# Module Outline
# ECF on Operational Risk Management (ORM)
# Module 4 "Advanced Operational Risk Management"

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| **Benchmarked HKQF Level:** | 5 |
| **No. of Credits:** | 30 |
| **Total Notional Learning Hours:** | 300 |
| ***a) Class contact hours:*** | *21 hours (3-hour per session x 7)* |
| ***b) Self-study hours:*** | *276 hours* |
| ***c) Assessment hours:*** | *3 hours* |
| **Pre-requisite:** | N/A |

## Module Objective

This module has been developed with the aim to nurture a sustainable talent pool of operational risk management practitioners in the banking industry. Candidates will acquire technical skills, professional knowledge and conduct for entry-level and junior level of job roles in the operational risk management function that take up a majority of responsibility in the operational risk management and business function risk and control.

## Module Intended Outcomes (MIOs) and Units of Competencies (UoCs)

Upon completion of the Module 4, candidates should be able to:

| **MIOs** | **Intended Outcomes / Competence** | ***Unit of Competencies (UoCs)** |
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| MIO-1 | Develop and establish operational risk management frameworks and associated policies and procedures. | 107405L5<br>107406L5<br>107412L5/ 109313L5<br>107414L5<br>109297L5<br>109307L5<br>109308L5<br>109309L5 |
| MIO-2 | Evaluate the operational risks encountered by different business units of the AI and establish effective mitigating controls. | |
| MIO-3 | Manage operational risks by using risk management control tools, e.g. risk control self-assessment (RCSA) and key risk indicators (KRIs). | |
| MIO-4 | Develop risk control measures by using scenario analysis and stress testing to identify potential operational risk events and assess their potential impact. | |
| MIO-5 | Analyse the risk profile of the AI/business function and apply operational risk modelling to quantify and predict operational risks. | |

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| MIO-6 | Compile the dashboards and metrics to measure and analyse operational risks within different business units. | |
| MIO-7 | Develop business continuity plan and recovery strategy. | |
| MIO-8 | Build and promote a risk focused culture within the AI/within the business function. | |
| MIO-9 | Propose strategic operational risk advice and remediation actions to senior management on findings of operational risk events. | |
| MIO-10 | Design and deliver operational risk training to business units. | |

**Note: For the details of the UoCs, please refer to the Specification of Competency Standards (SCS) of Retail Banking and Corporate & Commercial Banking which were developed by HKCAAVQ.*

## Assessment

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| **Examination duration:** | 3 hours |
| **Examination format:** | Part A: Multiple Choice Questions (MCQ) with 50 questions;<br>Part B: 2 out of 3 Essay Type Questions. |
| **Pass mark:** | 60% |

## Syllabus

| **Chapter 1: Operational Risk Assessment Methodology And New Products Risk Assessment** | |
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| **1.1** | **Introduction** |
| **1.2** | **Risk Assessment Criteria** |
| 1.2.1 | - Optimal Risk Taking for Banks |
| 1.2.2 | - Stages for Risk Assessment Process |
| 1.2.3 | - Critical Risk Factors in Various Business Area |
| 1.2.4 | - Operational Risk Assessment Methods |
| 1.2.5 | - Operational Risk Assessment Requirements |
| 1.2.6 | - Operational Risk Assessment Tools |
| 1.2.7 | - Operational Risk Assessment Factors |
| 1.2.8 | - Operational Risk Management Cycle |

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| 1.4.8 | - Operational Risk Perspective on Change |
| 1.4.9 | - Challenges on Risk Management for Changes |
| 1.4.10 | - Cohorts in Responding to Change |
| 1.4.11 | - Common Causes of Change Failure |
| 1.4.12 | - Information Requirement on Change |
| 1.4.13 | - Stage Involvement of Risk Function |
| 1.4.14 | - KRI for Monitoring Project Risks |
| **1.5** | **New Product Risk Assessment Cycle** |
| 1.5.1 | - New Product Definition |
| 1.5.2 | - Industry Observation on New Product |
| 1.5.3 | - Drivers for New Product |
| 1.5.4 | - Features of New Product |
| 1.5.5 | - Categorisation of New Product |
| 1.5.6 | - New Product Development Lifecycle |
| 1.5.7 | - New Product Risk Assessment Requirement |
| 1.5.8 | - Examples of Significant Changes to Risk Profile of Product (HKMA Illustration) |
| 1.5.9 | - Principles Governing the New-Product-Approval Process |
| 1.5.10 | - Issues on Managing New Product |
| 1.5.11 | - Types of Risks in New Process |
| 1.5.12 | - New Product Policy (Sample) |
| 1.5.13 | - New Product Committee (NPC) |
| 1.5.14 | - KRI for New Product |
| 1.5.15 | - New Product Risk Rating (NPRR) |
| 1.5.16 | - New Product Documentation |
| 1.5.17 | - New Product Risk Roles and Responsibilities – First Line |
| 1.5.18 | - New Product Risk Roles and Responsibilities – Second Line |
| 1.5.19 | - Product Expiration |
| 1.5.20 | - Consideration of Conflict of Interest |
| 1.5.21 | - Customer Onboarding |
| 1.5.22 | - Key Process and Regulatory Requirements of Customer Onboarding |
| 1.5.23 | - Risk Mitigation of Customer Onboarding |

