Risk Management

What do we mean by Risk in Risk Management?

In the context of risk management, a "risk" refers to the possibility that an event or condition will occur, which could have a negative impact on an organization's objectives, resources, or performance. In finance and quantitative analysis, a "risk" may refer to the potential for an investment or decision to result in an undesirable outcome, particularly financial loss. Risk encompasses the uncertainty about the returns or outcomes and is a critical factor in the decision-making process.
In risk management, risks are identified, assessed, and managed to mitigate their potential adverse effects. Here are some aspects and concepts to consider when working as risk manager or risk modeler:

- Not all relevant risks could be identified, leading to unforeseen threats that could impact the organization. Thus, the process of identifying the relevant risks is very important.
- Assessment Risk involves the danger of misjudging risks by either underestimating or overestimating their probability and impact, which can lead to inappropriate mitigation strategies.
- Control Risk refers to the possibility that implemented measures and controls to mitigate identified risks are ineffective or insufficient, failing to prevent or minimize negative outcomes.
- Monitoring Risk is the risk that ongoing monitoring processes fail to detect changes in existing risks or the emergence of new risks, leading to a lack of timely response.
- The risk of failing to adhere to laws, regulations, and standards, which could result in legal penalties, fines, and damage to reputation is called as Compliance Risk.
- Communication Risk is the risk that communication about risks within an organization is insufficient or unclear, leading to misunderstandings or lack of awareness among stakeholders.
- Integration Risk refers to the risk that risk management is not effectively integrated into overall business processes and decision-making, reducing its effectiveness and relevance.
- Cultural Risk involves the risk that the organizational culture does not support effective risk management practices, such as encouraging risk awareness and proactive risk management behaviors.
- The risk that risk management practices are not aligned with the organization's strategic objectives, potentially leading to conflicts and suboptimal decision-making is called Strategic Risk.
- Resource Risk deals with the risk that there are insufficient resources (e.g., time, budget, personnel) allocated to effectively manage risks, resulting in inadequate risk mitigation.
- Technology Risk is the risk that technological tools and systems used in risk management are flawed, outdated, or vulnerable to cyber threats, impacting the accuracy and reliability of risk data and analyses.
- External Risk encompasses with the risk that external factors, such as economic shifts, natural disasters, or geopolitical events, are not adequately considered in the risk management process.

Take Note: The effective risk management involves identifying these potential risks within the risk management process itself and implementing strategies to address them. This ensures that the risk management framework remains robust, adaptive, and capable of protecting the organization against various threats.

What are the different types of Risks?

There are several key types of risks in finance and quantitative analysis. Understanding and managing these risks is crucial for investors, financial analysts, and portfolio managers to make informed decisions and achieve desired financial outcomes

while minimizing potential losses. Here are some most common risks:

- **Market Risk:** The risk of losses due to changes in market prices, such as stock prices, interest rates, currency exchange rates, and commodity prices.
- **Credit Risk:** The risk that a borrower will default on their financial obligations, failing to make the required payments.
- **Operational Risk:** The risk of loss resulting from inadequate or failed internal processes, people, systems, or external events.
- **Model Risk:** The risk that financial models used to measure, predict, or manage risk are incorrect or misused, leading to inaccurate or suboptimal decisions.
- **Liquidity Risk:** The risk that an asset cannot be sold quickly enough in the market without affecting its price, often due to a lack of buyers.

How to measure different types of Risks?

Measuring different types of risks involves various quantitative and qualitative methods tailored to the specific characteristics of each risk. Various quantitative tools and models, such as Value at Risk (VaR), stress testing, and scenario analysis, are employed to assess and mitigate these risks.

Here are some common methods used to measure different types of risks. These methods provide a comprehensive toolkit for measuring and managing various types of risks, enabling organizations to make informed decisions and protect against potential adverse outcomes.

Market Risk:

- VaR: Estimates the maximum potential loss over a specified time period at a given confidence level.
- Expected Shortfall (ES) or Conditional VaR (CVaR): Measures the average loss in the worst-case scenario beyond the VaR threshold.
- Stress Testing and Scenario Analysis: Evaluates the impact of extreme but plausible adverse market conditions on a portfolio.

