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White Paper

Risk and finance integration: Bridging the gap between ambitions and new realities (Part 1)

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Executive Summary

Market and regulatory changes continue to drive and shape the financial industry's search for sustainable business models. The 2015 spend on risk management and related regulatory compliance is expected to exceed $50 bn globally, with average expenditures of a tier 1 bank standing at over $0.5 bn. The industry has come a long way, but there is much work to be done. Authorities continue to curb what is perceived as excessive risk-taking, across the industry. Financial institutions are faced with reduced access to cheap funding, and are weighed down by new capital requirements for the risks they are carrying on their balance sheet and operations. Since the last financial crisis, an ultra-low interest rate environment and the onslaught of new regulations to curb excessive risk-taking, have hit the average return on equity (ROE) of primarily large financial firms, and to some extent mid-sized and smaller institutions as well.

With these structural forces impacting the industry, delivering initiatives to mitigate cost impact and complexities in the new market environment will need to be carefully managed and executed. Banks will need to be smarter in being able to understand and triangulate the multifaceted risk and capital-related drivers that influence the profitability and cost equation — such as around collateral, valuation adjustments, funding, leverage, and risk-weighted assets (RWA) in relation to P&L targets in both business-as-usual conditions and stressed scenarios. Firms need to focus on and enhance operational levers to mitigate the corrosive effects of structural changes.

The imperative for greater efficiency is well recognized. However, the reality of walking the path of change remains a difficult journey for financial institutions, insurers, and investment managers alike. Increased IT automation and processing capabilities are part of the solution, but more is required if firms are to bridge the gap between their current state and emerging new realities. Conventional notions of addressing incremental change may not suffice; more radical solutions need to be found. This will require CROs, CFOs, COOs, and IT strategists to radically envision and rethink their regulatory and risk management operations and technology strategies. We believe that now is the time to make the business case for a more integrated risk and finance approach to improve quality and timeliness of management information, thereby supporting better business decisions.

To respond, reposition, and eventually thrive, TCS believes that well-honed capabilities in risk and finance operations in the following areas, when executed well, will differentiate leaders in the coming years.

1. Cohesive risk and finance decision-making

2. Real-time risk management capabilities

3. Risk management digitization and enablement

The first part of this white paper focusses on strategic imperatives and tactical steps required to **align risk and finance capabilities to make cohesive risk-enabled financial decisions.** In the second part of this white paper, we will focus on strategic imperatives and tactical steps required to evolve toward real-time risk management, and eventually prepare risk management capabilities for digitization trends sweeping various parts of the financial services value chain.

With structural and regulatory changes continuing to constrain profitability, an integrated approach across finance and risk will be a significant step to gain competitive advantage and achieve new levels of cost and operational efficiencies. In our view, banks that are able to invest sufficient resources to achieve long-term goals, while delivering against –short-term imperatives, will be winners. In order to achieve this, firms must address changes across five key areas:

- **Governance and steering:** Governance and steering mechanisms for first, second, and third lines of defense need to be clarified and confirmed. Additionally, accountabilities need to be tagged to senior management to ensure that the pre-defined strategic vision and operational objectives are adhered to for business as usual (BAU) activities.
- **Process integration:** Risk and finance process integration across the group will not only need to be well-defined, but collaborative activities and data handover points will also need to be redesigned and integrated.
- **Business and IT architecture:** Firms need to ensure that their business and IT architecture strategies reflect a high degree of alignment with front-office business units, risk and finance application architecture, data integration architecture, and technical infrastructure. The

focus should be on simplification, with more nimble, platform-based architecture methodologies. Flexibility, extensibility, and industrial reliability need to be the underpinning design principles to decide whether to buy, build, or adopt a hybrid approach.

- **Data management model:** Firms must ensure that data architecture and data management models execute to a roadmap that evolves toward a single version of the truth, yet meet changing regulatory requirements over time. Key components such as primary data sources, policies and standards for aggregating data across functions, and automated data feeds must be strengthened. To ensure round-the-clock availability of accurate real-time data, organizations need to implement comprehensive taxonomies for data definition and establish a golden source of data.
- **Analytics, metrics, and reporting operations:** Analytics, metrics, and reporting operations will need to be designed for greater flexibility and timeliness, in particular, to facilitate what-if analysis, integrated stress scenario modelling and testing, as well as finer grained data outputs and a wider range of data aggregation and analyses. To provide decision makers with actionable insights, banks need comprehensive and customizable management information dashboards and metrics, supported with robust modeling approaches and well-defined governance mechanisms.

Looking forward, firms need to still continue to find effective ways to consolidate, optimize, and innovate for sustainable operations in the new regulatory landscape. Regulation-led risk management alone will not automatically translate into a source of competitive advantage.

Forward-thinking firms that understand the profound impact of emerging regulatory regimes and future competitive requirements will assume a strategic stance (beyond just ensuring compliance) to hone their capabilities toward integrated balance sheet and financial resource management paradigms, in order to achieve financial stability when weighing risk versus reward. Only then can firms break away from merely complying, toward actually thriving.