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| **1.6** | **Offboarding and Periodic Review** |
| 1.6.1 | - Factors for Product Offboarding |
| 1.6.2 | - Overview of Post Implementation Review |
| 1.6.3 | - Scope of Post Implementation Review |
| 1.6.4 | - Overview of Periodic Product Review |
| 1.6.5 | - Scope of Periodic Product Review |
| 1.6.6 | - Customer Offboarding |
| 1.6.7 | - Key Process and Regulatory Requirement of Customer Offboarding |
| 1.6.8 | - Risk and Mitigation of Customer Offboarding |
| 1.6.9 | - Latest Trend of Customer Onboarding and Offboarding |
| **1.7** | **Case Studies** |
| 1.7.1 | - Case Study: Mis-selling of Investment Products |
| 1.7.2 | - Case Study: Deficient practices in ascertaining insurance protection for bill discounting business |
| 1.7.3 | - Case Study: Underpayment of stamp duty for certain OTC transactions |
| **1.8** | **Best Practice Guidance** |
| 1.8.1 | - New Product Checklist (Sample) |
| **Chapter 2: Scenario Analysis And Stress Testing** | |
| **2.1** | **Introduction** |
| **2.2** | **Stress Testing** |
| 2.2.1 | - Definition of Scenario Analysis, Stress Testing and Reverse Stress Testing |
| 2.2.2 | - Relationship between Scenario Analysis, Stress Testing and Reverse Stress Testing |
| 2.2.3 | - Demarcating Scenario Analysis, Stress and Reverse Stress testing |
| 2.2.4 | - Overview and Risk Factors of Operational Risk Stress Testing |
| 2.2.5 | - Value of Operational Risk Stress Testing |
| 2.2.6 | - Elements of Operational Risk Stress Testing |
| 2.2.7 | - Types of Risks Covered in Stress Testing |
| 2.2.8 | - Guiding Principles of Stress Testing |
| 2.2.9 | - Purpose of Stress Testing and Scenario Analysis |
| 2.2.10 | - Features of Stress Testing and Scenario Analysis |
| 2.2.11 | - Benefits of Stress Testing and Scenario Analysis |

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| 2.2.12 | - Linkage to Capital Planning Process |
| 2.2.13 | - Relationship between Sensitivity Analysis, Scenario Analysis, Stress Testing, Reverse Stress Testing, and Back Testing |
| **2.3** | **Scenario Analysis** |
| 2.3.1 | - Overview of Scenario Analysis |
| 2.3.2 | - Conducting Effective Scenario Analysis |
| 2.3.3 | - Identifying and Agreeing the Focus of Analysis |
| 2.3.4 | - Determining the Level of Analysis |
| 2.3.5 | - Key Components of Scenario Analysis Framework |
| 2.3.6 | - Scenario Design and Scenario Execution |
| 2.3.7 | - Approach in Developing Scenario Analysis |
| 2.3.8 | - Governance and Responsibilities |
| **2.4** | **Selection of The Scenarios** |
| 2.4.1 | - Animal Kingdom of Risks |
| 2.4.2 | - Black Swam Examples |
| 2.4.3 | - Gray Rhino Examples |
| 2.4.4 | - Questions on Understanding the Unknowns |
| 2.4.5 | - Steps in Building Scenario Analysis |
| 2.4.6 | - Relevance of Scenario Analysis |
| 2.4.7 | - Forward-looking Focus |
| 2.4.8 | - Data Collection |
| 2.4.9 | - Scenario Risk Drivers |
| 2.4.10 | - Scenario Distribution |
| 2.4.11 | - High Severity Scenario Examples |
| 2.4.12 | - Scenario Biases |
| 2.4.13 | - Possible Relationships between Operational Losses and Macroeconomic Conditions for Basel Event Types |
| 2.4.14 | - Identifying and Approving a Portfolio of Scenarios |
| 2.4.15 | - Techniques for Identifying Scenarios |
| 2.4.16 | - Sample of Common Scenarios (Corporate Bank) |
| 2.4.17 | - Assessing COVID Impact with Scenario Analysis |
| **2.5** | **Execution and Analysis** |
| 2.5.1 | - Running a Scenario Workshop |

