# Case Study: Evaluating Operational Risk Capital at Meridian Bank



All told, the bank provisioned $3.57 billion, representing TD's current estimate of the total fines to be paid related to AML matters, TD CEO Bharat Masrani said Thursday during a quarterly earnings call. The bank expects “a global resolution” on the AML matters by the end of this year, he said. (Aug 22, 2024)



The CRO calls Rashid, the Head of Operational Risk at Meridian Bank, into a meeting and starts by saying, "It's a good thing TD had set aside CAD 7.12 billion for operational risk—they can easily absorb this fine and still have around CAD 3.5 billion left over.

We have CAD 40 million in op risk capital. I'm not sure that is enough to handle a loss like that, even given our smaller size. Our CFO believes we don't have enough capital for operational risk and thinks we should increase it. Next week, I have to present to the Risk Committee (RC) whether we should keep the capital at its current level, increase it, or possibly—though unlikely—reduce it if we're overcapitalized. I have 20 minutes to make the case, and the topic is 'right-sizing the operational risk capital’.

He then adds, "we have to have the right financial resiliency, which means that we have the financial resources to absorb the loss and continue to operate uninterrupted.

Provide me with the analysis to help us decide which option to recommend to the RC," before rushing off to his next meeting.

Rashid assembles his team of analysts—Ottavio, Livia, and Avi—to tackle this challenge. The following is what happens next.

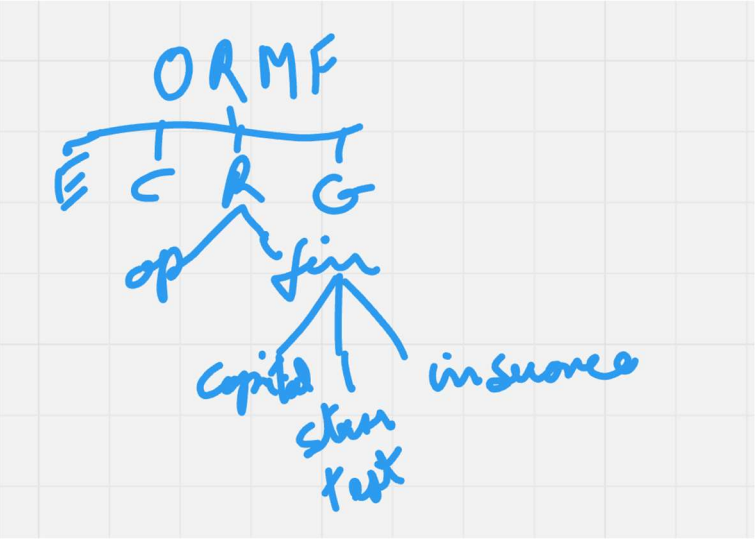
**Meeting 1: Initial Brainstorming**

Participants: Rashid (Head of ORM), Ottavio (Analyst), Livia (Analyst), Avi (Analyst)

Setting: The team gathers in a conference room equipped with a whiteboard, financial reports, and laptops. Rashid begins the meeting by outlining the CRO's request.

Rashid: (Looking around the table) Thank you all for joining on short notice. The CRO has asked us to determine if Meridian Bank has sufficient operational risk regulatory capital. We need to assess our current position and ensure we're compliant with the latest regulations. Let's brainstorm possible

approaches. Before we start, lets refer to our ORMF and focus on Financial Resiliency. Rashid walks up to the Whiteboard and draws the following diagram,




Rashid: Now that we have a reference point. Any suggestions on where to start?

Ottavio: (Leaning forward) I suggest we begin with how much capital we need and deal with stress testing and Insurance later. Is that, ok?

Everyone nods.

Ottavio: Ok then I suggest we start with the Basic Indicator Approach. It's straightforward and will give us an initial estimate of the capital required.

Livia: That's a good starting point, Ottavio. The BIA uses a simple calculation based on gross income.

Avi: While it's simple, is it sufficient for a bank of our size and complexity?

Rashid: Let's hear Ottavio's proposal first. Ottavio, could you walk us through your calculations?

Ottavio's Proposal: Basic Indicator Approach (BIA)

Ottavio: Certainly. Under the BIA, we calculate the capital charge by taking 15% of the bank's average annual gross income over the past three years.

**Calculations:**

Year 1 Gross Income: $500 million

Year 2 Gross Income: $550 million

Year 3 Gross Income: $600 million

Average Gross Income: ($500m + $550m + $600m) / 3 = $550 million

Capital Charge: 15% of $550 million = $82.5 million

Ottavio: So, according to the BIA, we should hold $82.5 million in operational risk capital.

Rashid: Thank you, Ottavio. That's clear and concise.

Livia: While the BIA is straightforward, I have concerns about its adequacy for us.

Avi: I agree. The BIA doesn't account for the specific risk profiles of different business lines.

Rashid: Exactly. Given our diverse operations, relying solely on gross income might not reflect our actual operational risk exposure.

Ottavio: That's true, but as a starting point, it provides a baseline.