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Emerging Paradigm for Managing Risk and Regulation

Regulation is Eroding Structural Returns, Posing Ongoing Challenges to Strategic Goals and Operational Enablement

Market and regulatory changes continue to drive and shape the industry's search for sustainable business models. Risk management and related regulatory compliance spend in 2015 is expected to exceed $50bn globally[1], with the average expenditures of a tier 1 bank standing at over $0.5 bn for post-crisis regulatory reforms[2]. The industry has come a long way, but there is more to be done. Authorities continue to curb the excessive risk-taking nature of the industry. Financial institutions are faced with reduced access to cheap funding, and are weighed down by new capital requirements for the risks they carry on their balance sheet and in operations. Since the last financial crisis, an ultra-low interest rate environment and the onslaught new regulations directed at curbing excessive risk-taking have hit the return on equity (ROE) and overall economics of financial firms, both large and small.

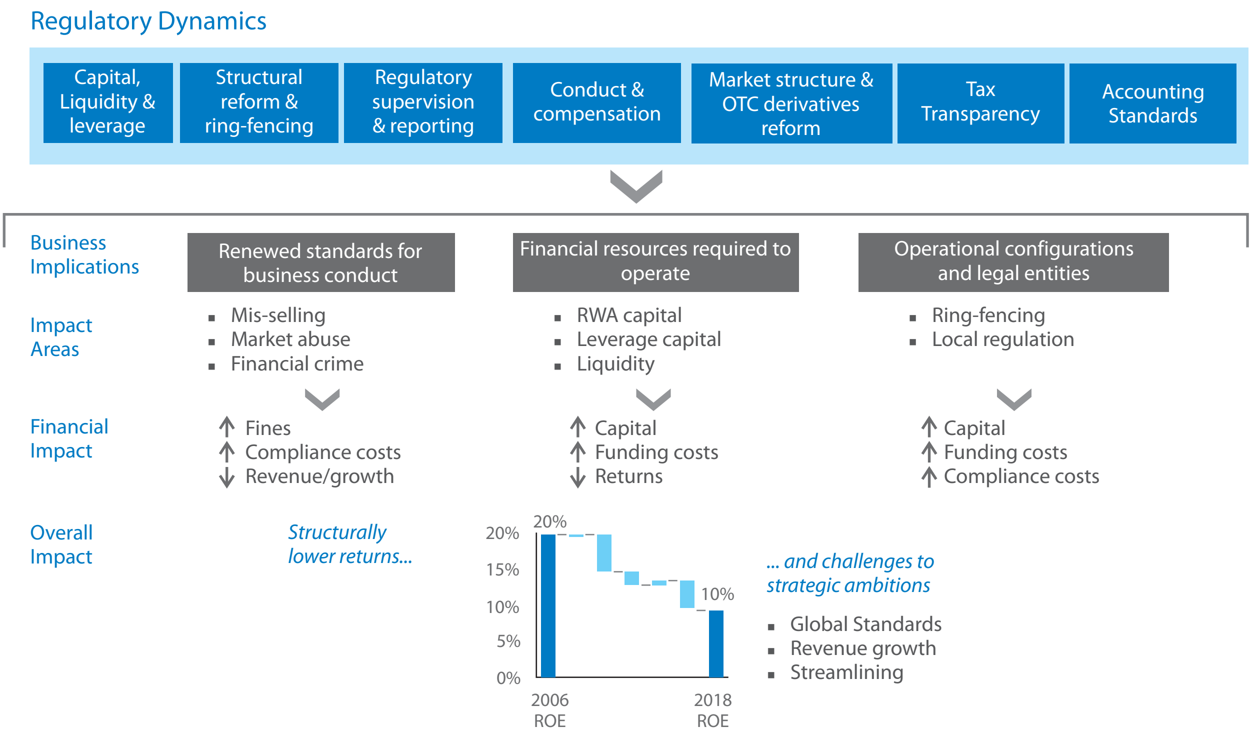

Figure 1: Market and regulatory dynamics: Facing the impact of the great erosion, Source: Celent, Oliver Wyman[3]

[1] Celent, *"Strength Under Fire in Risk Management: New Realities, Technology Imperatives, and Investment Spending" (February 2012), http://www.celent.com/reports/strength-under-fire-risk-management-new-realities-technology-imperatives-and-investment*

[2] Oliver Wyman, *"Adding 5% to RoE: How Banks Can Do More With Less", http://www.oliverwyman.com/insights/publications/2012/aug/adding-5--to-roe--how-banks-can-do-more-with-less.html#.Va9gLqSqqko*

[3] *Figures are illustrative and projected ROE figures are based on the wholesale banking sector, with expected average around 10%. From Celent report, "Back to the Future for Risk: Risk-enabled Financial Management", http://www.celent.com/reports/back-future-risk-management-realizing-promise-true-riskreward-decisions*

With financial stability being the foremost in the minds of business stakeholders and regulators, financial authorities are driving for more extensive and timely reporting requirements in order to facilitate greater levels of transactional transparency, and to increase the amount of pre- and post-trade information available to market participants. Firms operating in various jurisdictions are finding that regulators require a significant expansion of reported data to evaluate market activity. Supervision is becoming more stringent with an aim to enhance transparency and accountability in financial institutions when taking risks that are susceptible to stress scenarios, further escalating regulatory overheads. Yet, these requirements are not necessarily standardized or coordinated, and can therefore result in duplicative or even inconsistent requests from home and host supervisors.

