A Framework for Improving Operational Efficiency in Investment Banks

Continuing pressure on operating margins is posing a significant challenge for investment banks. This calls for a holistic approach to improve operational efficiency while reducing the complexity of the business and the technology architecture.

Executive Summary

Since the financial crisis of 2008, investment banks’ (IBs) operating margins have been narrowing while their expenses have been rising (see Figure 16, appendix). The rising cost of regulatory compliance and a volatile global economic environment have added to the woes of investment banking divisions (IBDs). The growth of electronic trading, regulatory restrictions on proprietary trading (as mandated by the Volcker Rule) and the trading of complex high-margin products have squeezed operating margins. Structural issues such as complex operations, weak corporate governance and inadequate controls compound the problem.

Cost-cutting measures such as headcount reduction, offshoring and outsourcing have helped the IBs in the short term but might not be enough over the long term. We believe that sustainable improvement in the cost profile of these businesses requires a more systematic and holistic approach.

This paper discusses the key cost and efficiency challenges facing IBDs. It proposes a comprehensive framework for enhancing operational efficiency by simplifying business processes and improving IT architecture.

A Framework for Operational Efficiency

In the current macroeconomic environment, investment banks face a range of internal and external challenges (see Figure 1, next page) that can negatively impact operating margins, operational risks and operating flexibility.

Figure 2 (next page) defines a solution framework that can help achieve the two operational efficiency themes identified above. The framework is based on the idea that simplified and standard-
ized business processes that are aligned to business strategy can support improvements in technology architecture and ultimately drive sustained operational efficiency improvements.

As Figure 2 depicts, the framework consists of the following six interrelated steps.

**Solution Framework for IBD Processes and Architecture**

**STEP 1** Based on the business strategy, outline core business capabilities and sub-capabilities and identify target data flows.

**STEP 2** Document the current state business processes and data flows for each entity and product within the IBD that are impacted by the business strategy.

**STEP 3** Based on the capability/business process map, identify redundancies/variation/issues across regions/entities/products and devise resolution strategy.

**STEP 4** Based on the identified resolution strategy, streamline underlying IT architecture.

**STEP 5** Realign supporting control model to ensure timely, efficient monitoring of data flows.

**STEP 6** Establish well-defined metrics to measure operational efficiency and identify/track risks and issues that need attention.
Define Core Business Capabilities and Sub-capabilities Based on Business Strategy and Identify Target Data Flows

Core capabilities can be defined by logically grouping similar business activities performed within the IBD. These capabilities can then be divided into sub-capabilities. For example, trade execution and management is a core capability with sub-capabilities of market connectivity, order management, trade capture, etc.

Figure 3 provides an example to illustrate Step 1.

Defining Core Capabilities/Sub-capabilities/Data Flows for Target State

Understanding Business Strategy for Trade Execution & Management (TEM)

**Strategic goal:** Address key areas of inefficiency and complexity by standardizing TEM capability (data and processes) for a product across entities and defining a consistent representation of trade model (data attributes that make up a trade) front to back.

A. Identifying Core Capabilities & Sub-capabilities Impacted by TEM Business Strategy

As the business strategy focuses on standardization of trade management model, capabilities and sub-capabilities which generate and consume trade data are considered.

<table>
<thead>
<tr>
<th>Trade Execution &amp; Management</th>
<th>Market Connectivity</th>
<th>Trade Lifecycle Events</th>
<th>Trade Capture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk Management</td>
<td>EOD Capture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operations</td>
<td>Clearing &amp; Settlement</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B. Identifying Data Flows Between Sub-capabilities

A target state mapping of data flows between sub-capabilities is created. For example, trades and positions data should flow from TEM to risk management in the target state once the TEM business strategy is implemented.