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| 2.5.2 | - Causes of Scenarios |
| 2.5.3 | - Assessing Impacts |
| 2.5.4 | - Assessing Likelihood |
| 2.5.5 | - Management Response |
| 2.5.6 | - Scenario Template |
| 2.5.7 | - Expert Assessment and Biases |
| 2.5.8 | - Validation and Governance |
| 2.5.9 | - Preparing for Operational Risk Workshop |
| 2.5.10 | - Conducting a Workshop |
| 2.5.11 | - The Participants |
| 2.5.12 | - Assessing Probability and Impact |
| 2.5.13 | - Workshop Analysis Techniques |
| 2.5.14 | - Validation of Output |
| 2.5.15 | - Governing the Process |
| 2.5.16 | - Making Effective Use of the Outputs |
| 2.5.17 | - Risk and Capital Modeling |
| 2.5.18 | - Calculating Baseline Loss |
| 2.5.19 | - Expected Levels of Loss |
| 2.5.20 | - Unexpected Levels of Loss |
| 2.5.21 | - Key Challenges in Scenario Analysis |
| **2.6** | **Benchmarking with The Industry** |
| 2.6.1 | - Industry Benchmarking of Scenario Analysis |
| 2.6.2 | - Industry Survey on Scenario Analysis |
| **2.7** | **Regulatory Guideline** |
| 2.7.1 | - Global Regulatory Timeline |
| 2.7.2 | - BCBS Principles for Sound Stress Testing Practices and Supervision |
| 2.7.3 | - HKMA Requirement on Stress Testing and Operational Risk Scenario Analysis |
| **2.8** | **Case Studies** |
| 2.8.1 | - Case Study: Phishing emails and fraudulent bank websites stealing customers' e-banking account information |
| **2.9** | **Best Practice Guidance** |
| 2.9.1 | - Stress Testing Toolkit |

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| 3.3.10 | - Types of Indicators |
| 3.3.11 | - Bow Tie Diagram for Key Risk Indicators |
| 3.3.12 | - Easy to Collect and Monitor |
| 3.3.13 | - Comparable |
| 3.3.14 | - Auditable |
| 3.3.15 | - Selecting Indicators: Top Down or Bottom Up |
| 3.3.16 | - Consideration for Top-down Approach |
| 3.3.17 | - Consideration for Bottom-up Approach |
| 3.3.18 | - Deciding Frequency |
| 3.3.19 | - Consideration for Number of Key Risk Indicators |
| 3.3.20 | - Thresholds and Limits |
| 3.3.21 | - Specialised Thresholds |
| 3.3.22 | - Value Proposition of Risk Indicators |
| **3.4** | **Analysis** |
| 3.4.1 | - Analysis of Loss Related Indicators |
| 3.4.2 | - Analysis of Cause Related Indicators |
| 3.4.3 | - Analysis of Control Related Indicators |
| 3.4.4 | - Risk Monitoring |
| 3.4.5 | - Triggers for Escalation |
| 3.4.6 | - Managing and Reporting Risk Indicators |
| 3.4.7 | - Adding or Changing Indicators |
| 3.4.8 | - Taking Action to Resolve Threshold or Limit Breaches |
| 3.4.9 | - Comparative Analysis – Joining the Dots |
| 3.4.10 | - Overview of KRI Reporting |
| **3.5** | **Reporting** |
| 3.5.1 | - Level of KRI Reporting |
| 3.5.2 | - Reporting to Different Audiences |
| 3.5.3 | - Frequency of Reporting |
| 3.5.4 | - Data Visualisation |
| **3.6** | **Validation** |
| 3.6.1 | - Validating Indicators |