With these structural and regulatory changes, initiatives to mitigate cost impact and complexities in the new market environment will need to be carefully managed and executed. Banks have to be smarter in being able to understand and triangulate the multifaceted risk and capital-related drivers that play into the profitability and cost equation — such as around collateral, valuation adjustments, funding, leverage, and risk-weighted assets (RWA) in relation to the P&L targets — in both business as usual conditions and stressed scenarios. Firms need to focus and enhance operational levers to mitigate the corrosive effects of structural changes.

With financial stability as the priority, financial authorities are driving for more extensive and timely reporting requirements to enhance transactional transparency and increase the amount of pre- and post-trade information available to market participants.

Firms must raise the bar on Risk Management Operations and Technology…

The imperative for greater efficiency is well recognized. However, the reality of walking the path of change remains a difficult journey for financial institutions, insurers, and investment managers alike. Increased IT automation and processing capabilities are part of the solution, but more is required if firms are to bridge the gap between emerging new realities and current ambitions to optimize financial resources, rebuild financial returns, and win in the evolving landscape. Conventional notions of addressing incremental change may not suffice; more radical solutions need to be found. This will require CROs, CFOs, COOs, and IT strategists to radically envision and rethink their regulatory and risk management operations and technology strategies.

Increased process automation has helped organizations move closer to their goal of advanced risk management, but a lot more is still needed. Radical solutions, as against incremental upgrades, is the need of the hour.

Financial firms will need better information management and a client-driven mindset to succeed. Very few institutions today, however, have cohesive infrastructure and governance in place that can provide an effective and realistic view of client profitability to support dynamic client-led strategies. Firms will need to update their approaches to reflect the new reality of client dynamics and market economics, particularly for sophistication around costs of execution and the impact on financial resources due to changing regulatory rules (such as on funding, RWA, liquidity, and leverage constraints).

… and to renew ambitions for Next Generation Capabilities

In the coming years, if not already, certain geographical regions like North America and Europe will witness a series of new regulations, making the management of regulatory response programs a spiraling dynamic that financial firms have to master as a core competence. Hence, financial firms must steer business change and IT transformation objectives guided by a clear vision of next generation capabilities both at tactical and strategic levels.

To respond, reposition, and eventually thrive, we believe that three strategic capabilities in risk management operations, when executed well, will differentiate leaders, in the coming years:

1. Cohesive risk and finance decision-making
2. Real-time risk management capabilities as a paradigm
3. Risk management digitization and enablement

We understand that financial firms are walking a tightrope to achieve balanced priorities and operational and IT strategies to:

- change versus run the bank,
- enhance transparency and absorb related costs,
- achieve localized responsiveness versus centralized mobilization, and finally,
- ensure that current compliance efforts do not crowd out and stifle innovation.

The capability themes we propose are key building blocks that will enable firms to traverse the fast-changing regulatory environment and meet the multi-faceted requirements of various markets.

We now discuss the strategic imperatives and tactical steps to **align risk and finance capabilities to achieve cohesive risk-enabled financial decisions.**

Cohesive risk and finance decision-making

Issues and pain points

Legacy risk and finance IT and operations typically fall short in terms of one or more of the following dimensions: timeliness of reporting, measurement capabilities, information granularity or accuracy, and risk and financial control effectiveness. The limitations often lie in legacy risk architectures and data delivery mechanisms that connect the front office to downstream risk and finance systems (at the appropriate level of quality) for these to deliver information in line with business needs.

Here, sourcing and maintaining high quality data to enable effective decision-making across both front and back offices remain major challenges across the financial industry, especially for firms that have undergone multiple iterations of M&A activity. Tactical efforts to solve the issues around consolidation of transaction and position data has led to a proliferation of data stores that are used by individual departments but not across the enterprise. This has made data mining simpler and quicker but hasn't addressed the data and process overlaps between different parts of the information value chain. This issue is further compounded by the fact that risk and finance operations in financial institutions are typically organized in distinct, siloed, or process-specific delivery chains, thereby limiting data sharing and promoting inconsistencies (see Figure 2).

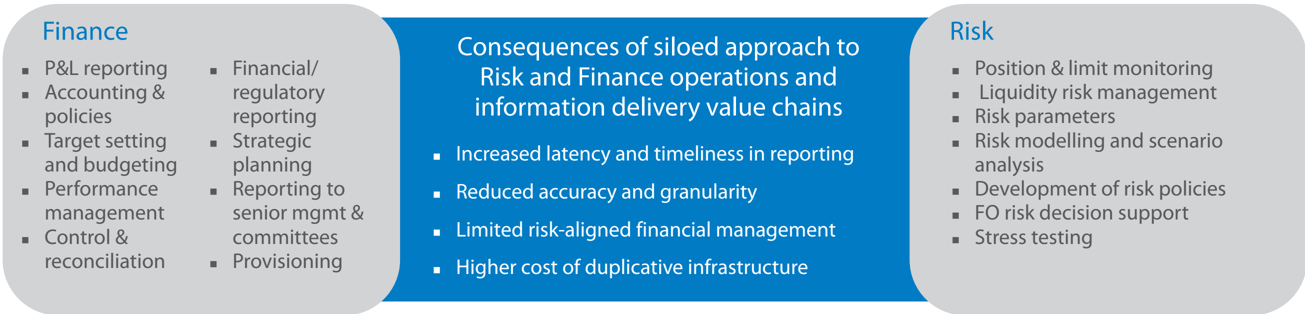

Figure 2: Gaps and inefficiencies in misaligned financial and risk management operations

Source: Celent[3]

The cost of this duplicative infrastructure is difficult to quantify, but manifests itself in many ways: dedicated data cleansing teams to clean data for specific business processes (like daily VaR); additional reconciliations to identify and address differences between data sets (like front office, operations, risk and finance); and the general overhead required to scrub data.