<table>
<thead>
<tr>
<th>Mapping of Data of Sub-capabilities</th>
<th>Trade Execution &amp; Management</th>
<th>Risk Management</th>
<th>Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade Capture</td>
<td>EOD Risk</td>
<td>Clearing &amp; Settlement</td>
<td></td>
</tr>
<tr>
<td>Market Connectivity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trades</td>
<td>Market Data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade Capture</td>
<td>Trades, Positions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade Lifecycle Events</td>
<td>Trade Lifecycle Cash</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade Capture</td>
<td>Trades, Positions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade Lifecycle Events</td>
<td></td>
<td></td>
<td>Asset Servicing Outcomes</td>
</tr>
</tbody>
</table>

Legend

- Business Capability
- Business Sub-capability
- Data

Figure 3


The current state documentation can be used at the product level to:

- Identify inter-entity variations in functional ownership for each capability. For example, position management done in trade execution and management for entity A but in operations for entity B.
- Identify duplication in the functional ownership of capabilities within an entity. For example, for an entity, trade capture process resides in both trade execution and management and operations.
IBDs will typically trade multiple products, and each product will be traded across multiple entities. As the intention is to standardize the business flows for a product across entities, the current state mapping process should be documented for each product/entity pair (see Figures 4 and 5).

Mapping Current State Business Process to Capabilities/Sub-capabilities

<table>
<thead>
<tr>
<th>Product 1 - Entity A</th>
<th>Product 1 - Entity B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capability</td>
<td>Capability</td>
</tr>
<tr>
<td>Trade Execution &amp; Management</td>
<td>Trade Capture &amp; Routing</td>
</tr>
<tr>
<td>Risk Management</td>
<td>EOD Risk</td>
</tr>
<tr>
<td>Operations</td>
<td>Clearing &amp; Settlement</td>
</tr>
</tbody>
</table>

Legend
- Business Capability
- Business Sub-capability
- Business Process

Figure 4

Mapping Current State Data Flows Between Sub-capabilities

<table>
<thead>
<tr>
<th>Product 1 - Entity A</th>
<th>Product 1 - Entity B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mapping of Data of Sub-capabilities</td>
<td>Trade Execution &amp; Management</td>
</tr>
<tr>
<td>Trade Capture</td>
<td>EOD Risk</td>
</tr>
<tr>
<td>Operations</td>
<td>Clearing &amp; Settlement</td>
</tr>
<tr>
<td>Trade Execution &amp; Management</td>
<td>Market Connectivity</td>
</tr>
<tr>
<td>Trades</td>
<td>Market Data</td>
</tr>
<tr>
<td>Trade Capture</td>
<td>Trades</td>
</tr>
<tr>
<td>Trade Lifecycle Events</td>
<td>Trade Lifecycle Cash</td>
</tr>
</tbody>
</table>

Legend
- Business Capability
- Business Sub-capability
- Data

Figure 5

**STEP 3** Identify Redundancies/Variations/Issues Across Regions/Entities/Products and Devise Resolution Strategy

After defining the target state of the different sub-capabilities and associated data flows, the next step is to identify issues in the current state for each product. To standardize business processes across entities and eliminate any redundancies:

- For each product and entity, analyze the current state capability-process map. Focus on those business processes that can be mapped to multiple business capabilities within an entity. Examine these processes thoroughly, as they typically indicate either straight through processing (STP) deficiencies between capabilities (e.g., dual keying of trades in trade execution and management, and in operations) or process redundancies in the existing infrastructure.
Investigating Business Processes Mapped to Multiple Capabilities to Identify Redundancies

For each product, compare the capability-process map across entities to pinpoint areas where the same business process is mapped to different capabilities in different entities. Examine such entity variations and rectify them for a more standardized business process architecture.

Comparing Capability-Process Map Across Entities for Given Product to Investigate Inter-entity Variations

Issues • Trade being captured at multiple places • Multiple data enrichments by different business functions

Figure 6

For each product, compare the target-state and current-state data flows between capabilities to identify additional or missing data flows. This indicates redundant data or incomplete data flowing between capabilities that require data enrichment.

Issues ★ Position being calculated by different business functions in different entities
★ P&L calculation being performed by different business functions in different entities

Figure 7

For each product, compare the target-state and current-state data flows between capabilities to identify additional or missing data flows. This indicates redundant data or incomplete data flowing between capabilities that require data enrichment.
• Once all the issues have been collated, they must be analyzed to identify the root cause. Based on the outcome of the root cause analysis, a comprehensive resolution strategy must be defined. The strategy must not only help simplify business processes but also provide inputs for streamlining the underlying IT architecture and control framework.

