SCS-based Training Package on Credit Risk Management for Banking Industry

Modules 1 and 2 of

Enhanced Competency Framework – Credit Risk Management

2023

Table of Contents

A. INTRODUCTION

The Enhanced Competency Framework on Credit Risk Management (ECF-CRM) [1] establishes a set of common and transparent competency standards for raising and maintaining the professional competence of relevant practitioners (RPs) of the credit risk management function in authorized institutions (AI). This framework enables talent development and facilitates the enhancement of professional competencies and capabilities of those staff engaged in the credit risk management function.

The Training Package on Credit Risk Management (CRM) for Banking Industry is based on the selected Units of Competency (UoC) of the Corporate & Commercial Banking Specification of Competency Standards (SCS) (Version 2) developed by the Banking Industry Training Advisory Committee and two modules[2] of the ECF-CRM promulgated by the Hong Kong Monetary Authority, namely Module 1 on Credit Risk Management and Key Regulations and Module 2 on Fundamental Credit Risk Analysis. The performance requirements in the UoC are applied to the learning outcomes of the Training Package, and the learning and assessment materials correspond with the learning outcomes. It is developed for the specific learner profile, learning mode, and assessment method, which can be used as a reference in module designs.

The Training Package outlines the essential elements for Modules 1 and 2, which correspond with those of ECF-CRM. It offers for reference the learning, assessment guidelines, as well as supporting and reference materials. The Training Package exemplifies the design of the modules' structure and comes with suggestions on teaching, learning, and assessment materials. Assessment materials include sample tasks, methods, contexts of assessment, outcome standards, and performance rubrics that are appropriate to the learning.

The Training Package is not meant to be a complete learning programme by itself. Enterprises and education and training providers who wish to use it as a blueprint for module development should adjust the relevant teaching, learning, and assessment contents for any variations in learning objectives, target learners, entry requirements such as academic level and experience, etc. In addition, users are advised to check and adopt the latest update of the references to ensure their currency, validity, and accuracy when using it. For any learning programme developed by drawing reference to the Training Package to become Qualification Framework (QF)-recognised, it must successfully pass the quality assurance process of the Hong Kong Council for Accreditation of Academic and Vocational Qualifications (HKCAAVQ) or the self-accrediting institutions.

[1] ***Source: Extracted from HKMA Enhanced Competency Framework*** (Enhanced Competency Framework on Credit Risk Management (hkma.gov.hk))

[2] Development of the Training Package of Module 3 will be done in 2023.

B. USER GUIDE

This section elucidates the flow, basics, concepts, and assumptions of the design of the Training Package. The training organizers, training programme designers and trainers (collectively named as “Users”) will find practical guidance on using the Training Package for development into modules of learning or delivery of training.

1 Flow

The Training Package gives the overview and suggested structure of Modules 1 and 2, followed by the recommended resources requirement on teaching and learning, including but not limited to the qualifications of the trainers, the learning and teaching guide, assessment guide, and supports materials.

2 Basics

The Training Package design includes

- expert opinions and experience of credit risk management, business management, and human resources management professionals solicited via
  - face-to-face interviews
  - electronic surveys
  - face-to-face work meetings, and
- validated with information from publicly available resources including but not limited to
  - the Hong Kong Monetary Authority (HKMA) framework on ECF-CRM
  - the HKMA Supervisory Policy Manual (SPM)

3 Concepts

The training package is best to evolve with time. Learners can achieve the intended learning outcomes (ILO) with the learning and assessment activities built around credit work cases and publicly known credit cases.

4 Assumptions

The Training Package design assumes continuous support from the employers allowing learners to complete the self-study, the class, the end-of-class assessment, and the post-class simulation case.

5 Users

The Training Package targets the Users in Sections 5.1 and 5.2 who find value in various sections for their work.

5.1 Training Programme Organizers

Training programme organizers include human resources/training department, enterprises, and vocational and professional education and training providers intending to host a new SCS-based training programme based on the Training Package.

Where applicable, these Users may also consider making an application to have the above programme accredited by HKCAAVQ based on the council's requirements.

5.2 Training Programme Designers and Trainers/Assessors

Training programme designers and trainers/assessors intend to design materials for and facilitate a new SCS-based training programme based on the Training Package.

6 Guide to Different Users

6.1 Training Organizers

Training programme organizers will find value in the following sections:

Section C – Overview: for the scope and coverage, target learners, trainers/assessors, and ratios of trainers/assessors and learners

Section D – Structure: for the ILO, modules, and submodules, level of learning, and volume of learning

6.2 Training Programme Designers and Trainers/Assessors

Training programme designers and trainers will find value in the following sections:

Section E - Learning and Teaching Guide: for suggested learning submodules, learning modes and methods, learning contexts, the format of teaching, learning activities, time allocation, and learning facilities recommended.

Section F - Assessment Guide: for mapping assessment tasks with corresponding ILO, assessment methods, assessment activities, criteria and rubrics, performance grade, and passing criteria.

Section G - Support Materials for Trainers: for reference notes, suggested self-study reading materials, books and optional reading materials.

The Module sequence follows the ECF-CRM suggested Module 1 and Module 2. None of the Modules is a prerequisite to the other one.

7 Volume of Learning

7.1 QF Credits

QF credit is a common currency to enhance the transparency of programme. Under QF, one credit consists of 10 notional learning hours.

7.2 Notional Learning Hours

Notional learning hours (NLH) to be spent by an average learner, in all modes of learning, includes attendance in classes, online education, examination, self-study, practical learning, etc., to achieve the programme's learning outcomes. In the Training Package, NLH is used to describe the volume of learning.

7.3 NLH Allocation by Module

The suggested NLH for an average learner to achieve the ILO of Module 1 and Module 2 are 260 and 150 respectively.