Drivers for change

Until recently, many banks have failed to make a compelling case to address the problem strategically, and this is showing up in their cost base because different tactical investments made to get to desired end states are not achieving the expected results. Furthermore, heightened regulatory pressures in the coming years are making the status quo untenable; these pressures are not expected to subside.

- Capital rules and reporting are increasing in scope and depth, based on the evolution of Basel (2.5 & III) regulations that require firms to allocate buffer capital based on risk-taking activities of specific lines of business, as well as product and client segments served.
- Regulators need firms to demonstrate stronger data management practices based on stringent standards, where data and information requests are now required at more granular levels. Examples are BCBS239 for risk data aggregation and reporting, and ECB's AnaCredit, which serve to enhance banking supervision based on granular credit data reported by firms.
- Financial stability concerns are also driving industry-wide regulatory assessments such as US Fed's Comprehensive Capital Assessment and Review (CCAR), and EU's Comprehensive Assessment exercises, where financial firms are required to develop the ability to handle both static and dynamic balance sheet stress testing.
- Going forward, regulators will require financial institutions and investment firms that are systemic in nature, to start reporting information on their intraday liquidity positions, in line with BCBS 248 proposals.

Regulatory pressures are not expected to subside. Financial firms therefore need to bring about strategic changes instead of implementing point solutions to meet short-term objectives.

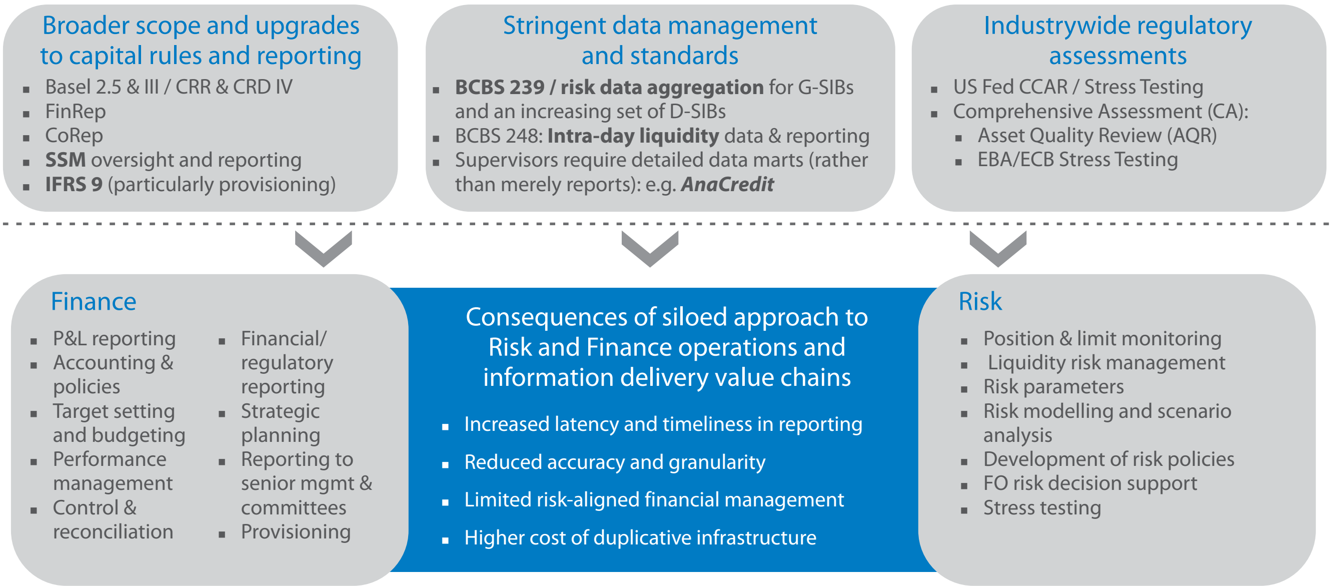

Figure 3: Industry and regulatory drivers are making the status quo untenable,

Source: Celent[3]

With supervisory demands continuing to rise across jurisdictions, we believe that now is the time to make the business case for a more integrated risk and finance approach, with the overarching benefit being improved quality and timeliness of management information for better business decisions.

Senior executives characteristically ascend to the idea of risk and finance alignment, but unfortunately, the need for tighter alignment has also come at a time of increased regulatory pressures across a wide range of areas, as well as major changes in financial market infrastructural reforms. We are seeing most IT resources being directed to non-discretionary items such as ongoing Basel programs or strategic priorities like the common general ledger.

Figure 4 highlights the key challenges firms face in forecasting and managing risks. At the same time, the board and senior management teams hold high expectations for risk, finance, and treasury functions to raise their game in terms of effectively coordinating to monitor and steer economic performance, manage financial resources effectively (for instance, regulatory capital, liquidity consumption and contribution), and to meaningfully add value in making risk-aligned financial decisions.

