

# Risk and Finance Integration

**A Practical Approach**



**People matter, results count.**

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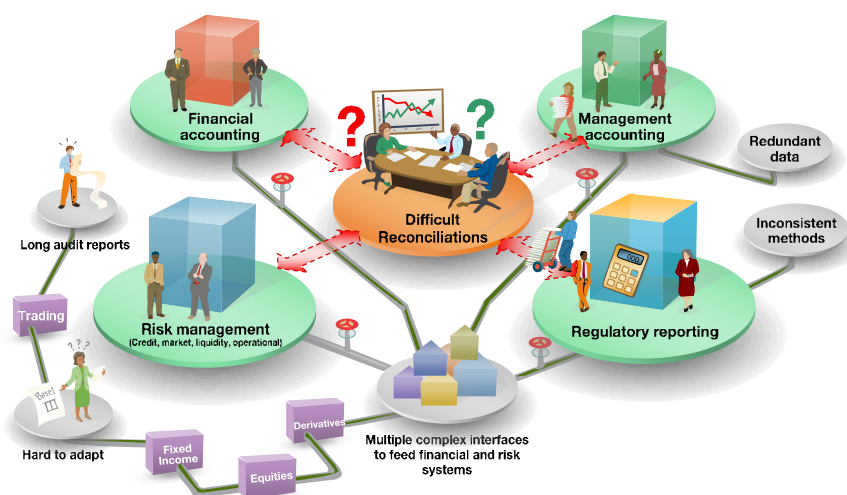
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# 1 Introduction

The lack of integration between risk and finance has limited the effectiveness of decision making around risk versus return, capital management and regulatory charge optimization. For many banks, the siloed approach to these two functions has resulted in:

- Data discrepancies that require significant reconciliation effort between risk and finance
- Data being aggregated and accumulated at different levels which causes difficulties in cross reporting
- Integration efforts occurring at end-of-day processes making predictive analytics across the two functions nearly impossible
- Difficulty in computing risk adjusted return for a business unit or portfolio or customer
- Inability to consider multiple facets of risk measures in business decisions

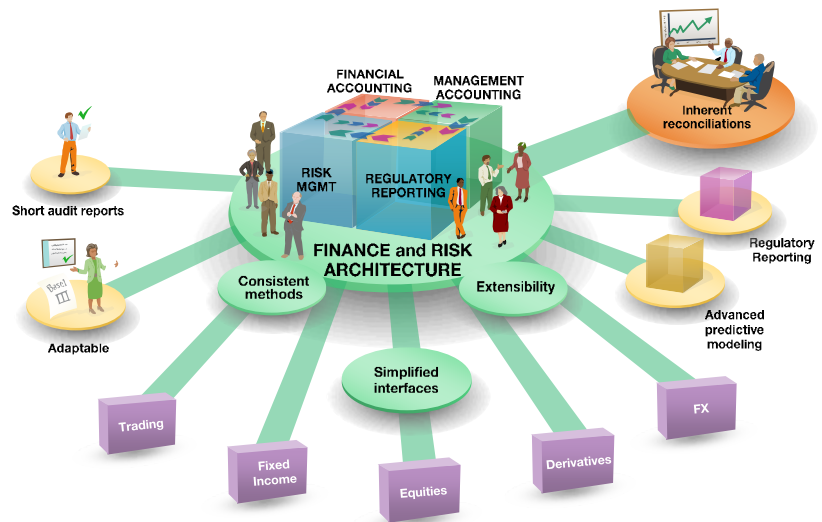
**Exhibit 1: Reconciliation difficulties due to segmented finance and risk functions**



Recent regulation dictates further capital adequacy which will make funds for front office trading scarcer, resulting in a need for tighter and more predictive return, risk, capital, and liquidity management.

The integration of risk and finance will help overcome data reconciliation issues, relate risk and return parameters with ease and improve predictability as well as reduce overall infrastructure costs, provide a robust and scalable platform and enable enhanced control and quality to ultimately provide a greater return on investment through better risk and financial management.

**Exhibit 2: Example of an integrated risk and finance architecture**



The awareness and benefits of the integration of the two functions is well known. But still many banks have not started the integration journey or have concentrated on tactical technology integration without putting in place foundation steps. Furthermore, the integration of the two functions must be enterprise-wide and any management decisions—whether based on historic data or predictive analysis—must include risk versus return profiling with all profits and losses being equally explained via risk metrics. To make the integration of the functions credible and robust, banks must focus on:

- Data management
- Predictive measuring
- Governance
- Application architecture
- Management information and dashboards

## 2 Data Management

“Consolidated platforms and data warehouses that employ common taxonomies permit rapid and relatively seamless data transfer, greatly facilitating a firm-wide view of risk”

Senior Supervisors Group  
(SSG) report  
December 2010

The first and most fundamental step for risk and finance integration is the creation of a common data repository that is populated with high quality, comprehensive and up to-date data. The data repository must meet a variety of needs such as:

- Store the risk aggregation and finance accumulation requirements that permit alignment such as book and organizational hierarchies, netting, legal hierarchies and economic capital;
- Address the needs of all risk types including credit, market, liquidity and operational risk;
- Serve the complete needs of finance including financial and management accounting;
- Meet regulatory reporting needs;
- Support risk versus return current and predictive measures;
- Ensure the sources of data are from strategic golden repositories where appropriate;
- Satisfy the need of historical time-series data;
- Get data in real-time and not just at end of day;
- Source data from the source of capture rather than some multiple hand warehouse; and
- Use common business driven taxonomies.