8 Overview of the Suggested Programme Structure

<table>
<tr><th></th><th>Module 1</th><th>NLH</th><th>Module 2</th><th>NLH</th></tr>
<tr><td>Title</td><td colspan="2">Credit Risk Management and Key Regulations</td><td colspan="2">Fundamental Credit Risk Analysis</td></tr>
<tr><td>Submodule</td><td>1. Early Warning Signal
2. Risk Mitigation
3. Manage and Control the Risk
4. Stress Testing
5. Account Monitoring and Problem Loan
Total</td><td>40
40
40
40
100
<u>260</u></td><td>1. Financial Analysis
2. Financial Strength Assessment
3. Credit Risk Assessment and Structure Credit Facility
Total</td><td>40
40
70
<u>150</u></td></tr>
<tr><td>Content</td><td>1. Monitoring of portfolio – theory and practice
2. Identify
- Early warning signal
- Needs for risk mitigants
- Relevant credit risk indicators
- Vulnerable sectors in the portfolio
- Delinquent payment’s root causes
3. Identify the relationship of the risk level change with loan provision
4. Identify key regulations, report remedy and make recommendations</td><td></td><td>1. Accounting concepts
2. Financial ratio
3. Limitation of financial statements
4. Business drivers
5. Critical analysis of financial statements
- Internal factors
- External factors
- Business model
6. Cash budget analysis and financial strength
7. Budget and pro-forma analysis
8. Quantitative analysis and risk assessment
9. Structure credit facility</td><td></td></tr>
<tr><td>Learning Mode 1 Self-Study</td><td>1. Reading materials
2. Self-assessment
3. Improvement suggestion on credit guidelines
4. Presentation preparation</td><td></td><td>1. Reading materials
2. Self-assessment
3. Improvement suggestion on credit guidelines
4. Presentation preparation</td><td></td></tr>
<tr><td>Learning Mode 2 Class</td><td>1. Intended learning outcomes
2. Introduction
3. Newsroom
4. Learning Content
5. Practice
- Case Presentation
- Case Drill
6. Assessment
- Short Questions
- Long Questions
- Case-based Questions
7. Seminar on key regulations, credit risk operations and compliance and topical sharing
- Key regulations
- Case related to credit operational risk
- Loan classification
- Capital adequacy and provisioning
- Collateral authentication
- Stress testing design overview
- Contingency plan overview</td><td></td><td>1. Intended learning outcomes
2. Introduction
3. Newsroom
4. Learning Content
5. Practice
- Case Presentation
- Case Drill
6. Assessment
- Short Questions
- Long Questions
- Case-based Questions</td><td></td></tr>
<tr><td>Learning Mode 3 Case</td><td>Simulation case</td><td></td><td>Simulation case</td><td></td></tr>
</table>

C. SCOPE, TARGET LEARNERS, AND TRAINERS

1 Scope and Coverage

1.1 Scope - Units of Competency

The following UoC are selected to direct the Training Package. Performance requirements of UoC are at Appendix One.

Module 1

109271L4 Monitor the risk level of the loan portfolio to identify early risk signal
109266L5 Develop risk mitigation strategies for the credit portfolio
109267L5 Conduct stress testing and analyse the results
109268L5 Manage and control the risks of the credit assets for enterprise banking
109270L5 Conduct ongoing monitoring of borrowing accounts
109273L5 Conduct post approval credit monitoring and review on problem loans
109319L5 Develop internal policies, guidelines, and standards for different operations to comply with regulatory requirements

Module 2

109256L5 Review risk assessment on credit application
109257L5 Structure the credit facility
109260L5 Assess credit and financial strength of borrower and prepare credit proposal
109502L5 Conduct company financial analysis to identify client needs

1.2 Coverage - Job Roles

The Training Package is intended to cover the following job roles of RPs. RPs refer to those who are engaged by banks undertaking commercial credits business for corporations ranging from large to medium and small enterprises.

Core Level (Entry-, junior-level staff in credit function)	**Role 1 Credit Initiation and Appraisal**	**Role 2 Credit Evaluation, Approval and Review**	**Role 3 Credit risk management and Control**
Examples of functional title for reference only	Credit officer, associate/assistant credit initiation manager, relationship officer	Credit acquisition officer, credit underwriter, credit analyst	Credit risk officer
Role Description	Assist in performing credit initiation of commercial lending within established policies Assist in assessing borrower's credit and financial information for preparing credit proposals Assist in assessing borrowers' credit ratings Assist in monitoring borrowers' accounts	Assist in assessing borrowers' repayment ability after evaluation of various risks and suitability of credit package based on the credit proposals Assist in conducting independent review of borrower's credit rating/loan classification Assist in assessing quality of collateral and other types of risk mitigations and comforts. Assist in evaluating and approval loan application	Assist in formulating and reviewing credit policies Assist in monitoring credit accounts, credit risks, and preparing analytical reports to management Assist in performing assessment and gap analysis according to regulatory and management requirements regarding calculations of risk indicators and portfolio performance indicators Assist in performing analysis on credit limits and monitoring credit portfolios Assist in handling the recovery and work-out of problem loans/ deteriorating credit

Source: Extracted from HKMA Enhanced Competency Framework (Enhanced Competency Framework on Credit Risk Management (hkma.gov.hk))

2 Target Learners and Entry Requirements

2.1 Target Learners

The training programme is suitable for banking employees who want to advance their knowledge, skills, and behaviours on credit risk management in commercial banking.

2.2 Entry Requirements

To apply for admission to the programme, it is suggested that applicants should have obtained one of the following:

- A Bachelor’s Degree in any discipline awarded by a recognized university or equivalent, OR
- An Associate Degree/Higher Diploma in a banking and finance discipline or equivalent; OR
- A relevant professional qualification; OR
- Three years of banking experience in any front, middle or back-office departments

3 Trainers/Assessors

3.1 Requirements

RP with a minimum of eight years of relevant experience and currently engaged in relevant roles (e.g., credit initiation and appraisal, credit evaluation, approval and review, credit risk management, and control) can be trainers.

Full-time trainers can be trainers with a postgraduate degree in finance or a minimum of ten years of teaching/training experience for banks or corporate executives.

A trainer may also deliver updates on the following topics in Module 1:

- Key regulations
- Cases related to credit operational risk
- Loan classification
- Capital adequacy and provisioning
- Collateral authentication
- Stress testing design overview
- Contingency plan overview

Alternatively, trainers may arrange guest speakers to share updates on the above topics.

3.2 Assessor's Role

Trainers also assume the role of assessors to collect and score assessment tasks.

4 Class Ratio

Trainer-to-learner ratio is 1: 15 – 20

D. STRUCTURE

1 Hierarchy of Structure

The Training Package consists of two Modules. Module 1 consists of five submodules, and Module 2 consists of three submodules which are also the keys for learning, teaching, and assessment. The essential knowledge and skills for the submodules are organized into "content." The table below lists out the suggested structure to which the Training Package is referred for development and design.

Module 1

Submodule	Content
1. Early Warning Signal	1. Monitor portfolio – theory and practice 2. Identify early warning signal 3. Identify the relationship of the risk level change with loan provision 4. Identify key regulations, report remedy, and make recommendations
2. Risk Mitigation	1. Monitor portfolio – theory and practice 2. Identify needs for risk mitigants 3. Identify the relationship of the risk level change with loan provision 4. Identify key regulations, report remedy, and make recommendations
3. Manage and Control the Risk	1. Monitor portfolio – theory and practice 2. Identify the relevant credit risk indicators 3. Identify the relationship of the risk level change with loan provision 4. Identify key regulations, report remedy, and make recommendations
4. Stress Testing	1. Monitor portfolio – theory and practice 2. Identify the vulnerable sectors in the portfolios 3. Identify key regulations, report remedy, and make recommendations
5. Account Monitoring and Problem Loan	1. Monitor portfolio – theory and practice 2. Identify delinquent payments' root causes 3. Identify the relationship of the risk level change with loan provision 4. Identify key regulations, report remedy, and make recommendations

Module 2

Submodule	Content
1. Financial Analysis	1. Accounting concepts 2. Financial ratio 3. Limitation of financial statements 4. Business drivers
2. Financial Strength Assessment	5. Critical analysis of financial statements - Internal factors - External factors - Business models 6. Cash analysis and financial strength
3. Credit Risk Assessment and Structure Credit Facility	7. Budget and pro-forma analysis 8. Quantitative analysis and risk assessment 9. Structure credit facility

2 Intended Learning Outcomes

Intended Learning Outcomes (ILO) are derived from the performance requirements of the UoC. ILO of Module 1 can be achieved through learning and applying the comprehensive credit risk management theories and practices. ILO of Module 2 can be achieved through learning and applying the comprehensive operational, financial, business, and internal analysis.

