



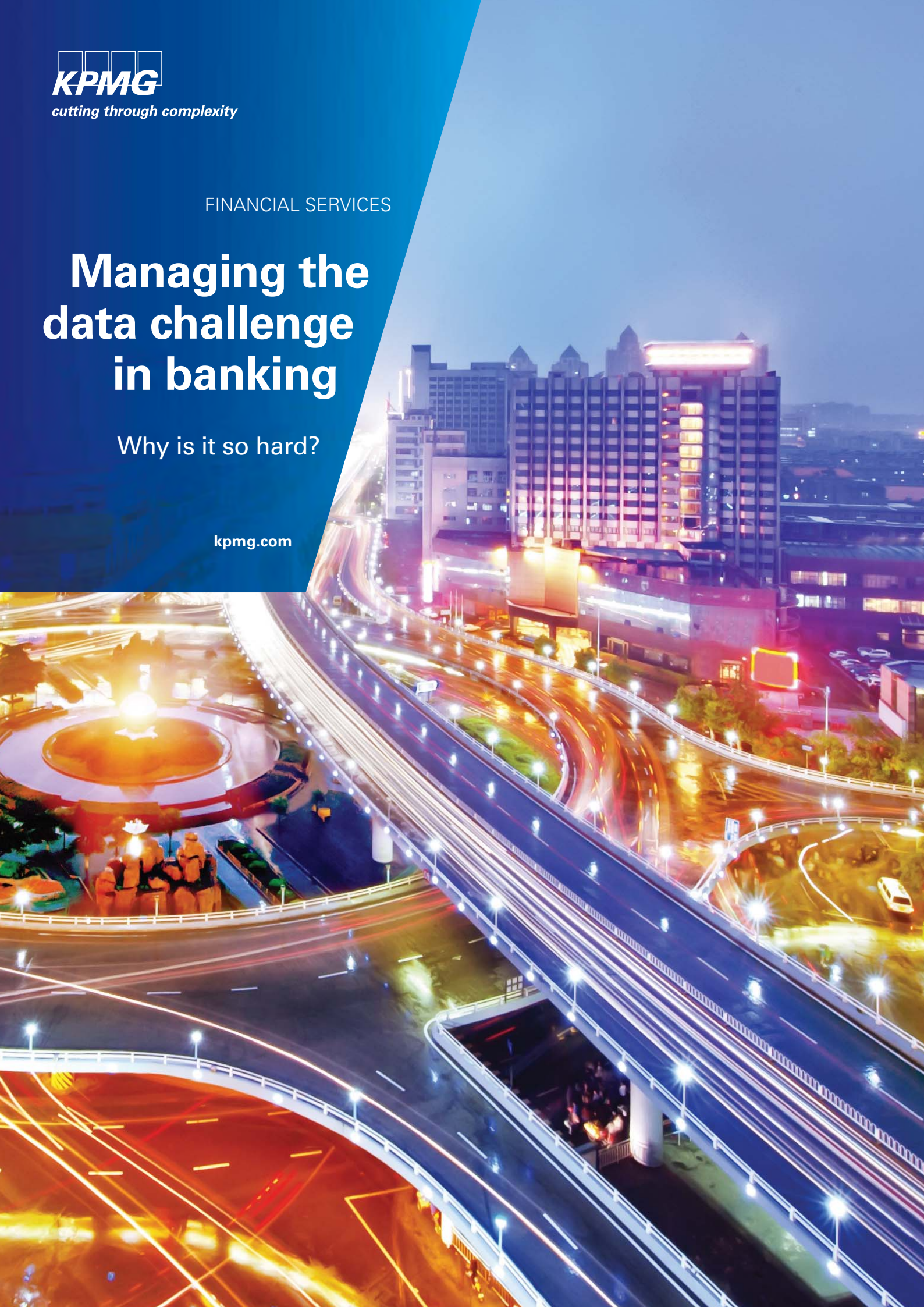
cutting through complexity

FINANCIAL SERVICES

Managing the data challenge in banking

Why is it so hard?

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Managing the **data challenge** in banking



More and more data
is being collected on
all aspects of banking
operations

Many banking organizations continue to struggle with the challenge of aggregating and managing vast amounts of data and accurately reporting their financial positions to both regulatory agencies and the general public. The extent of the problem has been long standing, but it was brought starkly to light by the financial crisis as confidence evaporated and markets seized. More than five years on, the challenge remains as great as ever. Many firms are failing to address the magnitude of the problems they face around data risk aggregation. We believe that it is likely that the underlying cultural issue of who owns and is responsible for data generally is a key root cause for the lack of progress. It is time for both business leaders and regulators to 'raise the bar' around 'data literacy' in order to fully address the many challenges that lie ahead.