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| 4.3.4 | - TSA Example 2 |
| **4.4** | **Alternative Standardised Approach (ASA)** |
| 4.4.1 | - Alternative Standardised Approach |
| **4.5** | **Advanced Measurement Approach (AMA)** |
| 4.5.1 | - Advanced Measurement Approach |
| 4.5.2 | - Advanced Measurement Approach Distribution Curve |
| 4.5.3 | - AMA Quantitative Stipulations |
| 4.5.4 | - AMA Qualitative Stipulations |
| 4.5.5 | - Internal Measurement Approach |
| 4.5.6 | - Loss Distribution Approach |
| 4.5.7 | - Advantages and Disadvantages of LDA |
| 4.5.8 | - Standard LDA methods |
| 4.5.9 | - Step 1: Modeling Frequency |
| 4.5.10 | - Frequency in an LDA Model: Example |
| 4.5.11 | - Qualities of the Poisson Distribution |
| 4.5.12 | - Step 2: Modeling Severity |
| 4.5.13 | - Selecting a Severity Distribution |
| 4.5.14 | - The Severity Probability Distribution |
| 4.5.15 | - Step 3: Monte Carlo Simulation |
| 4.5.16 | - Correlation |
| 4.5.17 | - Scenario Analysis Approach to Modeling Operational Risk Capital |
| 4.5.18 | - Advantages and Disadvantages of an SA Approach |
| 4.5.19 | - Hybrid Approach to Modeling Operational Risk Capital |
| 4.5.20 | - Insurance |
| 4.5.21 | - Disclosure |
| **4.6** | **Revised Standardized Approach (RSA)** |
| 4.6.1 | - Revised Standardized Approach |
| 4.6.2 | - Methodology of Revised Standardized Approach |
| 4.6.3 | - Reduced Risk Management Incentive |
| 4.6.4 | - Implications For Banks (Data, systems and processes, business model, capital) |
| 4.6.5 | - Business Indicator Component |

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| 4.6.6 | - Loss Component |
| **4.7** | **Case Studies** |
| 4.7.1 | - Case Study: Insufficient controls over storage of title deeds of customers |
| **4.8** | **Best Practice Guidance** |
| 4.8.1 | - Data Comparability Problem |
| 4.8.2 | - Changing Level of Operational Risk Capital |
| 4.8.3 | - Operational Risk Management Road Map |
| 4.8.4 | - Operational Risk Allocation Rules |
| 4.8.5 | - Charging Framework (Sample) |
| **Chapter 5: Risk Control Self-Assessment** | |
| **5.1** | **Introduction** |
| **5.2** | **Operational Risk Process and Key Control Analysis** |
| 5.2.1 | - Definition of RCSA |
| 5.2.2 | - Types and Approaches of RCSA |
| 5.2.3 | - General Control Environment Self-Assessment on Minimum Expected Controls |
| 5.2.4 | - Characteristics of RCSA |
| 5.2.5 | - Benefits of RCSA |
| 5.2.6 | - Key Business Identification |
| 5.2.7 | - Governance and Responsibilities |
| 5.2.8 | - Frequency and Timing |
| 5.2.9 | - BCBS Principles |
| **5.3** | **Process Risk Mapping and Control** |
| 5.3.1 | - Business Process and Process Risk |
| 5.3.2 | - Sign off on the Business Process |
| 5.3.3 | - Tools on Operational Risk Mapping |
| 5.3.4 | - Key Operational Risk Process by Function |
| **5.4** | **Business Process Management Tool** |
| 5.4.1 | - Business Process Management |
| 5.4.2 | - Root Cause Analysis |
| 5.4.3 | - Operational Risk Event Types |
| 5.4.4 | - Operational Risk Causal Factors |

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| 5.4.5 | - Risk Assessment Criteria |
| 5.4.6 | - Subjective Risk Assessment |
| 5.4.7 | - RCSA – Scorecard Approach |
| 5.4.8 | - RCSA – Questionnaire Approach |
| 5.4.9 | - RCSA Proactive Risk Identification and Management Tool |
| 5.4.10 | - Management Results Reporting Tools |
| 5.4.11 | - Heat Mapping |
| 5.4.12 | - Operational Frequency – Severity Risk Mapping |
| 5.4.13 | - RCSA Follow Up |
| 5.4.14 | - Advantage and Disadvantage of RCSA |
| **5.5** | **Quantification of Potential Exposure** |
| 5.5.1 | - Risk (Probability and Impact) Matrix |
| 5.5.2 | - Quantification Techniques |
| 5.5.3 | - Maximum Potential Exposure |
| **5.6** | **Residual Risk Assessment and Treatment** |
| 5.6.1 | - Inherent Risk Exposure |
| 5.6.2 | - Residual Risk Exposure |
| 5.6.3 | - Causes |
| 5.6.4 | - Effects |
| 5.6.5 | - Action Plan |
| 5.6.6 | - Other Elements |
| 5.6.7 | - Risk Treatment Strategies |
| 5.6.8 | - Operational Risk Action Plan |
| **5.7** | **Operational Risk Reporting and Dashboards** |
| 5.7.1 | - Reporting RCSA Results |
| 5.7.2 | - Reporting Action Planning |
| 5.7.3 | - Internal Audit Planning and Reporting |
| **5.8** | **Case Studies** |
| 5.8.1 | - Case Study: Loss Of Certificates Of Financial Instruments Pledged For Credit Facilities |
| **5.9** | **Best Practice Guidance** |
| 5.9.1 | - Top-Down and Bottom-Up |