### 2.1. Data Quality

Data quality is not only a necessity for optimising and having correct reported figures but also a requirement of regulators. Typical data quality problems include:

- Missing and incorrect data;
- Data that is untrustworthy because it has not been regularly maintained or does not have appropriate overrides;
- Lack of data context; for example, is the Moody's rating the long term or short term view?
- No identified owner for the data;
- Lack of traceability; e.g., the source, data chain and modifications of the data are not clear.

Regulators require banks to demonstrate that these issues have been addressed.

While data quality has been a hot topic in the industry for years, operationalising data quality—the implementation and governance of a data quality strategy across departmental and/or organisational boundaries—continues to be a challenge for many banks. Three key criteria must be used to determine data quality: appropriateness, completeness and accuracy.

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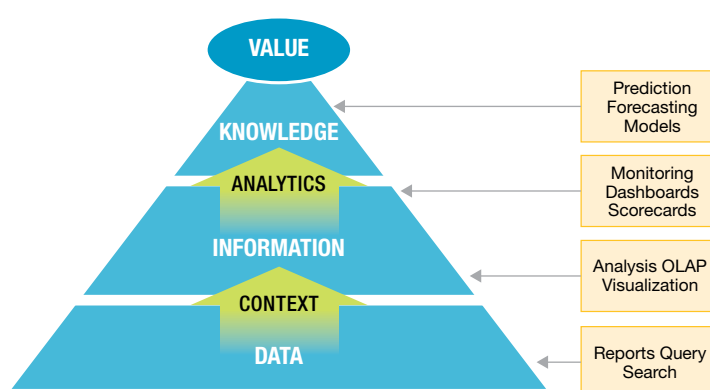
**Exhibit 3: Three key criteria are used to determine data quality**

<b>1.</b>	<b>Appropriateness</b>	Data is considered to be <b>appropriate</b> if it is suitable for the intended purpose (e.g. the valuation of financial instruments, setting of assumptions) and relevant to the portfolio of risks being analysed (i.e. directly relates to the underlying risk drivers).
<b>2.</b>	<b>Completeness</b>	Data is considered to be <b>complete</b> if it allows for the recognition of all the main homogeneous risk groups. Thus, data is considered to be complete if it has sufficient granularity to allow for the identification of trends and the full understanding of the behaviour of the underlying risks.
<b>3.</b>	<b>Accuracy</b>	Data is considered to be <b>accurate</b> if it is free from material mistakes, errors and omissions. Most of these will be caused by human error or IT failures.

### 3 Predictive Measuring

The ability to compute as well as predict risk versus return and calculate forward looking measures will undoubtedly help eliminate reactive behaviour in management and provide a significant competitive advantage. Analytics-driven processes have remained a point of differentiation among financial institutions. Analytics have been used to slice and dice historical data to analyse past performance and forecast or predict future events.

**Exhibit 4: Reactive versus proactive decision making**



The use of real-time data can support front office traders to help them accurately predict key end-of-day regulatory charges, counterparty and product mix optimisation; thereby, risk officers can proactively monitor existing exposures versus return and regulatory charges.

Banks can take these analytical techniques one stage further at pre-deal stage using real-time data. Front office traders will be able to accurately predict regulatory charges, risk and return on given counterparty and product mixes to ensure the optimal combination has been chosen. Furthermore, banks can avoid trades that potentially exhibit wrong way risk or have known data issues. Models must be developed using real-time data and an infrastructure that supports use in a front office, pre-deal predictive capacity.

Today's financial services landscape is a dynamic, fast moving industry where small market data changes and downgrades can have a larger impact on the value and return of a portfolio. Reactive, end-of-day approaches to monitoring such events are often inadequate to capture major negative impacting events. The ability to monitor and even predict such events as they occur and take immediate action is undoubtedly a key advantage.

## 4 Governance

Regulators have required that banks improve the governance of their risk and finance functions. Internally, banks need to increase the credibility of programmes with a buy-in from management and a top-down governance approach. A steering committee must exist that has board representation and ensures governance around the following key areas.