Upon completion of learning programme on Module 1 and Module 2, learners would have acquired knowledge, skills, and behaviours to achieve the overall learning outcomes in the following table.

Module 1

Submodules	Overall Learning Outcomes
1. Early Warning Signal	Monitor the loan accounts and portfolios day-to-day to identify early warning signal
2. Risk Mitigation	Understand mitigation strategies and apply to different kinds of credit assets in the portfolio
3. Manage and Control Risk	Manage risk of credit assets and develop risk control measures/remedy
4. Stress Testing	Understand and conduct stress testing, analyse the results to identify vulnerable sectors in the portfolios
5. Account Monitoring and Problem Loan	Monitor the risk changes in accounts and portfolios and recovery and workout of problem loans

Module 2

Submodules	Overall Learning Outcomes
1. Financial Analysis	Apply financial and non-financial analysis to assess a client's financial positions, needs and credit worthiness
2. Financial Strength Assessment	Analyse a client's operational, financial, business, and internal factors to assess its financial strength, and review the client's credit rating
3. Credit Risk Assessment and Structure Facility	Perform quantitative analysis about repayment capability, calculate potential losses, estimate risk-return, propose credit structure for eligible client

3 Intended Learning Outcomes Mapping Matrix

The ILO are stipulated in the UoC performance requirements. Mapping of submodules with the UoC performance requirements are presented in the following tables:

Module 1 - Mapping of Submodules with UoC Performance Requirements

109271L4
Monitor the risk level of the loan portfolio to identify early risk signal

Monitoring the risk exposures of the loan portfolio and reporting to senior management. It refers to day-to-day monitoring of the portfolio which covers monitoring of different types of risk.

Level: 4
Credit: 3

		UoC Performance Requirements								
		Knowledge		Application				Behavior		
Submodules	**Content**	Demonstrate proficient knowledge in credit risk management in order to identify the most appropriate method in risk monitoring.	Be able to understand the credit strategies and portfolio objectives of the bank in order to identify crucial areas for monitoring.	Monitor and ensure credit administration is in compliance with contractual requirements and facility terms.	Track risk indicators or credit quality (e.g., delinquency, risk rating trends) and detect changes in risk characteristics of loan portfolios.	Identify early signals of delinquency or system risk and escalate to appropriate parties for prompt actions.	Identify the sources and causes of the changes in risk level, e.g., underwriting standards, economic conditions, personnel issue and recommend appropriate corrective actions.	Demonstrate professionalism by applying impartial and unbiased judgment throughout the loan portfolio assessment process.	Regularly review the advantages and weaknesses of forecasting and reviewing approaches and adopt the most reliable measure.	Report to senior management about the results of analysis on risk profile of overall loan portfolio.
1. Early Warning Signal	- Monitor portfolio – theory and practice - Identify early warning signal - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations	X	X	X	X	X	X	X	X	X
2. Risk Mitigation	- Monitor portfolio – theory and practice - Identify needs for risk mitigants - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations	X	X							
3. Manage and Control the Risk	- Monitor portfolio – theory and practice - Identify the relevant credit risk indicators - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations	X	X							
4. Stress Testing	- Monitor portfolio – theory and practice - Identify vulnerable sectors in the portfolios - Identify key regulations, report remedy and make recommendations									
5. Account Monitoring and Problem Loan	- Monitor portfolio – theory and practice - Identify delinquent payment's root causes - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations									

Module 1 - Mapping of Submodules with UoC Performance Requirements

109266L5
Develop risk mitigation strategies for the credit portfolio

Developing strategies to minimize risks in the bank's credit portfolio. This applies to different kinds of assets in the bank's credit portfolio.

Level: 5
Credit: 4

		UoC Performance Requirements								
		Knowledge			Application					
Submodules	**Content**	Demonstrate professional knowledge in credit risk management in order to maintain an optimal risk level for credit portfolio.	Professional knowledge in credit management by utilizing different tools (e.g., setting exposure limits, credit derivative) in managing credit risk and their performance in different economic scenarios.	Understand the impacts on business environment caused by the changing external factors and apply the knowledge to evaluate current and future economic outlook and regulatory development for the purpose of developing suitable strategies in risk mitigation.	Evaluate the credit strategies and existing risk exposure of the bank in order to construct a suitable risk management approach.	Conduct analysis on the trends on risk level of the credit portfolio in order to identify critical factors which can affect the risk level.	Construct strategies in diversifying concentration risk, e.g., reducing exposures to particular type of loan, broaden customer base, altering product mix, industry etc.	Formulate measures to protect the bank from undue risk exposure by employing suitable techniques, e.g., asset sales, securitization, credit derivatives, etc.	Develop policies and procedures for applying different types of credit mitigation techniques.	Develop guidelines and standards on reporting to management when the aggregate exposure is approaching or exceeding portfolio limits.
1. Early Warning Signal	- Monitor portfolio – theory and practice - Identify early warning signal - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations	X	X	X						
2. Risk Mitigation	- Monitor portfolio – theory and practice - Identify needs for risk mitigants - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations	X	X	X	X	X	X	X	X	X
3. Manage and Control the Risk	- Monitor portfolio – theory and practice - Identify the relevant credit risk indicators - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations	X	X	X						
4. Stress Testing	- Monitor portfolio – theory and practice - Identify vulnerable sectors in the portfolios - Identify key regulations, report remedy and make recommendations									
5. Account Monitoring and Problem Loan	- Monitor portfolio – theory and practice - Identify delinquent payment's root causes - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations									

Module 1 - Mapping of Submodules with UoC Performance Requirements

<table>
<tr><td colspan="2">109266L5
Develop risk mitigation strategies for the credit portfolio

Developing strategies to minimize risks in the bank's credit portfolio. This applies to different kinds of assets in the bank's credit portfolio.

Level: 5
Credit: 4</td><td colspan="2">UoC Performance Requirements
Behavior
</td></tr>
<tr><td>Submodules</td><td>Content</td><td>Manage the activities of credit risk mitigation strategies to ensure they are applied at the right time and used for their purported purposes.</td><td>Conduct regular review on the results of the mitigation instructions and provide suggestions on necessary changes.</td></tr>
<tr><td>1.
Early Warning Signal</td><td>- Monitor portfolio – theory and practice
- Identify early warning signal
- Identify the relationship of risk level change with loan provision
- Identify key regulations, report remedy and make recommendations</td><td></td><td></td></tr>
<tr><td>2.
Risk Mitigation</td><td>- Monitor portfolio – theory and practice
- Identify needs for risk mitigants
- Identify the relationship of risk level change with loan provision
- Identify key regulations, report remedy and make recommendations</td><td>X</td><td>X</td></tr>
<tr><td>3.
Manage and Control the Risk</td><td>- Monitor portfolio – theory and practice
- Identify the relevant credit risk indicators
- Identify the relationship of risk level change with loan provision
- Identify key regulations, report remedy and make recommendations</td><td></td><td></td></tr>
<tr><td>4.
Stress Testing</td><td>- Monitor portfolio – theory and practice
- Identify vulnerable sectors in the portfolios
- Identify key regulations, report remedy and make recommendations</td><td></td><td></td></tr>
<tr><td>5.
Account Monitoring and Problem Loan</td><td>- Monitor portfolio – theory and practice
- Identify delinquent payment's root causes
- Identify the relationship of risk level change with loan provision
- Identify key regulations, report remedy and make recommendations</td><td></td><td></td></tr>
</table>

Module 1 - Mapping of Submodules with UoC Performance Requirements

109268L5

Manage and control the risk of the credit assets for enterprise banking

Conducting risk management and control of credit assets of the bank. This applies to different kinds of credit assets possessed by the bank.