To fully achieve the benefits of tighter coordination between risk and finance functions, infrastructure, data strategy, and operating model for risk and finance need to be designed, converged, and orchestrated for efficiency, and to better address the emerging regulatory requirements.

> Organizations will need to balance the competing demands of regulatory transformation, internal cost reduction, and emerging inflight requirements as they move toward more cohesive operations, technology, and data architecture.

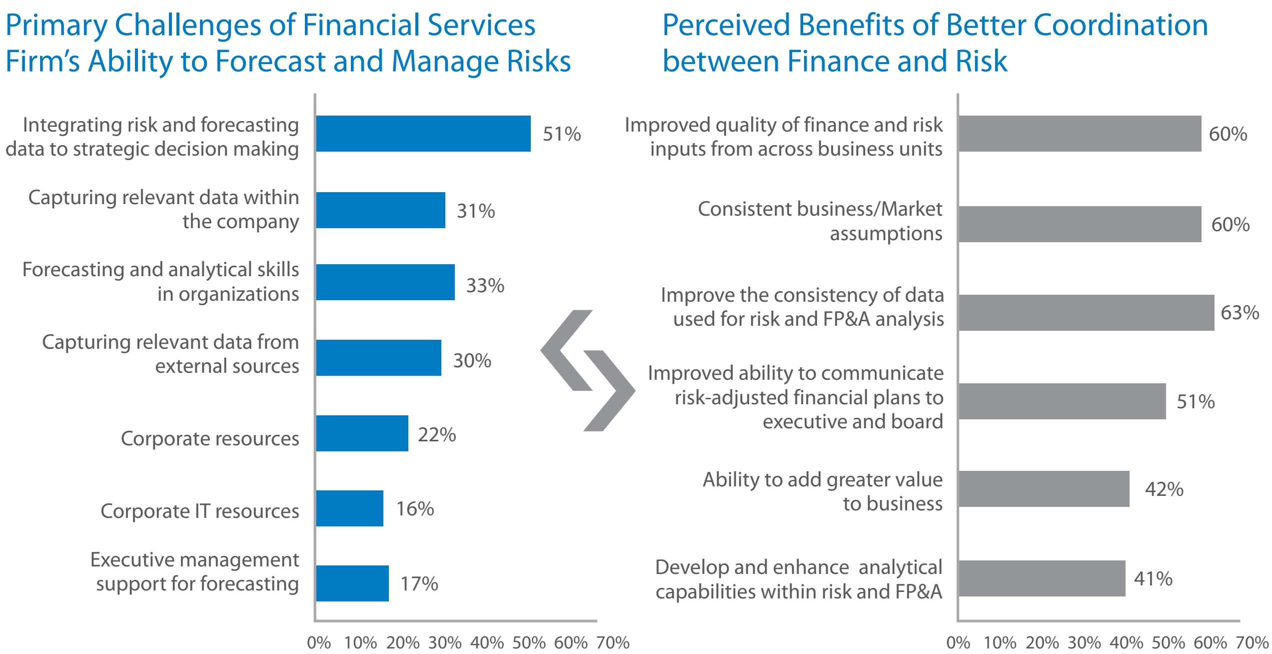

Figure 4: Risk and Finance: Challenges, drivers, and expectations toward greater alignment, Source: AFP and Oliver Wyman 2014 Survey

Source: Celent[3]

In many cases, there is already continued thrust toward better coordination strategies and plans across risk, finance, and treasury activities; this is no longer a point of debate. The real questions are around how these coordination efforts should be approached, what level of alignment supports overall business ambitions, how the information architecture should look, and what operating models best suit current and future directions.

Strategic options and approaches

In most instances, the difference between leading and lagging organizations lies in the realization of business benefits. Financial firms perceive clear benefits from finance and risk alignment, yet there are gaps in risk and finance IT or the underlying data, which limit organizational capabilities to integrate risk analysis, financial forecasting, and strategic decision-making. At present, only a few firms have struck the right balance between evolving the classic 'control-oriented' reporting and performance monitoring functions with the needs of a forward-looking alignment of strategy, risk, and capital. Most firms are still entrenched with choosing to focus on compliance, rather than deriving strategic benefits.

Beyond the regulatory lens, senior management of financial firms will (eventually, if not already so) require aligned risk and financial management processes to answer the following questions:

- How do we sustain, manage, and control escalating costs associated with regulatory and risk management initiatives?
- How will our strategic plan impact the risk and return of our bank's business portfolio under onerous regulatory regimes that we operate in?

- Is our institution's plan for capital deployment realistic under different economic and industry scenarios, or will it endanger our financial obligations?
- Should we reduce the capital budget or let it stay the same to provide a buffer?

Action points and recommendations

To address these strategic questions, firms must coordinate across business, risk, and finance activities to ensure the layers of change are planned for and managed (see Figure 5) around: governance and steering; process integration; business and IT architecture; data management model; and analytics, metrics, and reporting operations. In the sections that follow, we unpack each layer, highlight pertinent considerations, and recommend actions that firms should take.

> Most financial firms still focus on ensuring compliance, and that only. However, the real deal is to derive strategic benefits from regulation-led changes, and regulatory adherence is automatically taken care of.