Despite the substantial investment made to date around 'data' and the additional investments needed to meet heightened global standards, many firms are failing to gain traction around the challenges associated with risk data aggregation. Notwithstanding the enthusiasts of 'big data', it appears that the data question is more of a challenge for big banks than it is an opportunity.

In some jurisdictions, bank professionals are focusing on regulatory compliance and reporting; in others, the conduct agenda is steering banks to interpret data as an adjunct to customer-centricity. IT professionals tend to regard data as an IT issue, risk managers as a risk issue; strategy, finance and operations specialists all have their own perspectives. Sometimes it seems that there are as many approaches to the data issue as there are banking practitioners. As a consequence, our view is that the industry is conspicuously failing to develop a coherent understanding of the strategic implications; and is failing to understand the significance of aligning a firms' data strategy with the overall business strategy. We are nervous that the unintended consequences of this could have long term implications.

More and more data is being collected on all aspects of banking operations, yet collectively, the totality of 'data issues' does not seem to be properly aggregated nor, more importantly, understood by management. Meanwhile, banks have become bigger, more diverse, and more complex, and technological change has radically increased the speed of business operations and the rate at which data is amassed, stored and processed. Under-investment in data and systems (or investment in non-optimal systems), and the continual layering up rather than redefinition of new reporting and information requirements have compounded the difficulties. Today, many major banks have at least one significant project to improve data management, IT infrastructure and reporting. However, in KPMG member firms experience, the approach being adopted for these many and often, cross-purpose projects is neither cohesive nor consistent. The focus tends to be around control, governance and architecture with very little attention given to how the data is used – the term is data exploitation. For example, how data is used or captured by the line of business can be very different from the control function view, which can drive positive business outcomes such as increased revenue or cost avoidance (without root cause affect). Too often, cost has been expended with little realizable gain.

What progress has been made?

The challenge of getting to grips with data is highlighted by the reaction of major banks to the Basel Committee's principles to improve the effectiveness of risk data aggregation and risk reporting. Many firms are likely to struggle to meet all of these principles¹, although the extent of the gap will depend on how stringently the principles are interpreted by national supervisors.

During 2013, the Basel Committee undertook a review of progress in implementing the Principles by means of a 'stocktaking' self-assessment questionnaire completed by G-SIBs. The results were published in December 2013. On a scale of compliance status ranging from 4 (best) to 1 (worst), the average rating was 2.8, which indicates that banks' average

reported compliance status stands between largely compliant and materially non-compliant. The three principles with the lowest reported compliance were Principle 2 (data architecture/IT infrastructure), Principle 6 (adaptability) and Principle 3 (accuracy/integrity); nearly half of banks reported material noncompliance on these principles.

This self-assessed lack of progress against the Principles is telling and is not likely to improve as the deadline to comply by the end of 2015 is fast approaching. At this stage, the industry needs a holistic approach to data governance – not a siloed based approach targeted at specific datasets required for specific directives. It's not only about the regulatory requirements, which are extreme and costly, but more

The review continues:

Many banks are facing difficulties in establishing strong data aggregation governance, architecture and processes, which are the initial stage of implementation. Instead they resort to extensive manual workarounds which are likely to impair risk data aggregation and reporting... More importantly, **10 banks, 33% of the population**, mentioned that they currently expect to not fully comply with at least one principle by the deadline. Some of these banks noted that the reason is large, ongoing, multi-year, in-flight IT and data-related projects.

¹ Basel Committee on Banking Supervision (BCBS), Progress in adopting the principles for effective risk data aggregation and risk reporting, BCBS268, www.bis.org/publ/bcbs268.pdf

importantly the cultural change that is needed within the organization to view the data issue as a whole. Getting to the necessary cultural change is the key to meeting the challenge.

All of this adds greater pressure for a quick-fix solution. However, half measures and 'sticky tape' are unlikely in the end to be sufficient. Indeed, they are likely to compound existing challenges. Planning should have started on how to lay out a program which moves firms toward compliance, but more importantly, recognizes opportunities which will flow from a program that can improve the quality of decision making within the organization; and ultimately improve business outcomes by unlocking value from data.



The Principles, which cover both qualitative and quantitative measures, address four key areas:

01 The importance of Senior Management and Boards exercising strong governance over a bank's risk data aggregation capabilities, risk reporting practices and IT capabilities. This includes:

- the documentation, validation and robustness (in the event of new products and activities, or changes in group structure) of these capabilities and processes; and
- the design, building and maintenance of data architecture and IT infrastructure which fully supports a bank's risk data aggregation capabilities and risk reporting practices not only in normal times but also during times of stress or crisis.