### 4.1. Alignment

Change programmes must be initiated to align risk and finance functions. Banks should review data, processes, policy and technology within each function so that all performance measures are assessed subject to the risk of a security or investment.

### 4.2. Management Decision Making Processes

All decisions regarding return or performance must be made with respect to the risk taken. Governance must ensure the risk, return and indeed capital charge consequences are inherent in every decision making process.

### 4.3. Data and Data Quality

The data used within the risk-finance function must be part of a bank's overall data quality and governance program. The data must be of quality, traceable, timely and its context understood.

## 5 Application Architecture

An integrated IT platform is vital to support risk and finance integration. The IT platform must seamlessly integrate:

- Data that supports all risk types, scenarios, aggregation, financial and management accounting. The data must be the same data used by other risk and finance processes so no reconciliation issues occur;
- Data quality metrics and traceability; and
- Management information and dashboards

Tools must exist to allow efficient input and timely calculation of results. Similarly, workflow to manage scenario review and force results to relevant stakeholders must exist.



# 4 Management Information and Dashboards

One of the most important activities in any bank is reporting and analysing the results of performance and return based upon the associated risks and feeding those results into management decision making processes. Management information and dashboard layers must have analytic capabilities and allow performance and return based upon:

- Various risk types; and
- Results by product lines and geographical regions.

The table below outlines the typical reporting measures expected on Executive Dashboards and the data challenges faced with delivery of such dashboards.

**Exhibit 5: Typical Reporting Measures and Challenges**

	Business Capability	Reporting Measures	Challenges
1.	Enterprise Risk Appetite Monitoring	Losses, Earnings at Risk, Exposure	Multiple portfolio, legal entity hierarchies, diverse LoBs and systems
2.	Living Will, M&A Due Diligence	EL, RC, EC, EBIT	Hierarchies and asset groupings that were previously undefined
3.	Liquidity Risk Calculations	Liquidity Coverage Ratio, Net Stable Funding Ratio per Basel III.	Relatively new metrics. immaturity of many Treasury data environments
4.	Stress Testing/ "Model Risk"	Charge-Offs, VaR, EL,	Expanded definition of model risk to include data processes and quality in enterprise data systems
5.	AML/FCC Monitoring	# of SARS, Focal Entity Rating	Cross-sector monitoring
6.	Marketing Analytics	Cross Sell Ratio, Retention Rate, # of New Accounts	Data quality issues with customer matching, establishing single customer view
7.	Standard FFIEC Reporting	Charge-Offs, NPAs, NPL, REO, REPO	Additional scrutiny on data quality and lineage of call reporting, other FRB regulatory reporting
8.	Trade Surveillance	Failed Settlements, Order Execution (OMR)	Silo-based environments, standardizing data, multiple points of error in trade processing cycle

# 7 In Practice

## 7.1. Risk and Finance Data Warehouse

Our client needed to create a single and consistent data set to serve as the strategic data and information target architecture for key functions such as credit risk, market risk, finance, product control, regulatory control, collateral management, operations and counterparty risk reporting. The data set would also be used to support end of day signoff reporting and ad hoc reports.

Capgemini designed and implemented a data warehouse to store data for fixed income, credit derivatives, futures trades, P&L, positions, cash flows, risk sensitivities, book, counterparty and instrument data, and common reference data. We created the data model, set up real-time and batch extract, load and transform processes, and built the data quality layer and associated exceptions processing.

The warehouse is a platform that supports reporting needs including end-of-day trader risk, P&L signoff reporting, and ad hoc reporting needs.

### The Results

With the new data warehouse, our client achieved data consistency between front office, risk and finance. They eliminated reconciliation differences across functions, removed local overrides within finance, and increased the timeliness of data delivery which lowered costs by streamlining processes and allowing associated processes to begin earlier in the cycle.

Overall, our client experienced higher quality data which improved risk metric calculations.

## 7.2. Common Book Hierarchy – Risk and Finance Alignment

Our client had multiple business hierarchies which involved multiple book definitions, hierarchy attachment points, and book and hierarchy attributes. Due to various manual book opening processes, our client experienced unknown attribute owners and other data quality issues. These problems prevented our client from performing risk/return reporting.

Capgemini created a common book hierarchy solution by rationalising the information to build a common information model. We created data quality dashboards to identify exception breaches and manage workflow for corrections.

We also provided tools to align book and organisational hierarchies and created a common book definition to attach to the hierarchy. Overall, Capgemini helped re-engineer our client's book opening processes to clearly assign the ownership and responsibility of book attributes and use a common, single store of book and organisational hierarchy. This helped optimise the book opening workflow and allowed the downstream adoption of book data.

### The Results

Our client's new book and organisational hierarchy solution provided one company-wide view of book and organisational data. It helped our client align finance and risk reporting hierarchy and provided common definitions and understandings for book. We helped our client define and clarify the book opening workflow process and provided real-time availability for book and organisational data.

### About the Author

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