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| 5.9.2 | - Completing an RCSA: Approaches and Techniques |
| 5.9.3 | - Workshop Approach |
| 5.9.4 | - Planning |
| 5.9.5 | - Attendees |
| 5.9.6 | - Structure and Duration of the Workshop |
| 5.9.7 | - Facilitation |
| 5.9.8 | - Validation |
| 5.9.9 | - Questionnaires |
| 5.9.10 | - Scope of Questionnaire |
| 5.9.11 | - Designing a Questionnaire |
| 5.9.12 | - Content of Questionnaire |
| 5.9.13 | - Integrating an RCSA into the Operational Risk Management Framework |
| **Chapter 6: Operational Risk Events** | |
| **6.1** | **Introduction** |
| **6.2** | **Different Types of Risk Events** |
| 6.2.1 | - Definition of Operational Risk Event |
| 6.2.2 | - Identification of Loss Events |
| 6.2.3 | - Brainstorming Loss Events |
| 6.2.4 | - Defining Loss Events |
| 6.2.5 | - Screening Loss Events |
| 6.2.6 | - Factors of Review of Loss Events |
| 6.2.7 | - Actual Events and Near Misses |
| 6.2.8 | - Categorisation of Events |
| 6.2.9 | - Governance and Responsibilities |
| 6.2.10 | - Basel Consultative Paper – Revisions to Principles for the Sound Management of Operational Risk (PSMOR) |
| **6.3** | **Root Cause Analysis** |
| 6.3.1 | - Root Cause Analysis |
| 6.3.2 | - Fault Tree Analysis |
| 6.3.3 | - Ishikawa Cause and Effect Diagram |
| 6.3.4 | - Causes of Risk Events |
| 6.3.5 | - Control Failures |

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| 6.3.6 | - Direct And Indirect Impacts |
| 6.3.7 | - Financial and Non-Financial Impacts |
| 6.3.8 | - Aligning with the Wider Operational Risk Framework |
| 6.3.9 | - Operational Risk Causal Factors |
| 6.3.10 | - Operational Risk Effect Types |
| **6.4** | **Data Collection** |
| 6.4.1 | - Data Capture Requirements |
| 6.4.2 | - Reasons of Data Collection |
| 6.4.3 | - Date and Time of the Event |
| 6.4.4 | - Risk Event Type |
| 6.4.5 | - Location |
| 6.4.6 | - External Data Collection |
| 6.4.7 | - Data Collection: Difficulties and Solutions |
| 6.4.8 | - Aligning with the Wider Operational Risk Framework |
| **6.5** | **Escalation** |
| 6.5.1 | - Incident Management and Notification |
| 6.5.2 | - Loss Prediction |
| 6.5.3 | - Loss Prevention |
| 6.5.4 | - Loss Control |
| 6.5.5 | - Loss Reduction |
| 6.5.6 | - Assumptions, Avoidance and Transference |
| 6.5.7 | - Reporting of Operational Risk Events |
| 6.5.8 | - Using Operational Risk Event Data |
| 6.5.9 | - Using Loss Data to Support Risk Assessments and Monitoring |
| 6.5.10 | - Using Loss Data to Support The Risk Appetite and Tolerance Activities |
| 6.5.11 | - Using External Data to Benchmark Internal Loss Data |
| 6.5.12 | - Using Loss Data to Support the Identification of Emerging Risks |
| 6.5.13 | - Insight and Oversight |
| 6.5.14 | - Supporting Risk Governance |
| **6.6** | **Treatment of Boundary Loss** |
| 6.6.1 | - Treatment of Credit Risk Related Operational Risk Events |