Livia: Perhaps, but we need a method that considers the nuances of our business.

Livia's Proposal: The Standardized Approach (TSA)

Livia: I propose we use the Standardized Approach. It assigns different beta factors to various business lines, making it more risk-sensitive.

Rashid: Go ahead, Livia. Present your calculations.

Livia:

Business Lines and Gross Income:

Corporate Finance: $100 million

Trading & Sales: $200 million

Retail Banking: $150 million

Commercial Banking: $100 million

Beta Factors:

Corporate Finance: 18%

Trading & Sales: 18%

Retail Banking: 12%

Commercial Banking: 15%

Calculations:

Corporate Finance: 18% of $100 million = $18 million

Trading & Sales: 18% of $200 million = $36 million

Retail Banking: 12% of $150 million = $18 million

Commercial Banking: 15% of $100 million = $15 million

Total Capital Charge: $18m + $36m + $18m + $15m = $87 million

Livia: So, under the TSA, we should hold $87 million in operational risk capital.

Avi: That's slightly higher than the BIA result.

Rashid: The TSA seems to provide more granularity. What do you all think?

Ottavio: While it's more detailed, the TSA still relies on gross income, which may not accurately represent operational risk.

Avi: There's also the challenge of correctly classifying income into the right business lines.

Livia: True, but we have accounting systems in place to allocate revenues appropriately.

Rashid: Allocation can be subjective. Misclassification could lead to regulatory issues or inaccurate capital charges.

Avi: Additionally, the TSA doesn't consider our internal loss data or risk management practices.

Avi's Proposal: Advanced Measurement Approach (AMA)

Avi: Given the limitations of the BIA and TSA, I suggest we explore the Advanced Measurement Approach.

Rashid: The AMA allows banks to use their own internal models, right?

Avi: Exactly. We can develop a model based on our internal loss data, risk indicators, and control environment.

Calculations:

Expected Loss (EL): Based on historical loss data.

Unexpected Loss (UL): Calculated using statistical models, such as Value at Risk (VaR) at a 99.9% confidence level.

Avi: Using our loss data over the past five years, I've estimated:

EL: $20 million

UL: $70 million

Total Capital Charge: EL + UL = $90 million

Rashid: That's higher than both the BIA and TSA results.

Livia: The AMA seems comprehensive, but isn't it resource-intensive?

Ottavio: Yes, developing and validating such models requires significant investment.

Rashid: Also, regulators have become cautious with the AMA due to inconsistencies across banks.

Avi: That's true. There's also model risk—we might make incorrect assumptions, leading to underestimation of capital.

Livia: And with the latest regulatory updates, aren't there plans to phase out the AMA?

Rashid: Yes, the Basel Committee has suggested replacing the AMA with a more standardized approach due to these issues.

Moving Forward: Exploring the Standardized Measurement Approach (SMA)

Rashid: Given the challenges with the BIA, TSA, and AMA, I think it's time we consider the Standardised Measurement Approach.

Ottavio: The SMA combines financial statement information with historical loss data, right?

Rashid: Correct. It aims to be more risk-sensitive while maintaining comparability across banks.

Livia: Should we reconvene after researching the SMA and preparing calculations?

Rashid: Agreed. Let's meet in a few days with our findings.

**Meeting 2: Presenting the SMA Results**

Participants: Rashid, Ottavio, Livia, Avi

Setting: The team gathers again, with Ottavio prepared to present his analysis.

Rashid: Welcome back, everyone. Ottavio, I understand you've worked on the SMA calculations?

Ottavio: Yes, I have. Let me walk you through it.

Ottavio's Presentation: Standardized Measurement Approach (SMA)

**Step 1: Calculate the Business Indicator (BI)**

Interest, Lease, and Dividend Component (ILDC):

Net Interest Income: $400 million

Leasing Income: $50 million

Dividend Income: $20 million

ILDC: $470 million

Services Component (SC):

Fee and Commission Income: $200 million

Fee and Commission Expenses: $50 million

SC: $150 million

Financial Component (FC):

Net Profit/Loss on Trading Book: $100 million

Net Profit/Loss on Banking Book: $80 million

FC: $180 million

Total BI: ILDC + SC + FC = $470m + $150m + $180m = $800 million

**Step 2: Apply Marginal Coefficients**

BI up to $1 billion: Entire BI falls into this bucket

Coefficient: 12%

Business Indicator Component (BIC): 12% of $800 million = $96 million

Step 3: Calculate the Loss Component (LC)

Average Annual Losses over 10 Years: $25 million

Step 4: Calculate the Internal Loss Multiplier (ILM)

Formula: ILM = ln [(LC / BIC) + 1]

Calculation: ILM = ln [($25m / $96m) + 1] = ln [0.26 + 1] = ln [1.26] ≈ 0.23

Step 5: Calculate the Operational Risk Capital (ORC)

ORC: ILM × BIC = 0.23 × $96 million ≈ $22 million

Ottavio: So, under the SMA, we need to hold approximately $22 million in operational risk capital.