Level: 5
Credit: 4

		UoC Performance Requirements							
		Knowledge		Application				Behavior	
Submodules	Content	Demonstrate professional knowledge in managing risk of credit assets by applying it to evaluate different risk management strategies for the purpose of designing a most suitable approach for the bank.	Understand the credit strategies and portfolio objectives of the bank in order to build an alignment between the selected risk management approach and the bank’ s strategies.	Assess the situation in order to identify the most suitable approach in risk management and develop the execution plan.	Design risk management measures to diversity risks into different uncorrelated or less correlated business.	Mitigate credit risk by acquiring security, insurance, third party guarantee, etc.	Identify factors affecting the value of the credit assets for assessing the purchase or selling price in order to quantify the risks.	Evaluate effectiveness of different approaches of risk management for the purpose of transferring or mitigating credit risk.	Review current risk management measures and provide suggestions on improvement based on results of evaluation on different approaches for transferring or mitigating credit risks.
1. Early Warning Signal	- Monitor portfolio – theory and practice - Identify early warning signal - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations								
2. Risk Mitigation	- Monitor portfolio – theory and practice - Identify needs for risk mitigants - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations	X	X						
3. Manage and Control the Risk	- Monitor portfolio – theory and practice - Identify the relevant credit risk indicators - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations	X	X	X	X	X	X	X	X
4. Stress Testing	- Monitor portfolio – theory and practice - Identify vulnerable sectors in the portfolios - Identify key regulations, report remedy and make recommendations								
5. Account Monitoring and Problem Loan	- Monitor portfolio – theory and practice - Identify delinquent payment’s root causes - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations								

Module 1 - Mapping of Submodules with UoC Performance Requirements

109267L5
Conduct Stress Testing and analyse the results

Conducting different types of stress testing at different complexity level. This applies to testing conducted on individual loans offered to clients or different portfolio segments.

Level: 5
Credit: 4

		UoC Performance Requirements								
		Knowledge			Application					
Submodules	**Content**	Possess specialized knowledge in stress testing and apply it to evaluate different methods of execution in order to develop a suitable approach for the bank.	Understand the credit strategies and portfolio objectives of the bank and based on that evaluate the existing portfolio of credit assets.	Understand the Current macroeconomic environment and trends and consider these as key factors of stress testing.	Identify factors (e.g., financial data, economic variables) that can impose effects on risk level of loan portfolio and develop financial models to quantify the sensitivity of loan performance to different scenarios.	Analyse existing performance/potential risks of the portfolio in order to determine the objectives for stress testing.	Design methodology, analysis framework and tools on stress testing which are aligned with the objectives of the testing.	Develop testing plan and conduct the test by altering assumptions in different variables and record the effect on portfolio credit quality.	Analyse the performance of different assets and liabilities under the various hypothetical scenarios.	Analyse the results of stress testing and identify the vulnerability of different segments of loan portfolio.
1. Early Warning Signal	- Monitor portfolio – theory and practice - Identify early warning signal - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations									
2. Risk Mitigation	- Monitor portfolio – theory and practice - Identify needs for risk mitigants - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations									
3. Manage and Control the Risk	- Monitor portfolio - theory and practice - Identify the relevant credit risk indicators - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations		X	X						
4. Stress Testing	- Monitor portfolio - theory and practice - Identify vulnerable sectors in the portfolios - Identify key regulations, report remedy and make recommendations	X	X	X	X	X	X	X	X	X
5. Account Monitoring and Problem Loan	- Monitor portfolio - theory and practice - Identify delinquent payment's root causes - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations									

Module 1 - Mapping of Submodules with UoC Performance Requirements

<table>
<tr><td colspan="2">109267L5
Conduct Stress Testing and analyse the results

Conducting different types of stress testing at different complexity level. This applies to testing conducted on individual loans offered to clients or different portfolio segments.

Level: 5
Credit: 4</td><td colspan="2">UoC Performance Requirements
Behavior</td></tr>
<tr><td>Submodules</td><td>Content</td><td>Consolidate the results of stress testing into the risk management process and develop suitable measures.</td><td>Develop contingency plans for vulnerable segments. e.g., strengthening the supervision process, imposing limits, devising existing strategies.</td></tr>
<tr><td>1.
Early Warning Signal</td><td>- Monitor portfolio – theory and practice
- Identify early warning signal
- Identify the relationship of risk level change with loan provision
- Identify key regulations, report remedy and make recommendations</td><td></td><td></td></tr>
<tr><td>2.
Risk Mitigation</td><td>- Monitor portfolio – theory and practice
- Identify needs for risk mitigants
- Identify the relationship of risk level change with loan provision
- Identify key regulations, report remedy and make recommendations</td><td></td><td></td></tr>
<tr><td>3.
Manage and Control the Risk</td><td>- Monitor portfolio – theory and practice
- Identify the relevant credit risk indicators
- Identify the relationship of risk level change with loan provision
- Identify key regulations, report remedy and make recommendations</td><td></td><td></td></tr>
<tr><td>4.
Stress Testing</td><td>- Monitor portfolio – theory and practice
- Identify vulnerable sectors in the portfolios
- Identify key regulations, report remedy and make recommendations</td><td>X</td><td>X</td></tr>
<tr><td>5.
Account Monitoring and Problem Loan</td><td>- Monitor portfolio – theory and practice
- Identify delinquent payment’s root causes
- Identify the relationship of risk level change with loan provision
- Identify key regulations, report remedy and make recommendations</td><td></td><td></td></tr>
</table>

Module 1 - Mapping of Submodules with UoC Performance Requirements

109270L5

Conduct ongoing monitoring of borrowing accounts

Monitoring borrowing accounts transactions regularly or in real time for risk by using different kinds of analysis methods to cover areas on banking practice, commercial credit management, clients' corporate governance, clients' business and industrial trends and regulatory requirements. This applies to different types of enterprise banking loans accounts.