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| 6.6.2 | - Treatment of Market Risk Related Operational Risk Events |
| 6.6.3 | - Goodwill Payment |
| 6.6.4 | - Single Versus Many Events |
| 6.6.5 | - Specific Criteria on Loss Data Identification, Collection and Treatment |
| 6.6.6 | - General Criteria on Loss Data Identification, Collection and Treatment |
| 6.6.7 | - Lesson Learnt Session |
| **6.7** | **Lesson Learnt and Corrective Actions** |
| 6.7.1 | - Source Data Documentation |
| 6.7.2 | - Training and Awareness |
| 6.7.3 | - Review on Other ORM Tools |
| 6.7.4 | - External Event Analysis |
| **6.8** | **Case Studies** |
| 6.8.1 | - Case Study: Use Of Fraudulent Documents And Information For Obtaining Factoring Financing |
| **6.9** | **Best Practice Guidance** |
| 6.9.1 | - Thematic reviews |
| 6.9.2 | - Risk Modelling |
| 6.9.3 | - Risk Culture |
| 6.9.4 | - Reasons for collecting Operational Risk Event/Loss Data |
| 6.9.5 | - Connecting multiple, related events |
| 6.9.6 | - Validation of loss estimates |
| 6.9.7 | - When to close an event |
| **Chapter 7: Regulatory And Supervisory Frameworks** | |
| **7.1** | **Introduction** |
| **7.2** | **Compliance with Regulatory Standards** |
| 7.2.1 | - Recap on Hong Kong Monetary Authority, SA-1: Risk Management Framework; October 2017 |
| 7.2.2 | - Recap on Hong Kong Monetary Authority, OR-1: Operational Risk Management; July 2022 |
| 7.2.3 | - Concentration Risk on Outsourcing |
| 7.2.4 | - Risk and Impact of Concentration Risk on Outsourcing |
| 7.2.5 | - Mitigation and Example of Concentration Risk on Outsourcing |
| **7.3** | **Supervisory Approach of Regulators** |

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| 8.2.1 | - Definition of Resiliency |
| 8.2.2 | - Threats to Financial Resilience |
| 8.2.3 | - Interconnects of Financial and Operational Resiliency |
| 8.2.4 | - Drivers of Operational Resilience |
| 8.2.5 | - Risk, Resilience and Sustainability |
| 8.2.6 | - Types of Disasters |
| **8.3** | **Resiliency Risk Framework** |
| 8.3.1 | - Operational Resilience Framework |
| 8.3.2 | - Questions on Operational Resilience |
| 8.3.3 | - Common Challenges |
| 8.3.4 | - COVID-19 Challenges |
| 8.3.5 | - Building Blocks of Operational Resilience |
| 8.3.6 | - Approach to Operational Resiliency |
| **8.4** | **Effective Tools of Planning, Execution and Testing** |
| 8.4.1 | - Business Continuity Planning |
| 8.4.2 | - Business Continuity Execution |
| 8.4.3 | - Business Continuity Testing and Review |
| 8.4.4 | - Business Continuity Insurance |
| **8.5** | **Regulatory Requirements** |
| 8.5.1 | - Overview of International Regulation and Standard |
| 8.5.2 | - Evolution of Regulation on Operational Resiliency (UK) |
| 8.5.3 | - Meeting Regulator Expectation |
| 8.5.4 | - Regulators Step Up Pressure |
| 8.5.5 | - Resilience is a Governance Issue |
| 8.5.6 | - IOSCO Principles on Cyber-resilience |
| 8.5.7 | - BCBS Consultation on Operational Resiliency, March 2021 |
| 8.5.8 | - HK Regulators' Position on COVID-19 |
| 8.5.9 | - HKMA Supervisory Policy Manual (SPM): New module OR-2 on "Operational Resilience" and revised module TM-G-2 on "Business Continuity Planning" |
| 8.5.10 | - Effective Incident Management Programme |
| 8.5.11 | - HKMA Timeline on Operational Resilience |
| 8.5.12 | - BCP and Operational Resilience according to the Hong Kong Monetary Authority |

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| 8.5.13 | - Business Continuity Planning and Risk Assessment Methodologies |
| 8.5.14 | - Incident Response |
| 8.5.15 | - Sound Practices for Payment Operations |
| 8.5.16 | - Banking Sector's Support for Implementation of Severe Weather Trading |
| **8.6** | **Integration into Operational Risk** |
| 8.6.1 | - Enterprise Resiliency Office |
| 8.6.2 | - Maintaining Financial Resiliency In Post COVID-19 |
| 8.6.3 | - Integration Operational Resiliency into Operational Risk |
| **8.7** | **Case Studies** |
| 8.7.1 | - Case Study: Guide to Better Operational Resilience |
| 8.7.2 | - Case Study: Disaster – Do not do |
| **8.8** | **Best Practice Guidance** |
| 8.8.1 | - Take-away on Resiliency Risk Management |
| 8.8.2 | - BCP Checklist |
| 8.8.3 | - Best Practice of Operational Resilience in Financial Services |
| **Chapter 9: Risk Culture, Awareness And Key Components Of Successful Operational Risk Management Implementation** | |
| **9.1** | **Introduction** |
| **9.2** | **Risk Culture and Awareness** |
| 9.2.1 | - Recap on the Importance of Operational Risk Culture |
| 9.2.2 | - Performance Metrics of Operational Risk Culture |
| 9.2.3 | - How Operational Risk Culture Can Be Improved |
| **9.3** | **Importance and Application of Trainings in Operational Risk Management** |
| 9.3.1 | - Objectives of Operational Risk Training |
| 9.3.2 | - Means of Operational Risk Training |
| 9.3.3 | - Contents of Operational Risk Training |
| 9.3.4 | - Review and Maintain Operational Risk Training |
| **9.4** | **Communication and Engagement Plan of Operational Risk Management in The Workplace** |
| 9.4.1 | - Motive: Reduce Routine Losses and Improve Efficiency |
| 9.4.2 | - Motive: Reduce the Required Amount of Regulatory Capital |
| 9.4.3 | - Motive: Improve Operational Efficiency |