02 The accuracy, integrity, completeness, timeliness and adaptability of aggregated risk data. This includes:

- the adequacy of the systems and controls that generate the risk data and its aggregation; and
- the capability to adapt rapidly to changes in key risks, decision-making arrangements and regulatory requirements.

03 The accuracy, comprehensiveness, clarity, usefulness, frequency and distribution of risk management reports, including to Senior Management and the Board.

This includes:

- procedures for monitoring the accuracy of data and the reliability of models;
- making good use of forward-looking assessments of risk; and
- reviewing the usefulness of risk management reports to Senior Management and the Board.

04 The need for supervisors to review and evaluate a bank's compliance with the first three sets of principles listed above, to take remedial action as necessary, and to cooperate across home and host supervisors.

BCBS 239 - The bigger picture

BCBS 239 accepts that where data is not available 'expert judgement' is acceptable. If this 'exemption' becomes prevalent, there is little incentive to create the processes and systems to capture the quantitative risk data to create objective risk information. We accept the data landscape can contain actual and 'expert' data items, but if the data-road map is not based on complete and systemic coverage, the industry is likely to end up with sub-optimal solutions at best.

Over the years, management systems in banks – and in other financial services companies – have had to cope with increasing regulatory requirements, new corporate structures, new products and operating models and more (the financial crisis). As with other infrastructure, systems for the collection, aggregation, and analysis of risk data have typically developed in an incremental fashion, with different modules, incompatible data and a range of ad hoc processes. Often relevant data is missing or inadequately analyzed, resulting in the formation of 'reconciliation industries' within the organization as data is passed between a multitude of systems across inconsistent integration mechanisms. The issue in many organizations is that the reporting architecture is a patchwork of data extraction, manual calculation and reporting components focused on individual reports by business area. This rarely allows risks to be calculated or reported across lines of business for instance, by country, or by product, and may not easily facilitate drill down or ad-hoc analysis to understand the underlying trends or issues. Risk data is frequently being provided too late to influence basic business, trading, and overall operations which depend on it, whilst the operating costs are still incurred. In addition to 'business as usual' requests, the need for quick and accurate data to meet the recovery and resolution plan requirements means data is critical in a stress situation as well as business as usual.



Regulators have become increasingly concerned about the how weaknesses in risk data aggregation systems may compromise financial reporting. While these shortcomings were exposed at the height of the financial crisis, little progress has been made. Many institutions are still unable to provide the required data, or find themselves coordinating a massive manual and ad-hoc intervention to assemble the data demanded by their management teams or by regulators. Major market participants still question whether firms have the capacity to extract the necessary information quickly enough to understand the location and extent of risks and exposures contributing to whatever future crisis of confidence the global financial system may face.

This is not an issue that the majority of firms have squarely addressed – Can we handle another financial crisis?


Firms need to ask themselves whether they have a clear Data Architecture to support the principles of Risk Data Aggregation and whether they are able to create future data capabilities that will enable them to comply with the BCBS principles by the required deadline of 1 Jan 2016. Implementation of an additional reporting capability is very straightforward compared with the challenges of making fundamental changes to the quality and completeness of data across the Enterprise that would be required in order to effectively comply with BCBS 239. The biggest issue is likely to be with being able to apply Data Quality, Data Governance and Data Management techniques pragmatically and effectively so that the quality of the data being used for risk reporting can be demonstrated (measured) automatically.

Compliance with the Principles will be compulsory for global systemically-important banks (G-SIBs) from 1 January 2016. National supervisors need to have translated the Principles into detailed regulation by then. The Basel Committee also recommends that banks classified as domestic systemically important banks (D-SIBs) by national regulators should be required to comply within three years of such designation.

The short timescale, and the need to await local regulations before the precise details of the requirements can be analyzed, raise particular challenges. The costs are likely to be high, and the demands on people, processes and technology will be significant. Many banks are also struggling to cope with other multiple, overlapping – and sometimes conflicting – domestic regulatory requirements. There is a significant risk that many banks will fail to meet the deadline; or that they will be driven to focus on narrow compliance rather than to embrace the challenge at a more fundamental level.

More importantly, are banks confident that they have the right data to respond to another crisis?

A further complication is that some regulators, for example the Federal Reserve and OCC in the US want to regulate the whole of a global bank in one place. The UK Prudential Regulatory Authority is making similar suggestions. But this runs directly counter to the principle of ring-fencing capital, separating retail from investment banking, and aiding orderly resolution. Early clarity is unlikely.



Many banks are still suffering the consequences of failed IT solutions for data repositories not delivering their intended benefits. As such, there is a strong chance that 'risk data' repositories will be built adjacent to the 'strategic' data repositories. At this point, they will be narrow by design and the ownership will likely be confused i.e. the data owner of the source data may not accept ownership of the risk data if it has been changed in anyway. This will result in an owner of the source data, an owner of the modified data and primary and secondary federated data architectures – a mess.