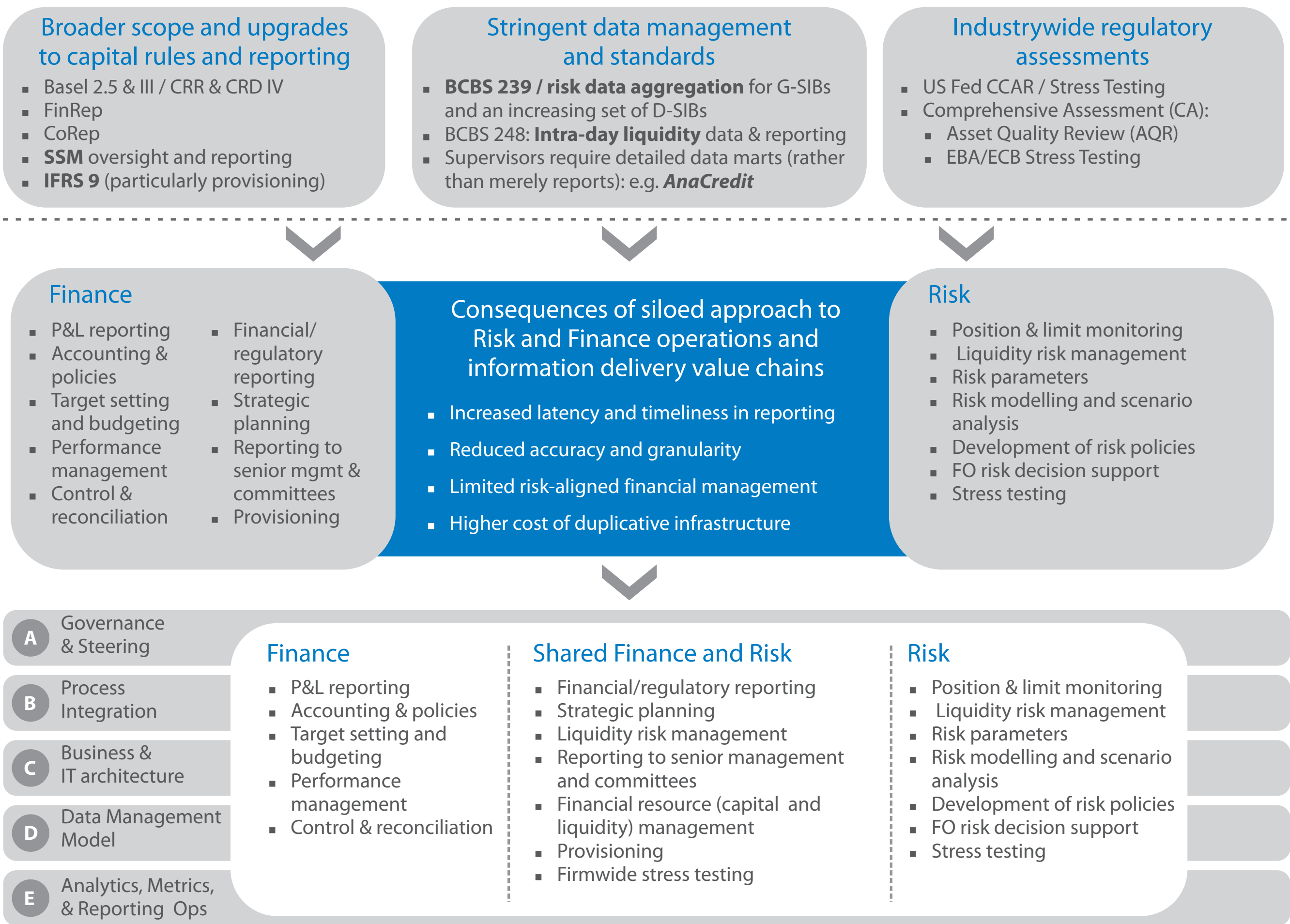

Figure 5: Risk and Finance Transformation: A strategic approach is required

Source: Celent[3]

A. Governance and steering: Ensure alignment between business processes, governance, IT, and data models

With regulatory, risk, and accounting initiatives gaining prominence, responsibilities between various risk, finance, and treasury groups have at times blurred. This can be attributed to overlapping activities, requirements for similar information, and in certain instances, a lack of coordinated stipulations from senior management regarding the boundaries of each function, especially at a day-to-day level. In light of these developments, this is an important layer for change – to not merely envisage how change could look like from a business perspective, but also to secure the right buy-in at various levels.

Governance and steering mechanisms for first, second, and third lines of defense need to be clarified and confirmed, and accountabilities need to be elevated to the senior management. This will ensure that the strategic and operating vision defined during the change program execution stage are weaved into the business as usual phases. In particular, firms need to be cognizant of the following aspects:

Maintaining a status quo through tactical initiatives usually leads to higher fragmentation and 'operational drag'. Financial institutions should therefore aim for a radical overhaul.

- Scope, timetable, and supervisory paradigms in different regulatory regimes, as well as interactions and overlaps between risk and finance, are increasing in complexity. These open up the potential for synergies, but might also result in inefficiencies, inconsistencies, and conflicts surrounding models, data, and reporting. Firms must realize that maintaining a status quo through tactical initiatives usually leads to higher fragmentation and 'operational drag'.
- Executive sponsorship teams need an attractive business case to secure investments for risk and finance alignment efforts. This means getting the senior team to commit to driving changes in an evolving regulatory environment, keeping a sound proposition for alignment between risk and finance control functions with regard to the frontline transactional processes, and making improvements in front-to-back efficiency and effectiveness. Avoid IT and operations centric business cases at all costs. This not only weakens the commitment and loyalty of stakeholders, but also means that there is no basis for making decisions about possible scoping, cost, or duration adjustments during the course of the project. Remember that platform renewal projects (such as risk and finance integration) are likely to fail if there is a failure in establishing and quantifying links to business benefits.