Level: 5
Credit: 4

		UoC Performance Requirements									
		Knowledge			**Application**					**Behavior**	
Submodules	**Content**	Demonstrate proficient knowledge in risk management in order to identify the most appropriate method in borrowing account risk monitoring.	Understand the process of credit monitoring and evaluate the performance of client's accounts to compare with the credit strategies and portfolio objectives of the bank to identify critical areas for further follow-up actions.	Keep up to date on the future development and current performance of clients' business/ participating industry.	Analyse client's historical information, account profile, account activities/pattern, business outlook, predicted future activity, financial and business data, etc. for identifying risk levels.	Monitor indicators of credit quality (e.g., delinquency, risk rating trends) and identify changes in risk characteristics of loan portfolio.	Perform on-site inspection and regular due diligence review to identify early signals or delinquency.	Analyze the customers, products activity and financial transactions profile of bank clients to track if any irregularities occur.	Monitor clients' borrowing accounts and advise them of new or alternative services to meet their changing needs.	Be able to identify causes and sources of risks and report to appropriate parties for prompt remedial actions.	Be able to restructure debts of clients to improve clients' financial stability and solvency, when it is necessary.
1. Early Warning Signal	- Monitor portfolio – theory and practice - Identify early warning signal - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations										
2. Risk Mitigation	- Monitor portfolio – theory and practice - Identify needs for risk mitigants - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations										
3. Manage and Control the Risk	- Monitor portfolio – theory and practice - Identify the relevant credit risk indicators - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations										
4. Stress Testing	- Monitor portfolio – theory and practice - Identify vulnerable sectors in the portfolios - Identify key regulations, report remedy and make recommendations										
5. Account Monitoring and Problem Loan	- Monitor portfolio – theory and practice - Identify delinquent payment's root causes - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations	X	X	X	X	X	X	X	X	X	X

Module 1 - Mapping of Submodules with UoC Performance Requirements

109273L5

Conduct post approval credit monitoring and review on problem loans

Conducting on going credit monitoring on loan accounts and reviewing problem loans to identify the underlying causes. This applies to loans of different kinds, amount and client segments.

Level: 5
Credit: 4

		UoC Performance Requirements								
		Knowledge		Application					Behavior	
Submodules	**Content**	Understand theories and knowledge in bank lending in order to analyse the situation in different cases of problem loans.	Demonstrate professional knowledge in problem loans management (e.g., common causes for problem loan, early warning signals) by applying it to identify the root causes of different problem loans.	Evaluate the repayment record and transaction records of different accounts of the clients in order to identify possible causes for delay in payment.	Review the accuracy of past documentation (e.g., collateral valuable report, risk assessment, tracking report) and timeliness of problem identification in order to identify possible root causes or problem loans.	Consolidate information from different sources in order to analyse the changes in financial situations of the clients when compared to the time of loan origination.	Compare the loan with lending guidelines to identify any deviation from the agreed principles.	Determine the amount of provision for problem accounts and assess the impact on the bank’ s credit portfolio.	Evaluate information related to current and projected financial status of applicants, hence, to re-assess the bank/client relationship and carry-out necessary follow-up actions promptly.	Classify the unpaid debt customers to make claims and provide necessary information to relevant parties, if warranted.
1. Early Warning Signal	- Monitor portfolio – theory and practice - Identify early warning signal - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations									
2. Risk Mitigation	- Monitor portfolio – theory and practice - Identify needs for risk mitigants - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations									
3. Manage and Control the Risk	- Monitor portfolio – theory and practice - Identify the relevant credit risk indicators - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations									
4. Stress Testing	- Monitor portfolio – theory and practice - Identify vulnerable sectors in the portfolios - Identify key regulations, report remedy and make recommendations									
5. Account Monitoring and Problem Loan	- Monitor portfolio – theory and practice - Identify delinquent payment’s root causes - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations	X	X	X	X	X	X	X	X	X

Module 1 - Mapping of Submodules with UoC Performance Requirements

109319L5

Develop internal policies, guidelines and standards for different operations to comply with regulatory requirements

Setting of compliance policies, guidelines and standards for different operations of the bank. This applies to different regulations related to the banking industry.

Level: 5
Credit: 4

		UoC Performance Requirements								
		Knowledge		Application						
Submodules	**Content**	Demonstrate professional knowledge in banking law in order to identify the requirements of different regulations.	Possess knowledge in rules and regulations related to banking operations (e.g., framework issued by Basel Committee on Banking Supervision and requirement of HKMA Supervisory Policy Manual, etc.) and apply it to evaluate the relevant regulations and identify the effects on the bank' s policies, procedures and operation as appropriate.	Evaluate the business/operations of the bank in order to assess whether they can fulfil the regulatory requirements.	Review the existing level of compliance risks and identify possible scenarios of breaches of law in order to formulate control measures.	Review the probability and possible consequences of non-compliance when designing the control measures.	Develop the scope and objective of internal standards based on the review findings.	Specify the handling methods of dealing with different scenarios of non-compliance based on the estimated consequences and impacts to the bank.	Design effective internal reporting systems to provide management with updated information on compliance.	Establish escalation procedures for reporting different types of non-compliance issues to internal parties or regulatory bodies.
1. Early Warning Signal	- Monitor portfolio – theory and practice - Identify early warning signal - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations		X				X		X	X
2. Risk Mitigation	- Monitor portfolio – theory and practice - Identify needs for risk mitigants - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations		X				X		X	X
3. Manage and Control the Risk	- Monitor portfolio – theory and practice - Identify the relevant credit risk indicators - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations		X	X	X	X	X	X	X	X
4. Stress Testing	- Monitor portfolio – theory and practice - Identify vulnerable sectors in the portfolios - Identify key regulations, report remedy and make recommendations		X				X		X	X
5. Account Monitoring and Problem Loan	- Monitor portfolio – theory and practice - Identify delinquent payment's root causes - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations	X	X				X		X	X

Module 1 - Mapping of Submodules with UoC Performance Requirements

109319L5
Develop internal policies, guidelines and standards for different operations to comply with regulatory requirements

Setting of compliance policies, guidelines and standards for different operations of the bank. This applies to different regulations related to the banking industry.

Level: 5
Credit: 4

		UoC Performance Requirements		
		Behavior		
Submodules	**Content**	Formulate internal standards by stating practices acceptable/required by the bank and ensure the standards set are in proportionate with the level of risk exposure.	Propose internal compliance policies, guidelines and standards which can maintain a proper balance between compliance with statutory requirements and operational efficiency.	Take actions to ensure existing framework is adequate to safeguard the bank from regulatory risk.
1. Early Warning Signal	- Monitor portfolio – theory and practice - Identify early warning signal - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations	X		
2. Risk Mitigation	- Monitor portfolio – theory and practice - Identify needs for risk mitigants - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations	X		
3.. Manage and Control the Risk	- Monitor portfolio – theory and practice - Identify the relevant credit risk indicators - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations	X	X	X
4 Stress Testing	- Monitor portfolio – theory and practice - Identify vulnerable sectors in the portfolios - Identify key regulations, report remedy and make recommendations	X		
5. Account Monitoring and Problem Loan	- Monitor portfolio – theory and practice - Identify delinquent payment's root causes - Identify the relationship of risk level change with loan provision - Identify key regulations, report remedy and make recommendations	X		