Credit Risk:

- Credit Scoring Models: Uses statistical techniques to assess the creditworthiness of borrowers.
- Probability of Default (PD): Estimates the likelihood that a borrower will default on a loan.
- Loss Given Default (LGD): Estimates the proportion of a loan that will be lost if the borrower defaults.
- Exposure at Default (EAD): Estimates the total value exposed to default at the time of default.
- Credit Default Swap (CDS) Spreads: Measures the cost of insuring against the default of a borrower, reflecting the perceived credit risk.

Operational Risk:

- Risk and Control Self-Assessments (RCSA): Identifies and assesses operational risks and the effectiveness of controls.
- Key Risk Indicators (KRIs): Metrics used to monitor risk exposures and performance in critical areas.
- Loss Data Analysis: Collects and analyzes historical loss events to identify patterns and root causes.
- Scenario Analysis: Assesses the impact of hypothetical adverse operational events.

Model Risk:

- Back-testing: Compares model predictions with actual outcomes to assess accuracy.
- Sensitivity Analysis: Examines how changes in model inputs affect outputs.
- Stress Testing: Evaluates model performance under extreme conditions.
- Model Validation: Independent review and testing of models to ensure they are sound and reliable.

Liquidity Risk:

- Bid-Ask Spread: The difference between the buying and selling prices of an asset, indicating its liquidity.

- Market Depth: Measures the volume of an asset that can be traded without significantly impacting its price.
- Liquidity Coverage Ratio (LCR): Ensures that financial institutions have sufficient high-quality liquid assets to withstand a 30-day stressed funding scenario.
- Net Stable Funding Ratio (NSFR): Ensures that financial institutions maintain a stable funding profile relative to the composition of their assets and off-balance sheet activities.

IFRS Regulations

The International Financial Reporting Standards (IFRS) have specific regulations and guidelines that are essential for effective risk management within organizations. These standards ensure that risks are identified, measured, and reported in a transparent and consistent manner.
IFRS regulations require comprehensive and transparent disclosures about risk exposures and risk management strategies. They mandate the use of consistent measurement bases, such as fair value, and forward-looking impairment models. These standards help stakeholders understand an entity's financial risks and the measures in place to manage them, ultimately leading to better-informed decision-making.
In the following I will briefly summarize the IFRS 9 and IFRS 17 Regulations in risk management and give some key differences.

IFRS 9 - Financial Instruments

Objective: To provide guidelines on the classification, measurement, impairment, and hedge accounting of financial instruments.

Key Components:

Classification and Measurement:

- Categories: Financial assets are classified into three categories: amortized cost, fair value through other comprehensive income (FVOCI), and fair value through profit or loss (FVPL).
- Criteria: Classification is based on the business model for managing the financial assets and their contractual cash flow characteristics.

Impairment:

- Expected Credit Loss (ECL) Model: A forward-looking approach to recognizing credit losses.
- Three Stages:
- Stage 1: 12-month ECL for financial instruments without significant credit deterioration.
- Stage 2: Lifetime ECL for instruments with significant increases in credit risk.
- Stage 3: Lifetime ECL for credit-impaired instruments.

Hedge Accounting:

- Objective: Aligns hedge accounting more closely with risk management activities.
- Types of Hedges: Fair value hedges, cash flow hedges, and hedges of a net investment in a foreign operation.
- Effectiveness Testing: More flexible criteria for hedge effectiveness to allow for better alignment with risk management practices.

Disclosures:

- Extensive disclosures are required to provide users of financial statements with comprehensive information about the risk management strategies and the impact of financial instruments on the financial statements.

IFRS 17 - Insurance Contracts

Objective: To provide a consistent framework for the recognition, measurement, presentation, and disclosure of insurance contracts, enhancing comparability and transparency.

Key Components:

Recognition and Measurement:

- General Measurement Model (GMM): Default model based on the fulfilment cash

flows (present value of future cash flows), risk adjustment for non-financial risk, and the contractual service margin (CSM).
- Simplified Model - Premium Allocation Approach (PAA): Allowed for short-duration contracts, simplifying the measurement.
- Variable Fee Approach (VFA): Applies to insurance contracts with direct participation features, where the policyholders share in the returns on underlying items.

Fulfilment Cash Flows:
- Expected Cash Flows: Estimate of future cash inflows and outflows.
- Discount Rates: Reflect the time value of money and the characteristics of the cash flows.
- Risk Adjustment: Reflects the compensation required for bearing uncertainty about the amount and timing of cash flows.

Contractual Service Margin (CSM):
- Represents the unearned profit from the contract, recognized over the coverage period.
- Adjusted for changes in estimates of future cash flows.