Getting a grip

Although the details of how the BCBS principles will be implemented by national regulators remain unclear, the fact that this is fundamentally a strategic issue means that banks can get on with planning the structure and direction of improvements now. This will lay the groundwork for real strategic advantage; and it will also put them in a better position to comply with the detail beginning in 2016.

Nevertheless, the challenge is complex. The standards require the ability to generate a wide range of information in both business as usual conditions and under stress. In addition, it is difficult to envisage the definition of a single consistent framework. For example, credit risk aggregates quite simply; but market risk is mitigated by portfolio diversification. Moreover, it is difficult to calculate and cannot simply be aggregated up within the legal entity hierarchy. Operational risk is still a subject of much debate regarding the value of quantitative and qualitative data. In a crisis, a regulator may ask for an assessment of exposure to an unforeseen and poorly-understood situation. While the question may not be easy to answer, the principles imply that management should be able to reply accurately very quickly.

These considerations suggest that a fully-automated front-to-back data solution may not be the answer. Management will need to rely also on people who understand the data, can intervene, can interpret data and then respond to new situations. The challenge will be to balance automation with flexibility.

Key issues to be addressed:

quality: with multiple, discrete systems, the quality of data is degraded by incompatible definitions, inconsistency, incompleteness and duplication. With poor quality data, the effectiveness of risk management can be seriously compromised.

flexibility: it is important to be able to react quickly to market events. Similarly, the flexibility to react rapidly to regulators' requests for reports and data without a huge amount of manual work is also important.

efficiency: very often, data resides in different silos, owned by different functions, all with different attitudes and approaches to data management. With multiple systems and incompatible data, risk professionals spend too much time and effort on data aggregation, reconciliation and analysis and too little time on applying the results to risk management and decision making.

The stumbling block for many will be the issue of:

ownership: too often, ownership of risk data is shuffled uneasily between the control function and the IT function, with business Senior Management taking little direct responsibility. Data ownership, data governance and business alignment enable the producers, consumers and stewards of data to be identified and aligned across an organization. Without a clear structure of governance and ownership there is no accountability and no prime commitment to quality. Also, there is the fear that the risk data will become a secondary product, with a different owner to the source – this makes implementing quality standards problematic, as both primary and secondary uses of data will need to be considered.

Techniques exist that enable the processes and architectures for managing data end to end to be defined, documented and controlled including tracking where data is not managed in accordance with agreed processes and protocols. Whilst the methods and tools exist to enable data to be managed effectively across the Enterprise few organizations have managed to specifically define how this will work within their environment. Meaning many firms are still unable to implement effective data quality regimes across the range of data required to satisfy the breadth and depth of regular risk reporting or stressed risk reporting.

How to get data right – comparability, measurement, documentation and auditability

- ➔ A critical objective of meeting BCBS 239 requirements is accuracy and flexibility. The data and reporting should all be consistent and agile, so that banks are able to split and analyse the data in multiple variations. The same level of granularity is needed of data across the business – this will prove challenging in a global context, particularly in light of structural separation measures, also as a result of regulatory reforms.
- ➔ Senior Management and the Board need a clear understanding of the macro-economic environment and an assessment of the various risks presented. This means the right people being accountable for data capture and reporting, with the correct links to the Board.
- ➔ A suitable model across the business would cover a number of variables and business lines, as illustrated in Figure 1.