Module 2 - Mapping of Submodules with UoC Performance Requirements

109502L5 **Conduct company financial analysis to identify clients' needs** Conducting different kinds of analyses to evaluate the company performance of banking facilities applicants as part of the account planning process. This involves reviewing of different financial reports of the clients and applies to different kinds of lending to small and medium sized enterprises Level: 5 Credit: 4		**UoC Performance Requirements**									
		Knowledge		**Application**					**Behavior**		
Submodules	**Content**	Demonstrate in-depth knowledge on company financial analysis by applying it to evaluate different common methodologies within the bank's framework in analyzing company performance and to develop a suitable approach for assessing the current banking facility application.	Demonstrate professional knowledge in the client's industry, e.g., key terms and terminology, performance indicators for analysis, business cycle, competitive landscape, latest development, etc. in order to identify focus and scope of company analysis.	Identify information useful for understanding the business and employ different approaches to obtain the relevant information for account planning purpose (e.g., send request to clients, industry practitioners, etc.)	Consolidate relevant financial data and evaluate financial position of client by analyzing financial statements, business contracts, ageing reports, and etc.	Analyse the strategic direction and major business initiatives to identify the future potential, challenges and opportunities of the company.	Evaluate the business models and identify factors that may impose significant effect on their earnings and cost structures hence to predict the prospect of the business.	Assess the risk of potential financial loss that doing business with the client, ultimately determining whether to offer the credit facilities.	Identify key forces shaping the industry of the clients' businesses and learn from the accuracy of historical forecasts to make adjustments to the assessment methods.	Analyse the value chain of the business and adopt a holistic consideration to assess opportunities and risks associated with the client's operations.	Compare the performance, business model and operations of the clients with companies of similar size in the same industry hence to produce a fair judgement.
1. Financial Analysis	- Accounting concepts - Financial ratios - Limitation of financial statements - Business drivers	X	X	X	X	X	X	X	X	X	X
2. Financial Strength Assessment	- Critical analysis of fin. statements • Internal factors • External factors • Business model - Cash budget analysis and fin. strength										
3. Credit Risk Assessment and Structure Credit Facility	- Budget and pro-forma analysis - Quantitative analysis and risk assessment - Structure credit facilities										

Module 2 - Mapping of Submodules with UoC Performance Requirements

109256L5
Review risk assessment on credit application

Reviewing risk assessment approaches on credit application. This applies to risk assessment using in-depth analysis on individual applications which usually covers loan involving significant amount such as project finance, corporate financing, and ordinary enterprise banking loans, etc.

Level: 5
Credit: 4

		UoC Performance Requirements									
		Knowledge			Application						
Submodules	**Content**	Demonstrate expert knowledge in theories and concepts across different areas of corporate finance in order to assess the risks of loan application.	Understand the characteristics of different credit products offered by the bank and apply the knowledge to compare and contrast features of them in order to judge the suitability of loan applicants.	Possess knowledge on the bank's business portfolio and conduct research on factors affecting default risks and assess the probability and impacts of default.	Interpret research findings or other information on macroeconomic environment and industry analysis in order to assess business outlook and possible risks of the applicants' business.	Evaluate financial statements and identify incomplete information in order to have an accurate and comprehensive analysis on the financial standing of borrower (need for securities).	Evaluate liquidity, profitability, and credit histories of establishments being evaluated with those of similar establishments in the same industries and geographical locations in order to identify discrepancies or suspicious statements/reports.	Evaluate and select the most suitable methods (e.g., net present value based on present market values, discounted cash flow valuation, etc.) to calculate the value of the businesses or projects.	Conduct site visit to verify the authenticity of information submitted and obtain additional information for assessment.	Conduct credit risk assessment by evaluating the business risk, financial risk and total corporate risk of the businesses/projects in consideration.	Estimate the degree of risk involved in extending credit or lending money by consolidating information from different analysis (e.g., track record, business performance, collateral values).
1. Financial Analysis	- Accounting concepts - Financial ratios - Limitation of financial statements - Business drivers										
2. Financial Strength Assessment	- Critical analysis of fin. statements • Internal factors • External factors • Business model - Cash budget analysis and fin. strength	X	X	X	X	X	X		X	X	
3. Credit Risk Assessment and Structure Credit Facility	- Budget and pro-forma analysis - Quantitative analysis and risk assessment - Structure credit facilities							X			X

Module 2 - Mapping of Submodules with UoC Performance Requirements

109256L5
Review risk assessment on credit application

Reviewing risk assessment approaches on credit application. This applies to risk assessment using in-depth analysis on individual applications which usually covers loan involving significant amount such as project finance, corporate financing, and ordinary enterprise banking loans, etc.

Level: 5
Credit: 4

Submodules	Content	UoC Performance Requirements – Behaviors: Provide recommendations on whether the current assessment methods satisfy the changing lending criteria of the banks.	Recommend revised assessment criteria and approaches for determination of approval (with or without condition(s))/rejection on loan application and approved loan size with justification provided.	Specify revised principles for justification of approval on application which are violating credit risk policies or general lending criteria.
1. Financial Analysis	- Accounting concepts - Financial ratios - Limitation of financial statements - Business drivers			
2. Financial Strength Assessment	- Critical analysis of fin. statements • Internal factors • External factors • Business model - Cash budget analysis and fin. strength			
3. Credit Risk Assessment and Structure Credit Facility	- Budget and pro-forma analysis - Quantitative analysis and risk assessment - Structure credit facilities	X	X	X

Module 2 - Mapping of Submodules with UoC Performance Requirements

109260L5
Assess credit and financial strength of borrowers and prepare credit proposal

Conducting risk assessment on credit application. This applies to risk assessment using in-depth analysis on individual applications which usually cover loans involving significant amount such as project finance, corporate finance, aircraft financing, and general enterprise banking loan products, etc.

Level: 5
Credit: 4

		UoC Performance Requirements									
		Knowledge			**Application**						
Submodules	**Content**	Familiarize with special knowledge related to corporate finance in order to assess the risks of loan application.	Have in-depth understanding of credit management in order to identify factors which might affect default risks and assess the impact on loan applications.	Understand liquidity, profitability, and credit histories of establishments being evaluated with those of similar establishments in the same industries and geographical locations.	Interprets research findings on macroeconomic environment and industry analysis in order to understand the business outlook of the applicants' businesses.	Interpret financial statements to determine financial standing of borrower.	Apply suitable methods (e.g., net present value based on present market values, discounted cash flow valuation, etc.) to calculate the value of businesses or projects.	Conduct site visit to verify the authenticity of documentation submitted and obtain additional information for assessment.	Conduct preliminary credit risk assessment by evaluating the business risk, financial risk and total corporate risk of the businesses/projects in consideration.	Provide recommendations regarding the degree of risk involved in extending credit or lending money by consolidating information from different analyses e.g., track record, business performance, collateral valuation).	Calculate the cost of offering the loan e.g., funding costs, overhead expenses, administrative costs.
1. Financial Analysis	- Accounting concepts - Financial ratios - Limitation of financial statements - Business drivers										
2. Financial Strength Assessment	- Critical analysis of fin. statements • Internal factors • External factors • Business model - Cash budget analysis and fin. strength	X	X	X	X	X	X	X			
3. Credit Risk Assessment and Structure Credit Facility	- Budget and pro-forma analysis - Quantitative analysis and risk assessment - Structure credit facilities								X	X	X

Module 2 - Mapping of Submodules with UoC Performance Requirements

<table>
<tr><td colspan="2" rowspan="3">109260L5
Assess credit and financial strength of borrowers and prepare credit proposal

Conducting risk assessment on credit application. This applies to risk assessment using in-depth analysis on individual applications which usually cover loans involving significant amount such as project finance, corporate finance, aircraft financing, and general enterprise banking loan products, etc.