Presentation and Disclosure:
- Statement of Financial Position: Separates insurance contract assets and liabilities.
- Statement of Comprehensive Income: Distinguishes between insurance revenue, insurance service expenses, and insurance finance income or expenses.
- Disclosures: Extensive notes to provide insights into the amounts recognized, significant judgments, and the nature and extent of risks from insurance contracts.

Key Differences Between IFRS 9 and IFRS 17

Scope:
- IFRS 9: Applies to financial instruments, including loans, receivables, investments in debt and equity securities, and derivatives.
- IFRS 17: Applies to insurance contracts, including life, non-life, and reinsurance contracts.

Measurement Models:
- IFRS 9: Focuses on classification and measurement based on business models and cash flow characteristics, with an emphasis on the ECL impairment model.
- IFRS 17: Uses fulfilment cash flows, risk adjustment, and CSM to measure insurance contract liabilities.

Risk Management:
- IFRS 9: Includes hedge accounting to align financial reporting with risk management practices.
- IFRS 17: Reflects the insurer's exposure to insurance risks and the management of those risks through risk adjustments and the CSM.

It is worth noting that both IFRS 9 and IFRS 17 aim to enhance the transparency, comparability, and reliability of financial reporting, but they address different types of contracts and risks within the financial statements.

Basel Committee

The Basel Committee on Banking Supervision (BCBS) has developed a comprehensive set of regulations and standards designed to enhance risk management and ensure the stability and soundness of the global banking system but have no legal enforcement. These regulations are collectively known as the Basel Accords, and aim to reduce the probability of bank failures, promote financial stability, and protect depositors and the broader financial system from systemic risks. The essentials of the Basel Committee's regulations in risk management are primarily encapsulated in the Basel I (1988), Basel II (2004), Basel III (2010-2017) and Basel IV (Ongoing Implementation) frameworks. Here's is some take note about the last two committees.

Basel III (2010-2017)

Objective: Strengthen regulation, supervision, and risk management within the banking sector following the 2008 financial crisis.

Key Components:

- Enhanced Minimum Capital Requirements:
- Common Equity Tier 1 (CET1): Minimum requirement of 4.5% of risk-weighted assets.
- Tier 1 Capital: Minimum requirement of 6% of risk-weighted assets.
- Total Capital: Minimum requirement of 8% of risk-weighted assets.

Capital Conservation Buffer:

- Additional buffer of 2.5% of CET1, bringing the total CET1 requirement to 7% to absorb losses during periods of financial and economic stress.

Countercyclical Buffer:

- Up to 2.5% of CET1 during periods of high credit growth to protect the banking sector from periods of excess aggregate credit growth.

Leverage Ratio:

- A non-risk-based leverage ratio of 3% to constrain leverage in the banking sector and enhance risk-based capital requirements.

Liquidity Standards:

- Liquidity Coverage Ratio (LCR): Requires banks to hold sufficient high-quality liquid assets to cover total net cash outflows over 30 days.
- Net Stable Funding Ratio (NSFR): Requires banks to maintain a stable funding profile in relation to their assets and off-balance sheet activities over a one-year period.

Enhanced Risk Coverage:

- Counterparty Credit Risk: Improved capital framework for counterparty credit exposures arising from derivatives, repo, and securities financing activities.
- Market Risk: Revised framework for market risk, known as the Fundamental Review of the Trading Book (FRTB), to enhance risk sensitivity and improve the consistency of capital requirements.

Basel IV (Ongoing Implementation)

Objective: Further refine the risk sensitivity and robustness of the regulatory framework to ensure the stability of the global banking system.

Key Components:

- Revisions to Standardized Approaches: Improved standardized approaches for calculating credit, market, and operational risk to enhance risk sensitivity and comparability.
- Output Floor: Limit the extent to which banks can use internal models to drive down risk-weighted assets by imposing a floor of 72.5% of the standardized approach.
- Operational Risk Framework: Simplified and standardized measurement approach for operational risk, replacing the AMA.

In sum, the Basel Committee's regulations have significantly shaped risk management practices in the banking sector by:

- Establishing minimum capital requirements to ensure banks can absorb losses.
- Introducing risk-sensitive capital charges to cover credit, operational, and market risks.
- Enhancing supervisory review processes to ensure banks maintain adequate capital.
- Requiring comprehensive disclosures to promote market discipline and transparency.
- Implementing leverage and liquidity ratios to strengthen the overall stability of the banking system.