Break down functions and capabilities into manageable, easy to control components to reduce launch risk both from technical and functional perspectives, especially in the current risk and regulatory environment that is dynamic and ever-evolving.

- For significant programs such as this, it is critical to manage the transformation in a way that minimizes risks. Firms must pursue intelligent approaches in relation to scope and change planning to ensure that functional and technical dimensions are balanced in the right manner. From a functional standpoint, it is important to derive realistic platform requirements based on both balanced outside-in, as well as inside-out considerations. From a technical perspective, technology teams should design architectural components that can be introduced in the form of modules as well as multi-release strategies, by ensuring IT components are designed for adaptability, modularity, and agility.

- Beyond this, transformation should be actively adapted to changing business priorities, and consequently, should translate to an updated business case. Through a disciplined and iterative capability development process, it is possible for firms to sustain and selectively improve well-functioning architectural components and to speed up the implementation.

B. Process Integration

Risk and finance process integration across the group will not only need to be well-defined, but collaborative activities and data handover points will also have to be redesigned and integrated.

- Convergence is required in specific areas like financial or regulatory reporting, strategic planning, liquidity risk management, financial resource management (capital and liquidity), enterprise-wide stress testing, provisioning, and integrated C-suite reporting.
- Risk and finance activities each have their own core and value-added tasks. Firms need to identify all categories but emphasize a different focus for each:
  - Core production factory-type tasks require timely, efficient, and cost-effective information delivery. Hence, integration mechanism, straight-through processing capabilities, and structural data integrity to facilitate processing efficiencies are required to ensure high predictability and low-exception rates. Some examples of related tasks are:
    - Risk and finance reporting based on reconciled or common data
    - Measurement of BAU risks (for example, generation of market, credit, and liquidity risk measures)
    - Controlling functions (for example, daily P&L or product control processes)
  - Value-added tasks should focus on enabling the business to differentiate. Hence, analytical frameworks, information usability, and flexibility in creating 'what-ifs' around data as and when needed, should be deployed. Some examples of related tasks are:
    - Embedding risk considerations in strategic decision-making
    - Accurate assessment of risk-adjusted performance
    - Framework for assessment of risk appetite
    - Active management of the institution's capital resources (related to economic capital, regulatory capital, and collateral)
    - Active preparation for organic and inorganic (acquisition-based) growth
- This will require first time business processes to ensure the incorporation of mechanisms that capture the correct data consistently, higher levels of automation, and enhanced validation and reconciliation against risk and financial data and reporting. Furthermore, validation and sign-off controls must be raised to the level of financial accounting standards. Comprehensive documentation is required throughout.

C. Business and IT architecture

Firms need to ensure that adopted business and IT architecture strategies reflect a high degree of alignment across front office business units, with risk and finance application architecture, data integration architecture, and technical infrastructure. The focus should be on simplification, with more nimble, platform-based architecture methodologies. Flexibility, extensibility, and industrial reliability need to be the underpinning design principles when deciding whether to buy, build, or adopt a hybrid approach.

The best practice for designing a risk and finance technology architecture is to take an upfront structured approach that ensures both domains are sufficiently aligned (whether physically or logically) with the needs of the business, and to avoid settling for downstream workaround solutions that create organizational bottlenecks and hinder effectiveness and efficiency in the long run.

D. Data management model

- Firms must ensure that data architecture and data management models present a 'single version of the truth', yet meet changing regulatory requirements over time. Key components such as primary data sources, policies and standards for aggregating data across functions, and automated data feeds must be strengthened. Comprehensive taxonomies to define data across the group and golden source data, need to be enhanced and implemented consistently, to better meet requirements for real-time availability of data.

  The process of entropy exists through duplication, fragmentation, and overlap of information, as well as derived calculations and aggregated data from source systems into risk and finance systems. Therefore, to redesign the information value chain for risk and finance, firms need to start by rationalizing data sources and interfaces that flow into finance and risk repositories. To make effective changes here, firms must:

  - ·Redesign data layer to reduce excessive extract-transform-load mechanism (ETL) processing – remove inconsistent and overlapping data feeds
    - Adopt 'clean and transform once, load many' paradigm
    - Where possible, share feeds through a single ETL, otherwise use shared feeds but through parallel postings or ETL
    - Consolidate data sources and/or feeds across related regulatory requirements
  - Leverage sophisticated high-performance computing, for example, incremental, on-demand, data stratification ETL techniques that utilize parallel processing technologies
  - Inventorize or maintain a map of system and metadata information within a centralized repository
  - Enhance data quality profiling, assessment, and reporting capabilities
  - Enforce discipline of data quality remediation at source (for example, through a combination of clearly defined processes, policy, and case or workflow tools)

First step to redesigning the information value chain for risk and finance: Rationalize data sources and interfaces that flow into these two repositories.