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| 9.4.4 | - Motive: Overcome Operational Risk Challenges |
| 9.4.5 | - Sample Timeline of Communication and Engagement |
| 9.4.6 | - Tips for Effective Communication Strategy for Stakeholder Engagement |
| 9.4.7 | - Operational Risk Communication |
| 9.4.8 | - Operational Risk Engagement |
| 9.4.9 | - Winning Over the Firm |
| 9.4.10 | - Tactics of Marketing and Communication for Operational Risk |
| 9.4.11 | - Overview Of Deliverables By Stakeholders |
| **9.5** | **Communication with Senior Management on Operational Risk Topics** |
| 9.5.1 | - Communication on Elements of Operational Risk Framework |
| 9.5.2 | - Communication on Risk Can Be Aggregated and Presented in Simple and Concise Manner to Senior Management |
| 9.5.3 | - Communication on Interpretation of High-Level Operational Risk Results to Draw |
| 9.5.4 | - Communication on Meaningful Conclusions and Trends That Will Impact the Organisation |
| 9.5.5 | - Communication on Explanation of Operational Risk Measurement Tools and Methodologies in Simple and Concise |
| 9.5.6 | - Manner of Communication with All Business Units and Senior Management |
| 9.5.7 | - Managing Effective Operational Risk Reporting Process |
| 9.5.8 | - Content of Operational Risk Management Information System |
| 9.5.9 | - Sample of Operational Risk Report |
| 9.5.10 | - Sample of Operational Risk Dashboard |
| 9.5.11 | - Objectives of Operational Risk Communication |
| 9.5.12 | - Characteristics of Operational Risk Communication |
| 9.5.13 | - Topics of Operational Risk Communication (Examples) |
| 9.5.14 | - Key Points to Convey in Operational Risk Communication |
| 9.5.15 | - Usability of Operational Risk Communication |
| 9.5.16 | - Guideline of Delivery of Operational Risk Communication |
| 9.5.17 | - Timeliness of Communication |
| **9.6** | **Oversight, Monitoring and Understanding of Relevant Operational Risk Management Processes Taken Up by Subject Matter Experts** |
| 9.6.1 | - Engagement Model between Operational Risk and Internal Audit |
| 9.6.2 | - Engagement Model between Operational Risk and Compliance |
| 9.6.3 | - Engagement Model between Operational Risk and Business Continuity |

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| 10.2.17 | - From Transition Risk to Financial Stability Risk |
| 10.2.18 | - Climate Financial Risk Assessment |
| 10.2.19 | - Example of Climate Risk Impact on Bank |
| 10.2.20 | - How Financial Firms Addressing Climate Risk |
| 10.2.21 | - Climate Risk Framework |
| 10.2.22 | - HKMA Climate Risk Initiative |
| 10.2.23 | - Four Biodiversity-related Financial Risks |
| 10.2.24 | - Operational Risk Assessment |
| 10.2.25 | - Climate Risk Stress Testing |
| 10.2.26 | - Operational Risk Scenarios (Example) |
| 10.2.27 | - Incorporating Climate Risk into Enterprise Risk |
| 10.2.28 | - HKMA Climate Risk Framework |
| 10.2.29 | - Governance: Key Takeaways |
| 10.2.30 | - Strategy: Key Takeaways |
| 10.2.31 | - Risk Management: Key Takeaways |
| 10.2.32 | - Disclosure: Key Takeaways |
| 10.2.33 | - HKMA Publishes Report On First Climate Risk Stress Test of The Hong Kong Banking Sector |
| 10.2.34 | - HKMA Guidelines for Banking Sector Climate Risk Stress Test |
| 10.2.35 | - Hong Kong Green Taxonomy |
| 10.2.36 | - HK's Green and Sustainable Finance Strategy |
| 10.2.37 | - Cross-agency Steering Group Announces Priorities To Further Strengthen Hong Kong's Sustainable Finance Ecosystem |
| **10.3** | **Digital Banking Services** |
| 10.3.1 | - Journey of Intelligent Process Automation |
| 10.3.2 | - Adversarial Risk |
| 10.3.3 | - Risk Assessment Framework |
| 10.3.4 | - Technology Risk Assessment Framework |
| 10.3.5 | - Third Party Risk Assessment Framework |
| 10.3.6 | - Recognition of Risk and Control |
| 10.3.7 | - Proactive Risk and Control Consciousness |
| 10.3.8 | - Call to Action |
| 10.3.9 | - Emerging Risk in Fintech |