Level: 5
Credit: 4</td><td colspan="5">UoC Performance Requirements</td></tr>
<tr><td colspan="3">Application</td><td colspan="2">Behaviors</td></tr>
<tr><td rowspan="2">Calculate amount to be allocated to loan loss reserve and capital charges based on default probability, loss levels, etc.</td><td rowspan="2">Provide recommendations regarding the affordability to enterprise clients and propose long-term, mid-term and short-term financing solutions.</td><td rowspan="2">Compute clients' ability to repay loan, estimate time for debt repayment given amount of debt, interest rates, and available funds.</td><td rowspan="2">Recommend approval (with or without conditions(s)/rejection on loan application and approved loan size with justification provided.</td><td rowspan="2">Provide justification for approval on application violating credit risk policy or lending criteria.</td></tr>
<tr><td>Submodules</td><td>Content</td></tr>
<tr><td>1.
Financial Analysis</td><td>- Accounting concepts
- Financial ratios
- Limitation of financial statements
- Business drivers</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>2.
Financial Strength Assessment</td><td>- Critical analysis of fin. statements
• Internal factors
• External factors
• Business model
- Cash budget analysis and fin. strength</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>3.
Credit Risk Assessment and Structure Credit Facility</td><td>- Budget and pro-forma analysis
- Quantitative analysis and risk assessment
- Structure credit facilities</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td></tr>
</table>

Module 2 - Mapping of Submodules with UoC Performance Requirements

109257L5 **Structure the credit facility** Preparing proposal on credit facility which specify the detailed terms and conditions for submission to the approving authority of the bank. This applies to loan application which requires individual and/or group assessment and involves significant amount such as corporate finance, lease-based/asset-based financing solutions, aircraft and ship financing, machinery and equipment financing, project finance and syndicated loan. Level: 5 Credit: 4		**UoC Performance Requirements**									
		Knowledge			**Application**						
		Comprehend the theories and concepts related to corporate credit management in order to assess the risks of loan application.	Demonstrate professional knowledge in corporate loan financing by applying it to evaluate factors affecting default risks and assess the impact on loan applications.	Possess knowledge in different enterprise banking loan products of the bank and apply it to evaluate and compare the features of them in order to judge the suitability of loan applicants.	Identify clients' purposes and objectives for the loan by evaluating relevant information.	Interpret and analyse financial information submitted (e.g., financial statements) to determine financial standing of applicants.	Conduct financial analysis on the business such as income growth, quality/ competence of management and market share to determine expected profitability of the business thus the repayment abilities of applicants.	Perform assessment on the specific projects or assets which require financing, analyse cash flow to be generated and valuation of assets in order to have a more accurate assessment on the risks involved.	Develop tailor-made financial package options for applicants and structure the terms and conditions (e.g., loan amount, repayment timeline, rates, etc.) based on earnings, repayment history, prospective risk level, etc.	Develop loan repayment plan (e.g., when how and provide supporting information to substantiate the plan (e.g., projected cash flow, projected revenue).	Develop proposals to specify financing options available to applicants and present the terms and explanation in a clear manner.
Submodules	**Content**										
1. Financial Analysis	- Accounting concepts - Financial ratios - Limitation of financial statements - Business drivers										
2. Financial Strength Assessment	- Critical analysis of fin. statements • Internal factors • External factors • Business model - Cash budget analysis and fin. strength										
3. Credit Risk Assessment and Structure Credit Facility	- Budget and pro-forma analysis - Quantitative analysis and risk assessment - Structure credit facilities	X	X	X	X	X	X	X	X	X	X

Module 2 - Mapping of Submodules with UoC Performance Requirements

109257L5 **Structure the credit facility** Preparing proposal on credit facility which specify the detailed terms and conditions for submission to the approving authority of the bank. This applies to loan application which requires individual and/or group assessment and involves significant amount such as corporate finance, lease-based/asset-based financing solutions, aircraft and ship financing, machinery and equipment financing, project finance and syndicated loan. Level: 5 Credit: 4		**UoC Performance Requirements**	
		Behaviors	
		Determine pricing of individual credits to ensure the returns are commensurate with the risk level.	Analyse the risks of repayment and select suitable collateral or guarantee to protect the bank in case of inability to pay.
Submodules	**Content**		
1. Financial Analysis	- Accounting concepts - Financial ratios - Limitation of financial statements - Business drivers		
2. Financial Strength Assessment	- Critical analysis of fin. statements • Internal factors • External factors • Business model - Cash budget analysis and fin. strength		
3. Risk Assessment and Structure Credit Facility	- Budget and pro-forma analysis - Quantitative analysis and risk assessment - Structure credit facilities	X	X

4 Level of Learning

The ECF-CRM is referenced to the QF, with the Core Level training programme (including Module 1 and Module 2) mapped at QF Level 5. As banks have different business scopes and degrees of sophistication, Users may adjust the relevant teaching, learning, and assessment contents for any variations in learning objectives and target learners.

5 Volume of Learning

The following table indicates the NLH by learning mode for Module 1 and Module 2.

	Self-Study	**Class**	**Case**	**Total**
Module 1	115	40	105	260
Module 2	66	21	63	150

E. LEARNING AND TEACHING GUIDE

This section provides the ILO and suggests each submodule's teaching and learning outline (Sections E1 and E2). In addition, Users may refer to the sample content notes in Part G Support Materials for developing lecture notes/PPT for learners.

It also gives the suggested learning modes (Section E3), the learning context (Section E4), learning activities, and proposed time allocation (Section E6), which enable learners to achieve the ILO progressively by learning about performance expectations, credit guidelines, theories, practices, skills and attitudes.

Lastly, it describes the recommended format of teaching and learning resources (Section E5) and the suggested learning facilities (Section E6).

It is recommended that the Trainer prioritize the training contents in terms of importance, according to the context of the learners working background and experience. For instance, the most important 20%; less important 30%; and the remaining 50%, which helps the learners to prioritize their work during the self-study and better allocate their resources of study.

1 Module 1

1.1 Submodule 1: Early Warning Signal

1.1.1 ILO

Upon completion of learning, learners would be able to monitor loan accounts and portfolios daily to identify early warning signal.