### Investigating Issues and Defining Resolution Strategy Based on Root Cause Analysis

<table>
<thead>
<tr>
<th>Issues</th>
<th>Investigation</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade capture happening within multiple functions.</td>
<td>Lack of STP between front and back office; no common definition of trade between them.</td>
<td>Canonical trade data model defined and owned by trade execution &amp; management with a capability to handle all trade lifecycle events thus removing the need of back office to capture trade and generate P&amp;L.</td>
</tr>
<tr>
<td>P&amp;L calculation being performed by different business functions in different entities.</td>
<td>Back office and front office have their own P&amp;L view due to capture of certain lifecycle events in the back. This leads to increase in reconciliation effort.</td>
<td></td>
</tr>
<tr>
<td>Multiple data enrichments by different business functions.</td>
<td>Lack of common sourcing of reference data across functions leading to enrichment of data in multiple business functions.</td>
<td>Establish data standards with robust governance.</td>
</tr>
<tr>
<td>Position being calculated by different business functions in different entities.</td>
<td>Granularity of position data required varies across business functions.</td>
<td>Creation of business services (e.g., position management services), which can cater to requirements of various business functions.</td>
</tr>
<tr>
<td>Data flow variations between business capabilities across entities.</td>
<td>As per target mapping of data flows between sub-capabilities, trade management should be sending positions to risk management.</td>
<td>Golden sources and ownership to be defined for key data classes produced or consumed by trade execution &amp; management.</td>
</tr>
</tbody>
</table>

Figure 9
STEP 4 Streamline Underlying IT Architecture Based on Resolution Strategy

Business processes are tightly coupled with the underlying IT architecture, and any change in the former necessitates realignment of the latter to ensure maximum operational efficiency. As the resolution strategy identified in Step 3 will impact business processes, it will also affect the supporting IT architecture. The IT organization will need to understand each proposed item of the strategy, identify the key changes required to support the strategy and then decide on an implementation approach.

Following are key steps/activities that the IT organization would need to undertake for some of the items proposed in Figure 9 (previous page).

- Create a canonical trade data model defined and owned by trade execution and management with the ability to handle all trade lifecycle events.
  > **IT Alignment:** Analyze existing trade models within IBD and define a common trade data model that can accommodate all products and their respective lifecycle events. All systems that are either producers or consumers of trade-related data will need to implement the new trade data model. As trade execution and management (TEM) will now be able to capture all trade types and trade-related lifecycle events, any trade capture functionality in back-office systems must be discontinued.

- Establish data standards with robust governance.
  > **IT Alignment:** A common messaging standard will need to be agreed upon between TEM and all consumers of trade-related data. The messaging protocol can be developed internally or an industry standard protocol such as FIX or FML can be used. The delivery mechanisms (publish/subscribe or message queue) of the trade data messages must also be agreed upon between TEM and downstream consumers.

- Create business services that can cater to the requirements of various business functions.
  > **IT Alignment:** The creation of shared services supporting a business capability across businesses/entities aids in reusability of components within the IT architecture. Figure 10 illustrates trade routing and booking capability as a service that can be used by all businesses and entities within the IBD.

**Illustration of a Capability Designed as a Service**

- Define golden sources and ownership for key data classes produced or consumed by trade execution and management.
  > **IT Alignment:** Enlist the key data classes consumed as part of the trade lifecycle processing and identify the golden source for each of the data classes together with the target distribution mechanism. For each data class, any enrichments happening in systems other than the golden source must be discontinued. Figure 11 (next page) uses reference data as an example to showcase how the concept of golden sources can be implemented with delivery through local hubs that act as data quality monitoring gateways, ensuring any upstream data is quality checked for completeness and accuracy before it is fed to downstream components.
Realign Supporting Control Model to Ensure Efficient Monitoring of Data Flows

Defining robust business and IT operational controls is a must to ensure that all data touchpoints (front to back) are monitored. Cross-functional controls should be emphasized. Any control breaks such as data SLA breaches and poor quality data must be managed through a well-defined quality assurance process.

The realignment of a control model can be broken down into the following sequential steps:

- Create a framework by key IT and business representatives to document controls with a defined list of attributes. Figure 12 highlights some key control attributes that should be a part of the framework.
- Identify and document key controls as per the control framework. Figure 13 (next page) provides an example for defining controls related to the trade execution and booking process.
- Implement the controls identified in the step above. The design must ensure that each control is performed as per the frequency defined in a service level agreement and all breaks are reported in real time. Any break that requires real-time intervention should be handled through a well-defined exception management process.