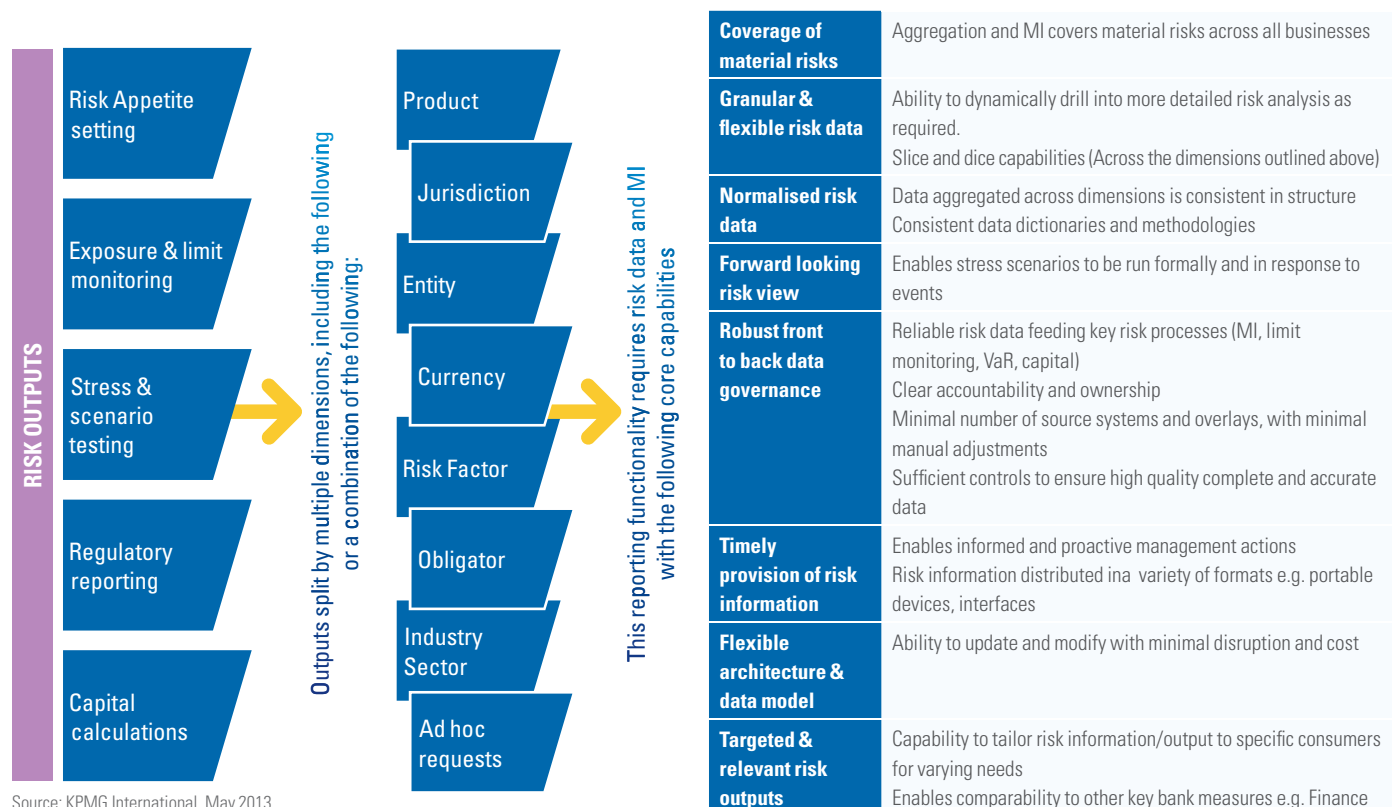
The strategic benefits of change

Success will bring significant strategic benefits. Capabilities which will benefit include:

- the ability to aggregate risk, counter-party risk, country risk etc in a timely manner
- the necessary integration of finance and risk data
- the ability to make better strategic decisions around products and markets
- rationalization of reporting and dashboards

Risk and opportunity are two sides of the same coin. Hence risk data aggregation is conceptually equivalent to opportunity data aggregation: that is, the identification, aggregation, modelling, analysis and management of all material data necessary for the bank to manage the risks it faces and to exploit the opportunities open to it: to reduce costs, increase sales, increase efficiency and improve profits. In this sense, risk data aggregation is merely a part of the structure of broad data collection, information management and analysis which a bank needs to put in place to manage its business properly.

Figure 1



Source: KPMG International, May 2013.

Developing an **effective project structure**

A robust approach should start with an impact assessment which considers:

- the risk data (including associated reference data) needed to meet internal risk management requirements as well as regulatory reporting needs;
- the scope and quality of the risk data collected;
- effective aggregation of risk data, including by legal entity;
- the frequency, appropriateness and quality of internal reporting of aggregated risk data, including to Senior Management and the Board, and the use of this information for decision-making; and
- governance procedures at Senior Management and Board level for risk data aggregation and reporting, including a firm's IT capabilities in these areas.

Creating an effective project structure then requires defining three key stages:

- **gap analysis** – assessing the extent to which a bank meets the principles, and characterizing the gap to clarify how data and processes must change to close it;
- **meeting the principles** – designing and implementing the necessary improvements to deliver on the program's objectives either through expanding the scope of existing programmes or implementing new initiatives; and
- **validation** – providing assurance through external reviews of data management, data aggregation and data reporting to ensure the maintenance of robust data and reporting processes which continue to be fit for purpose and demonstrate the ability to effectively aggregate risk data across risk types.



Figure 2



Source: KPMG International, May 2013.

In terms of meeting the principles, there is likely to be an issue in identifying and managing the data required to produce both on-going risk reporting and the data likely to be required to respond to specific regulatory requests in times of stress. Secondly, managing the above data so that this meets the BCBS principles is also going to be a significant challenge. Thirdly, for most G-SIBs, the data architecture/strategy is likely to involve multiple, disparate programmes rather than a single structure, meaning that co-ordination and reporting is going to be difficult and complex.