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| 11.3.5 | - Use of Operational Risk in Decision Making |
| 11.3.6 | - Early Warning Signal |
| 11.3.7 | - Develop Scenarios |
| 11.3.8 | - Generate Options and Strategy |
| 11.3.9 | - Implement Strategy |
| 11.3.10 | - Review Risk Development |
| 11.3.11 | - Effective Lines of Defense |
| 11.3.12 | - Predictive Risk Intelligence |
| 11.3.13 | - Embedding Operational Risk into Business |
| 11.3.14 | - Overview of Deliverables by Stakeholders |
| **11.4** | **Deployment of Artificial Intelligence** |
| 11.4.1 | - Key Trends in Artificial Intelligence |
| 11.4.2 | - Application of Technology in the Financial and Non-financial Risk Management |
| 11.4.3 | - Priority of RegTech and RiskTech |
| 11.4.4 | - GARP Survey on AI/RPA |
| 11.4.5 | - AI Adoption in Risk Management |
| 11.4.6 | - Risk Managers in Assessing AI Adoption or Non-adoption Risk |
| 11.4.7 | - Empower Risk and Compliance |
| 11.4.8 | - Trade Lifecycle Enabled by AI |
| 11.4.9 | - Digitisation of Risk Management |
| 11.4.10 | - CCAR and Stress Testing |
| 11.4.11 | - Risks and Opportunities: Questions on AI |
| 11.4.12 | - Using AI/Machine Learning in Operational Risk Management |
| 11.4.13 | - Key Points on AI Development Path |
| **11.5** | **Challenges and Solutions** |
| 11.5.1 | - Intrinsic Difficulties of Operational Risk |
| 11.5.2 | - Overcoming The Operational Risk Challenges |
| 11.5.3 | - Opportunity Window |
| 11.5.4 | - Potential Pitfalls And Workable Solutions |
| 11.5.5 | - Integrating ORM Framework |
| 11.5.6 | - Engaging the Right People |

## Recommended Readings

### *Essential Readings:*

1. Ariane Chapelle. (2018). Operational Risk Management: Best Practices in the Financial Services Industry (1st ed.). WILEY.
2. The Hong Kong Institute of Bankers. (2013). Operational Risk Management (1st ed.). WILEY.
3. HKIB Handout. (2021). Advanced Operational Risk Management.

### *Supplementary Readings*

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2. Basel Committee. (2020). The Basel Framework: Frequently Asked Questions.
3. Basel Committee. (2021). Principles For Operational Resilience.
4. Basel Committee. (2019). Launch Of The Consolidated Basel Framework.
5. Basel Committee. (2018). Sound Practices: Implications Of Fintech Developments For Banks And Bank Supervisors.
6. Basel Committee. (2017). Basel III: Finalising Post-Crisis Reforms.
7. Hong Kong Monetary Authority. (2019). TM-E-1: Risk Management of E-Banking.
8. Hong Kong Monetary Authority. (2017). IC-1: Risk Management Framework.
9. Hong Kong Monetary Authority. (2022). OR-1: Operational Risk Management in Supervisory Policy Manual.
10. Hong Kong Monetary Authority. (2022). TM-G-2: Business Continuity Planning.
11. Hong Kong Monetary Authority. Operational Incidents Watch.
12. Hong Kong Monetary Authority. (2020). Report on Review of Self-assessments on Bank Culture.
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### *Further Readings*

1. McKinsey. (2020). The Future Of Operational-Risk Management In Financial Services.
2. BCG. (2016). Five Practices Of Operational Risk Leaders.
3. Accenture. (2016). The Convergence of Operational Risk and Cyber Security.
4. Accenture. (2015). Reaping The Benefits Of Operational Risk Management.
5. COSO. (2021). Enterprise Risk Management Framework.
6. ISO 31000:2018. Risk Management Guidelines.