Key Attributes of Control Framework

<table>
<thead>
<tr>
<th>Definition</th>
<th>Risk</th>
<th>Control Category</th>
<th>Control Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elaboration of the rationale behind the control and what the control is trying to achieve.</td>
<td>Highlight the probable risk in case the control is not implemented.</td>
<td>Define whether the control is a business process control or a system process/feed control.</td>
<td>What does the control check (completeness or accuracy of data)?</td>
</tr>
<tr>
<td>Ownership</td>
<td>Scope</td>
<td>Impacted Functions</td>
<td>Data</td>
</tr>
<tr>
<td>Identifies the function that would own the requirements for the control.</td>
<td>Identifies the entities/businesses/product lines/products for which the control is relevant.</td>
<td>Identifies those functions that are dependent on the control and need to know any control breaks.</td>
<td>The key data classes affected by the control.</td>
</tr>
</tbody>
</table>
Establish Well-Defined Metrics to Measure Operational Efficiency

A sound performance measurement process will be able to link the key metrics to strategy and therefore the business capabilities defined in Step 1 of the framework. It will enable senior management to:

- Assess the progress towards achieving the key operational efficiency themes by providing insights into the efficiency of the systems/processes and the efficacy of the controls in place.
- Detect risks by identifying inefficiencies and highlighting areas that need attention.

Systematic measurement of operational efficiency starts with the definition of metrics that are based on measurable, specific and actionable parameters. Figure 14 (next page) outlines the essential elements of a metrics-based approach for operational performance assessment.
Performance assessment must be an iterative process that evolves over time. The metrics must be periodically reviewed to test their worth and relevance in a dynamic operating environment. Figure 15 illustrates a set of metrics by using the trade enrichment and validation process as an example.

### Example to Illustrate Metrics-Based Approach

<table>
<thead>
<tr>
<th>#</th>
<th>Steps to Define Metrics</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Strategic Performance Themes</td>
<td>Business process simplification</td>
</tr>
<tr>
<td>2</td>
<td>Operational Goals</td>
<td>Streamline trade enrichment and validation process</td>
</tr>
<tr>
<td></td>
<td>Desired Outcomes</td>
<td>Reduction in exceptions handling and manual adjustments by 60%</td>
</tr>
<tr>
<td>3</td>
<td>Metrics Definition</td>
<td>M1: Volume of manual adjustments due to cancel/corrected trades</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M2: % of fully enriched trades per product/asset class wise</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M3: Daily trade reconciliation breaks between front office and back office due to incomplete/incorrect reference data (For example: If the coupon rate on a bond is not set up correctly in the front office, incorrect trade cash values will be generated and sent to the back office)</td>
</tr>
<tr>
<td>4</td>
<td>Metrics Computation</td>
<td>M1: Number cancel/corrected trades (daily) ÷ total number of trades (daily)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M2: Fully enriched trades per product ÷ total trades per product</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M3: Number of breaks due to reference data issues ÷ total number of breaks</td>
</tr>
<tr>
<td>5</td>
<td>Reporting</td>
<td>Daily reports/trendlines to track the improvements over a period of time</td>
</tr>
</tbody>
</table>
Conclusion

We believe sustainable operational efficiency will become a key differentiator for investment banks in gaining competitive advantage.

The framework proposed above offers benefits of synergy when compared with isolated efforts to reduce operating costs. Some of the key benefits of adopting this approach are:

- It establishes a clear logical business architecture that is in sync with the business strategy and capabilities, thus ensuring alignment between business and IT.
- It streamlines the IT architecture through rationalization, use of common services and messaging standards, ensuring reusability and sustained efficiencies.
- It reduces the operational overheads due to manual interventions for resolving discrepancies through a well-defined data sourcing strategy supported by strong business and IT controls.

We believe that the key requirements to ensure the effective implementation of the solution framework are:

- Strong sponsorship from senior IBD management.
- A robust governance structure to ensure the implementation aligns with strategic objectives.
- Involvement of cross-functional teams (business and IT) with knowledge of front-to-back processes, systems and data flows.
- A commitment to spending in the short term to deliver sustainable savings in the long term.

Appendix

Aggregate Investment Banking Revenue and Expense

![Figure 16](image-url)
Footnote


References

• http://uk.reuters.com/article/2015/10/21/uk-credit-suisse-gp-strategy-idUKKCN0SF0AD20151021.
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