Within this context, it makes sense to address first the principal regulatory requirements which banks are already required to meet. In the US, there is the annual stress test that has been underway since 2009; in the EU, there is the big ECB/EBA stress test under way at present. So the first task should be to look at the data which the regulatory authorities require for stress testing; and at what the firm itself needs for internal stress testing.

The importance of the conduct agenda and interpreting data adjunct to customer-centricity must not be overlooked. The real competitive advantage here can come from the successful integration and analysis of customer data to develop a better understanding of customer needs and thereby enable banks to serve these customers more effectively, efficiently and profitably.

There is a raft of new and emerging requirements which drive change to risk data – and these vary between jurisdictions. These include:

- Trade reporting for OTC derivatives which require granular information on positions, counterparties, valuation and collateral;
- COREP/FINREP capital and financial reporting in Europe which also require significantly more, and more granular, information on risks positions and concentrations as well as parallel data on capital, funding and financial position;
- Other BCBS initiatives, such as revisions to the large exposures regime which will require more frequent and granular information on risk concentrations, and changes to the trading book regime, which will fundamentally impact the designation of risk positions as trading or non trading, and also the associated valuation calculations;
- Other risk governance initiatives, including multiple papers from the FSB and BCBS which set out to clarify best practice, accountabilities of Senior Management and the Board, and associated reporting and information requirements; and finally
- IFRS 9, which significantly changes fair value measurement for financial instruments by introducing the concept of calculating an 'expected loss' but continues to leave gaps between regulatory and financial approaches – maintaining the need for dual reporting which must be aligned.

The emerging regulatory agenda now affects almost every aspect of how a bank controls its operations.

Together, these represent a huge new data reporting obligation which can only be tackled effectively with a holistic approach considering the impact on the organization overall rather than a siloed approach by risk type or division (see Figure 2). Individual projects need to be subsumed into a coherent framework of improved data management, streamlined processes and cost reductions. This also reflects the nature of the external environment. The emerging regulatory agenda now affects almost every aspect of how a bank controls its operations. Assessing impacts on capital, liquidity and collateral has become crucial to optimizing business decisions and returns. The scarcity and cost of both capital and funding requires a more integrated approach to capital buffers. Reliable data, which can be generated and aggregated quickly, is now a critical enabler. And Senior Management and the Board need a clear understanding of the macro-economic environment and an assessment of the various risks presented.

A coherent and holistic approach is essential. This also implies that any project structure has to include representation from all significant functions – from risk and IT to HR and customer relations – and all significant geographies – since the specific reporting requirements will vary by jurisdiction.

Establishing an overarching programme governance structure to monitor the delivery of the BCBS requirements through existing and, where required, new underlying initiatives will embed sufficient structure and rigour whilst avoiding the paralysis that can result from an unwieldy and all encompassing mega programme. At a minimum the overarching governance should:

- Set standards for compliance with the requirements of BCBS;
- Convert the principles of BCBS into designs to be applied consistently across the group;
- Act as the design authority for the end state systems and data architecture;
- Review business requirements for existing projects and revised as appropriate to meet requirements of BCBS;
- Monitor delivery and adherence to end state architecture and key BCBS driven designs requirements; and
- Lead demonstration of risk data aggregation capability.

Are there really **long-term benefits**

As we have suggested, there is significant potential value to be obtained from effective risk data aggregation, storage and analysis, beyond simple regulatory compliance. The ability to consolidate and synchronize all relevant risk data can lay the foundation for a more overarching and consistent analysis, enabling better business management, better risk management and optimized operating models.

High-quality and quality-assured risk data should lead to improved decision-making, greater confidence and a more stable strategy. With greater confidence in data validity, risk IT architecture can be streamlined, leading to efficiencies in both routine operations and in maintenance and development. In turn, these benefits can offer improved ability to respond quickly and effectively to changes in corporate strategy, operating environment or indeed regulatory demands. If regulators have greater confidence in a bank's risk data and the aggregation machinery underlying it, the whole regulatory compliance system can become simpler and less challenging.

Improved data aggregation can bring direct economic benefits and reduced capital requirements. Currently, for example, a significant proportion of a bank's collateral contracts are ineffectively captured, and so cannot contribute to risk-weighted capital calculations. More comprehensive and accurate data aggregation methodology can bring this into the equation.