**Discussion of SMA Results**

Rashid: That's significantly lower than the amounts calculated using previous methods.

Livia: That seems unusually low. Are we sure about these calculations?

Avi: Let's double-check the numbers. The ILM reduces the capital charge based on our loss experience, but $22 million seems off.

Ottavio: I was also surprised. Perhaps our historical losses are lower relative to the BI Component, reducing the ILM substantially.

Rashid: We need to ensure our loss data is accurate. Did we include all relevant loss events?

Ottavio: I used the loss data available in our systems, but there might be underreporting or thresholds that excluded smaller losses.

Livia: Additionally, the BI calculation might need a closer look. Are all income components correctly classified?

Rashid: We need to verify the completeness of our loss data. Let's review the past 10 years and ensure all losses above the minimum threshold are included.

Ottavio: I used a $10,000 threshold for loss events. Should we lower it?

Avi: Including smaller losses might increase the LC and, consequently, the ILM.

Livia: Let's revisit the BI components. For instance, are we accounting for all fee-based services in the SC?

Rashid: We should also consult the latest regulatory guidelines to ensure compliance in our calculations.

Rashid: Ottavio, review and validate the loss data, ensuring completeness and accuracy. Livia, reassess the BI calculations, confirming correct classification of income and expenses. Avi, cross-reference our calculations with regulatory requirements and industry practices.

Let's reconvene in two days with updated figures.

**Meeting 3: Finalizing the SMA Calculations**

Participants: Rashid, Ottavio, Livia, Avi

Ottavio: After a thorough review, we've updated the loss data to include all losses above $5,000, increasing the average annual loss to $40 million.

Livia: I've adjusted the BI components. The revised BI is $850 million.

Updated Calculations:

BIC: 12% of $850 million = $102 million

LC: $40 million

ILM: ln [($40m / $102m) + 1] = ln [0.39 + 1] = ln [1.39] ≈ 0.33

ORC: 0.33 × $102 million ≈ $33.7 million

Avi: This result seems more reasonable.

Rashid: With the updated figures, our required capital under the SMA is approximately $34 million.

Livia: That's still lower than the BIA and TSA results.

Avi: The SMA considers our actual loss experience, which appears relatively low compared to our business size.

Rashid: We need to evaluate whether holding $34 million in capital sufficiently covers our operational risk exposure.

Ottavio: Perhaps we should consider holding additional capital as a buffer.

Rashid: Based on our analyses, I propose the following:

Accept the SMA result of $34 million as the regulatory minimum for operational risk capital.

Implement an internal capital buffer, increasing the total to $50 million, to account for potential underestimation of risks. Therefore, the CRO should recommend that the RC approve a capital increase for Op risk from $ 40 million to $ 5O million.

Enhance our operational risk management practices to reduce future losses and improve data collection.

Team: Agreed.

**Conclusion**

Rashid prepares to present these findings and recommendations to the CRO. The team's collaborative effort highlights the importance of accurate data, regulatory compliance, and prudent risk management in determining operational risk capital.

**Questions to get you started.**

**Methodological Appropriateness:**

Which approach (BIA, TSA, AMA, SMA) is most suitable for Meridian Bank, considering its size and complexity?

What are the advantages and disadvantages of each method?

**Data Integrity:**

How does data quality affect the calculation of operational risk capital?

What steps can Meridian Bank take to improve data accuracy and completeness?

**Regulatory Compliance:**

How should banks interpret and implement regulatory guidelines when there are ambiguities?

What are the implications of underestimating or overestimating operational risk capital?

**Risk Management Practices:**

How can Meridian Bank enhance its operational risk management to reduce losses?

What role does internal culture play in managing operational risk?

**Strategic Decision-Making:**

Should the bank hold capital above the regulatory minimum? Why or why not?

How does the choice of operational risk capital approach impact the bank's competitiveness and profitability?

**Appendices**

Appendix A: Summary of Operational Risk Capital Calculations

Approach Calculated Capital Requirement

BIA $82.5 million

TSA $87 million

AMA $90 million

SMA $34 million (final)

Appendix B: Key Components of SMA Calculation

Business Indicator (BI):

ILDC: Net Interest Income + Leasing Income + Dividend Income

SC: Fee and Commission Income - Fee and Commission Expenses

FC: Net Profit/Loss on Trading and Banking Books

Marginal Coefficient:

Applied at 12% for BI up to $1 billion

Internal Loss Multiplier (ILM):

$ILM = \ln [(LC / BIC) + 1]$

Operational Risk Capital (ORC):

$ORC = ILM \times BIC$

**References:**


1. BIA/ TSA/ AMA (27 pages)

   https://www.osfi-bsif.gc.ca/sites/default/files/import-media/guidance/guideline/2018-10/en/CAR19_chpt8.pdf

2. SMA (18 pages)

   https://www.osfi-bsif.gc.ca/sites/default/files/2023-12/car24_chpt3.pdf

3. PWC Summary on the various approaches (40 pages)

   https://www.pwc.in/assets/pdfs/services/ras/financial-services/operational-risk.pdf