectly, with customer management – how the risk function is enabling customers of institutions to manage and control their own risks.

The research has revealed enormous variance in these situations and approaches. Some risk organizations are centralized, some are highly distributed, some collaborate closely with their business units, some even have special units designed to collaborate. Still others are highly commercialized, providing repackaged services to create commercial value and/or stronger customer relationships. From the institutions' perspective, some of this repackaging and commercialization serves strong business ends, enabling them to 'de-risk' in a way that does not disrupt existing customer relationships.

Looking ahead, we expect these themes – greater interaction with front-line business units and greater commercialization and externalization of risk units – to continue and expand across the industry as organizations and risk units mature. The mechanics of these developments will vary from organization to organization. We will see greater diversification of the personnel who work within risk units to include a wider variety of backgrounds, such as technology and financial risk, engineering, data science and other disciplines that complement core risk capabilities.

As we have noted, there are correct and incorrect ways for firms to approach the evolving risk function and its fit within the wider organization. Any plans must be properly structured – firms' response to these evolving dynamics will vary depending on their size and type and the nature of their customer relationships. Institutions must manage the necessary growth and change, but they must also calibrate and measure themselves appropriately as they evolve. This is a complex process, and to succeed firms will have to break down some existing cultural ideas around how risk units should be organized.

In that context, when establishing this culture, processes and methodologies are often far more important than high-level conceptual approaches. Senior management must consider the organizational maturity of the risk function and what it needs to achieve, setting out very clear guidelines and targets around the level of interaction between risk and other business units. As our research highlights, formal rules, processes and methodologies are vital elements in driving risk culture throughout an organization.

Finally, it is one thing to talk about culture and quite another to define and communicate it effectively. The more formal rules and well-defined methodologies firms have, the more likely they are to avoid problems. And carefully benchmarking how they are achieving this is key – what you can't measure you don't understand and you can't control.

Retail banking: close collaboration

The level of support and interaction required from the risk function is probably greater in retail finance than in any other sector. The level of riskiness embedded in particular products depends on the type of customer the product is going to – a dynamic not well understood on the retail side, and one that is becoming harder to grasp as products become more complex.

Business lines rarely have the quant skills to incorporate risk effectively into product design and customer interactions, so any entity with a retail banking unit will have to work closely with risk teams to design and incorporate the required risk capabilities, either directly or through the finance department.