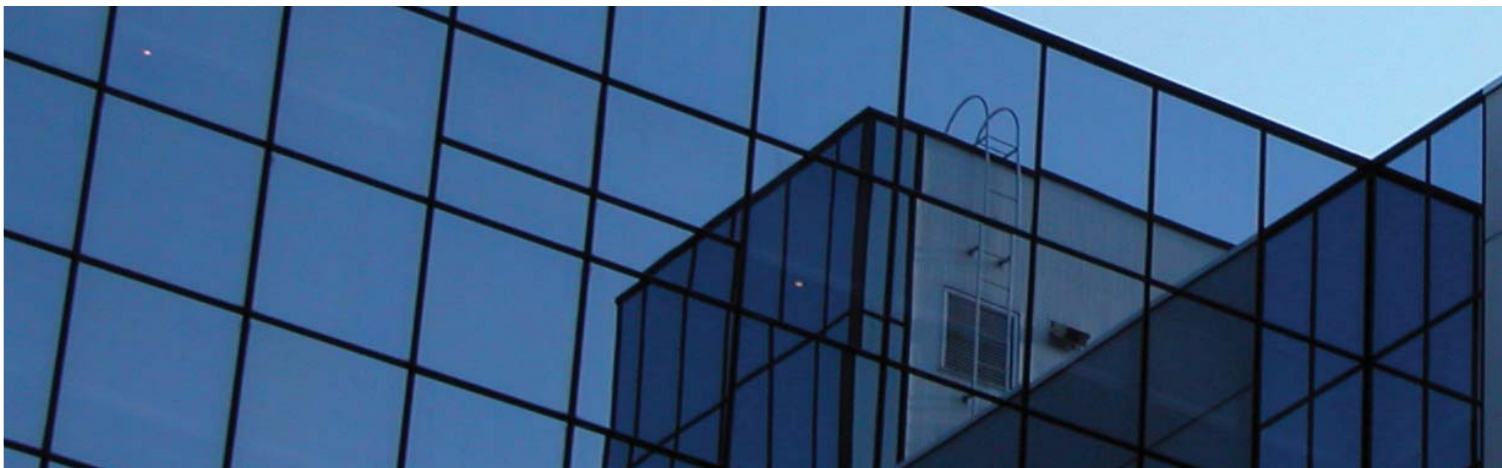
Systems for transmitting and reporting risk data need to be built into any improved data aggregation framework, since its value is dependent on the ease and timeliness with which senior management can take the results into account. The same argument applies to communication with regulators, who will value rapid and accurate regular reporting as well as a speedy response to ad hoc requirements.

Achieving the benefits requires moves towards modern approaches to data management. **However, it may be a happy accident that the challenges to data management currently being posed to banks, and typified by BCBS 239, coincide with major new trends in data architecture which could make their resolution much more practicable.**

For example, the Lambda data architecture pattern. This pattern enables real time data streaming and large scale batch processing to support in-depth machine learning and behavior change detection using technologies pioneered by Twitter and Yahoo. BCBS 239 could be a significant potential catalyst for change in this area.

The necessary initiatives clearly need to be defined and implemented in ways which balance costs and potential benefits. But since the results should include increased confidence, reduced potential for loss, efficiency gains and increased profits, significant effort and expenditure will often be economically worthwhile. Thus, managing data is not a regulatory compliance exercise but a business imperative.

Managing data is not a regulatory compliance exercise but a business imperative.