Firms must also start with coordinating data governance and definitions in key risk and finance departments, and over time, move toward aligned and consistent data architecture and management capabilities across the bank. Depending on the firm's as is state and target objectives, this can be toward a physically shared, common finance, and risk data repository. Firms must consider the following:

- Finance and risk data model for the repository should be capable of enabling multiple views: regulatory, accounting, and economic for steering purposes. Financial firms will need to make decisions on what data across finance, risk, treasury functions, and steering groups will be consolidated into shared data systems or pools versus what will be treated separately.
- Considerations need to be given to all steering functions according to their production timing requirements. What will be the target frequency and timeliness of the data delivered to various functions and stakeholder groups? How would this data's 'distance from its source' affect: fidelity of the data (therefore affecting timeliness of production and the materiality of discrepancies), speed and ability to generate reports (for example in emergency situations), and currency of data and reporting (for example, if near-real time liquidity monitoring is required).
- Repository should support distributed data processing and the ownership of data should exclusively be with the local bank (right to change data and responsible for its quality and calculations, with separate logical views across local subsidiaries and branches). This will facilitate decisions around where ownership for single binding data sets (golden sources) resides.
- All postings should be granular and made directly from source systems (including all loan and trade level transactional data).
- Ensure strong data governance, data quality, and data architecture practices across functions and legal entities to support such a significant undertaking. Increase auditability and traceability of source data and intermediate calculations – data architecture should include sufficient meta information about source systems, field mappings, and intermediate calculation steps, which can point back to how information is derived; traced back to the source. Institute continuous application level integrity and data quality profiling checks upfront (not as an afterthought) – to be able to deliver quality scores, indices, confidence indicators through regular data quality reports, or at the point of data consumption.
- Across the industry, a common target state is emerging for an integrated approach to data. Many banks have similar aspirations to finally deliver on some fundamental data themes (for instance, single book hierarchy across the enterprise). In addition, a number of banks are aiming to significantly rationalize their trading and position data on a front-to-back basis, arguably the most complex data that banks need.
- In the longer run, when consolidating risk and finance data and exploring options, the resiliency of each approach should be thought through. Ask questions like: Does one physical data warehouse (for example, for finance and risk) mean there is a single point of failure, rather than other options that have multiple paths that are more resilient? Is each option independent of the other, or are incremental migration paths possible from one state to another?

E. Analytics, Metrics and Reporting Operations

Analytics, metrics, and reporting operations will need to be designed for greater flexibility and timeliness, in particular, to accommodate ad-hoc 'what if' analysis, integrated stress scenario modelling and testing, as well as finer grained data outputs, and a wider range of data aggregation and analyses. Modeling approaches and activities must be well-governed and transparent. Management information dashboards and metrics will need to be designed to provide actionable insights for senior managers. In order to achieve these, firms must:

- Focus on standardization with common reporting tools and infrastructure.
- Craft data and reporting strategies to align internal (accounting, economic views of capital, risk, other KPIs) and regulatory reporting - reflecting a 'capture once, report many' approach.
- For both internal and external reporting, define and understand important characteristics of use cases for how reports and insights are consumed (profiles of users, their information needs, data granularity, frequency of access, predictability of access, etc.) in order to demonstrate that the reporting layer can work in practice and is fit-for-purpose.
- For external reporting, streamline workflows to support regulatory submissions to various jurisdiction-specific templates, automate workflows for sign-offs, remediation and governance processes on an end-to-end basis. Manual workarounds should be minimized. Institute business rules around submissions, corrections, and sign-off processes across jurisdictions, with facilities to trace back calculation steps, checks against historical submissions, previous submission failures, and so on. Centralize approach to regulatory report production, with localized approval and remediation workflows.
- Compare options to internally execute versus outsource operations for regulatory report production activities.

Overall, a more integrated approach across finance and risk will be a significant step change to achieve competitive advantage in terms of reaching new levels of cost and operational efficiencies, with the winners being the banks that are able to invest enough resources on longer-term goals, while delivering against nearer-term imperatives.

Looking forward

Looking forward, firms need to still continue to find effective ways to consolidate, optimize and innovate to sustainably operate in the new post-regulatory landscape for strategic advantage. Regulatory-led risk management alone will not automatically translate into a source of competitive advantage.

Leaders with ambitions to thrive in the new world will drive better risk-enabled financial management to counter the erosion of returns from regulatory developments, and to focus on profitably sustaining the right businesses and client segments. With a cohesive risk and finance approach, coupled with the right infrastructure and governance, firms can provide an effective and realistic view of client profitability to support dynamic client-led strategies which reflect the new realities of client economics borne from changing regulatory rules, such as on funding, RWA, liquidity, and leverage constraints.

Forward-thinking firms that understand the profound impact of emerging regulatory regimes and future competitive requirements will adopt a strategic stance (beyond regulatory requirements) to deploy capabilities for integrated balance sheet and financial resource management paradigms in order to achieve financial efficiency when weighing risk-reward considerations. Only then can firms break away from merely complying, toward actually thriving in the emerging regulatory landscape.

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TCS has been ranked #2 in the 2014 FinTech Rankings Top 100 of global technology providers to the financial services industry, by both - FinTech Forward™ (a collaboration of American Banker and BAI) and IDC Financial Insights. TCS has also been recognized as a 'Leader' and a 'Star Performer' in Everest Group's 2014 PEAK Matrix reports for Banking and Capital Markets Application Outsourcing (AO).

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