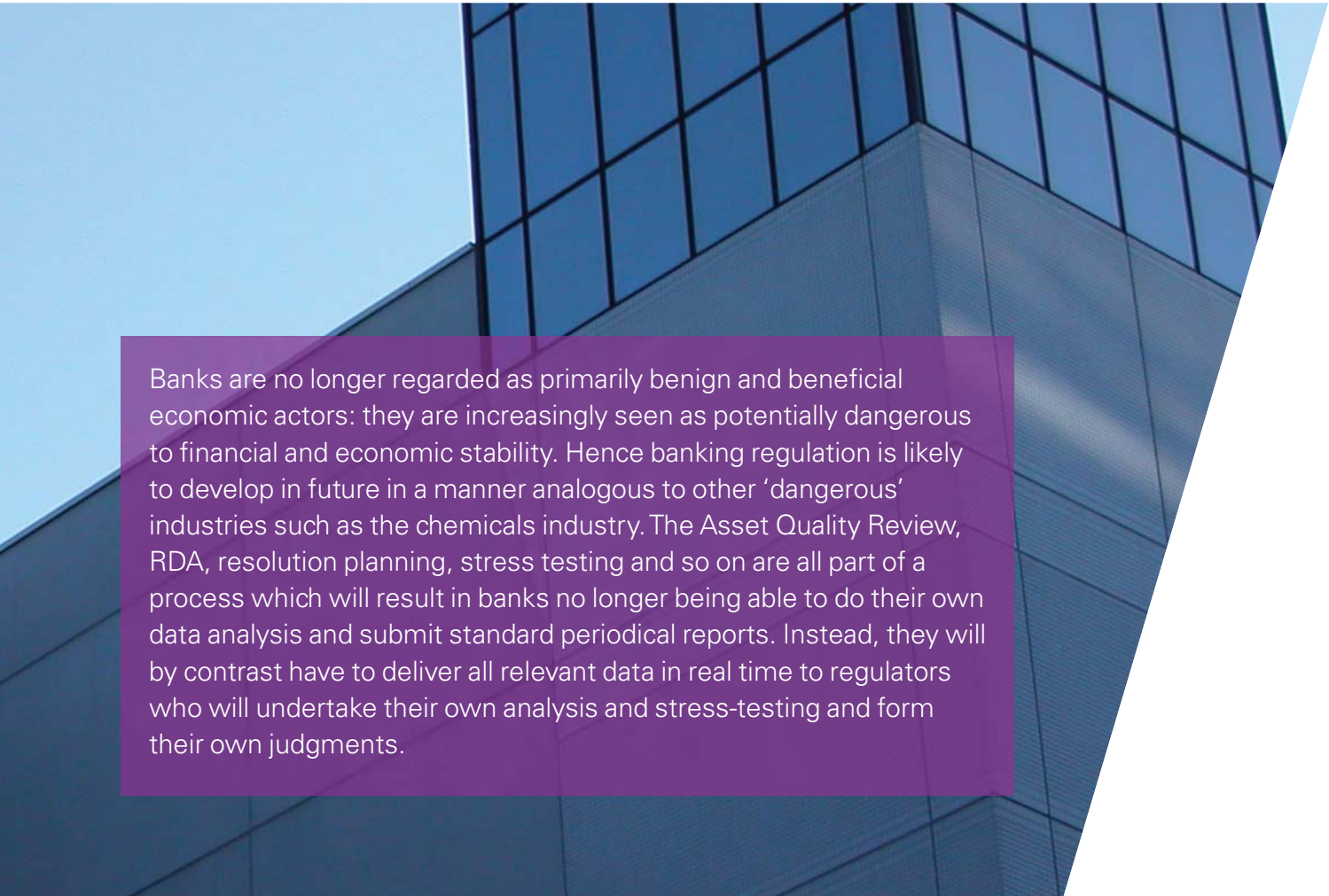
The **data issue** in the **broader regulatory context**

BCBS 239 itself is only part of a major shift in the regulatory philosophy and framework, in how wider society regards banks, and in the power relationships between banks, regulators and policymakers.

At the same time, regulators are increasingly intervening in the details of the systems and processes through which banks manage themselves. In many respects, the financial crisis did seem to demonstrate, to policymakers and the wider public alike, that the banking industry was not only unwilling but incapable of managing itself in an economically prudent and socially acceptable manner. The new regulatory agenda is focused, not on requiring more data to be reported per se but on remaking banks' internal systems and processes in directions which regulators themselves mandate.

The challenge to corporate autonomy and responsibility which these developments represent has proved surprising to some, but is nevertheless real and must be acknowledged. Responding to it requires at the least that banks radically simplify and streamline data management, information structures and processes. The upside should be cost reduction, increased efficiency and improved returns on capital. The need for action on the data issue has been recognized for some time. New regulatory requirements such as BCBS 239 should now catalyze the necessary response.

If banks fail to get this right, they will fail to satisfy the regulators and their shareholders. More importantly, they will continue to lack the information they need to run their businesses properly – and lose market share to the digital and customer centric challenger banks.



Banks are no longer regarded as primarily benign and beneficial economic actors: they are increasingly seen as potentially dangerous to financial and economic stability. Hence banking regulation is likely to develop in future in a manner analogous to other 'dangerous' industries such as the chemicals industry. The Asset Quality Review, RDA, resolution planning, stress testing and so on are all part of a process which will result in banks no longer being able to do their own data analysis and submit standard periodical reports. Instead, they will by contrast have to deliver all relevant data in real time to regulators who will undertake their own analysis and stress-testing and form their own judgments.

Conclusion

BCBS 239 is only one piece of a wider regulatory drive to improve the quality of information which Senior Management and the Board uses to inform itself and its stakeholders on the current and expected state of their business.

Supervisors in turn hope that improvements in the quality, timeliness and breadth of risk information will help them to better inform themselves on the current and expected state of the wider market. The scale of investment to get there, however, is substantial. Supervisors believe management can benefit from the exercise, thereby justifying the substantial cost and time involved in meeting the requirements. For management of financial institutions therefore, it is critical to plan comprehensively to ensure they do, in fact, drive opportunity and not just compliance from their efforts.





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