<u>ILO</u>

Monitor portfolio – theory and practice

- Identify the most appropriate method in risk monitoring
- Understand the bank's credit strategies and portfolio objectives
- Identify early signals of delinquency or system risk
- Identify sources and causes of changes in risk level
- Apply impartial and unbiased judgement

Identify early warning signal

- Monitor and ensure credit administration in compliance
- Track risk indicators or credit quality and detect changes in risk characteristics

Identify the relationship of risk level change with loan provision

- Review approaches and adopt the most reasonable measures

Identify key regulations, report remedy, and make recommendations

- Report to senior management on results of analysis

1.1.2 Content

The training programme designers may refer to the following list for the design of the learning and teaching programme.

<table>
<tr><th colspan="2">Module 1 - Submodule 1
Early Warning Signal</th></tr>
<tr><th>UoC Performance Requirements
(Exact stipulation in the UoC)</th><th>Suggested Learning/Teaching</th></tr>
<tr><td colspan="2">Monitor portfolio – theory and practice</td></tr>
<tr><td>Demonstrate proficient knowledge in credit risk management in order to identify the most appropriate method in risk monitoring.</td><td>Basics in CRM for identification of appropriate methods
- Importance of credit risk management in CAMEL Rating
- Credit risk
- Credit risk management system
- Credit risk management governance
- Credit risk management scale
- Credit process
- Credit risk management structure
- Constraints and challenges
- Technology solutions to overcome constraints and challenges
- Analytical approach on risk
- Credit default circumstances
- Theories/models for credit risk management
- Corporate finance theories relevant to credit risk management method</td></tr>
<tr><td>Understand the credit strategies and portfolio objectives of the bank in order to identify crucial areas for monitoring.</td><td>Basics in credit strategies for identifying crucial area of monitoring
- Elements of credit strategy
- Portfolio credit risk management objectives</td></tr>
<tr><td>Identify early signals of delinquency or system risk and escalate to appropriate parties for prompt remedial actions.</td><td>Basics to identify signals for escalation
- Credit risk management process: identify, measure, monitor and control
- Signals at account level
- Signals at portfolio level
- Signals at macro-economic level
- Other essential signals</td></tr>
<tr><td>Identify the sources and causes of the changes in risk level, e.g., underwriting standards, economic conditions, personnel issue and recommend appropriate corrective actions.</td><td>Basics of sources and causes of changes for remedial actions
- Knowledge management of all inhouse, external and industry information
- Internal, external, and industrial factors</td></tr>
<tr><td>Demonstrate professionalism by applying impartial and unbiased judgment throughout the loan portfolio assessment process.</td><td>Exercising unbiased judgment
- Review and prioritize risk level of external, industrial and internal factors
- Review and prioritize contagious effects on portfolio performance</td></tr>
</table>

	- Assign independent party for risk monitoring
Identify early warning signal	
Monitor and ensure credit administration is compliance with contractual requirements and facility terms.	**Overview of Credit Administration Function** - Compliance with T&C - Operational review
Track risk indicators or credit quality (e.g., delinquency, risk rating trends) and detect changes in risk characteristics of loan portfolios.	**Basics to detect changes of risk indicators** - Key drivers of credit risk (EAD, PD, LGD, Tenor): single debt and portfolio - Challenges to estimate credit risk - Suitable method to aggregate risk at portfolio level - Convention of risk rating - External credit rating agency service and precautionary measures - Limitation on use of credit rating agency's service and alternatives - Internal credit rating system – large borrowers - Internal credit rating system – small business borrowers - Benefits of multiple grades - Direct influence of internal credit rating on banks' actions - Benefit of assigning credit rating to borrowing accounts - Relationship between regulatory requirement and internal credit rating - Evaluation on impact of the changes in risk factors
Identify the relationship of the risk level change with loan provision	
Regularly review the advantages and weaknesses of forecasting and reviewing approaches and adopt the most reliable measure.	**Regular forecast and review requirements** - Refer to sources of guidelines for loan provisioning forecast • The HKMA guidance • Multiple risk rating • Loan provisioning & expected credit loss • Continual assessment of loan provisioning
Identify key regulations, report remedy, and make recommendations	
Report to senior management about the results of analysis on risk profile of overall loan portfolio.	**Risk profile analysis and reporting** - Standardised and IRB approach and justifications - Regulatory capital versus economic capital - Credit loss absorption - Senior Management's role in credit risk monitoring - Tools for senior management's credit risk oversight

1.2 Submodule 2: Risk Mitigation

1.2.1 ILO

Upon completion of learning, learners would be able to understand the mitigation strategies and apply to different kinds of credit assets in the portfolios.

<u>ILO</u>

Monitor portfolio – theory and practice

- Demonstrate knowledge in credit risk management
- Use different tools for risk mitigation
- Understand the impact of external factor changes
- Construct strategy to diversify concentration risk
- Formulate measures to protect against risk exposure
- Develop policies and procedures with risk mitigation techniques
- Manage the risk mitigation activities

Identify the needs for risk mitigants

- Conduct risk analysis to identify critical factors impacting the risk level

Identify the relationship of risk level change with loan provision

- Develop guidelines and standards when approaching or exceeding portfolio limits

Identify key regulations, report remedy, and make recommendations

- Evaluate credit strategy, risk exposure to construct a suitable approach
- Conduct regular review on result of mitigation instructions and give suggestions

1.2.2 Content

The training programme designers may refer to the following list for the design of the learning and teaching programme.

Module 1 - Submodule 2 Risk Mitigation	
UoC Performance Requirements (Exact stipulation in the UoC)	**Suggested Learning/Teaching**
Monitor portfolio – theory and practice	
Demonstrate professional knowledge in credit risk management in order to maintain an optimal risk level for credit portfolio.	**Optimal risk level** - Risk appetite - Importance of defining risk appetite - Process of setting risk appetite
Professional knowledge in credit management by utilizing different tools (e.g., setting exposure limits, credit derivative) in managing credit risk and their performance in different economic scenario.	**Utilize risk management tools** - Ongoing monitoring framework - Risk limits - Risk profiling
Understand the impacts on business environment caused by the changing external factors and apply the knowledge to evaluate current and future economic outlook and regulatory development for the purpose of developing suitable strategies in risk mitigation.	**Impacts of external factors** - Environment scanning - Sources of intelligence
Construct strategies in diversifying concentration risk, e.g., reducing exposures to particular type of loan, broaden customer base, altering product mix, industry etc.	**Diversify concentration risk** - Strategy of portfolio diversification - Risk mitigant definition - Risk mitigant types - Risk mitigant strength
Formulate measures to protect the bank from undue risk exposure by employing suitable techniques, e.g., asset sales, securitization, credit derivatives, etc.	**Formulate risk mitigation measures** - Risk mitigants provided by borrowers or third parties - Risk mitigants proactively managed
Develop policies and procedures for applying different types of credit mitigation techniques. Manage the activities of credit risk mitigation strategies to ensure they are applied at the right time and used for their purported purpose.	**Credit risk mitigation techniques at right timing** - Identification of needs for risk mitigants - Strong credit risk culture is essential for identification of risk - Implementation of risk limits with comprehensive credit policy - Check and balance on the risk-return

Identify needs for risk mitigants	
Conduct analysis on the trends on risk level of the credit portfolio in order to identify critical factors which can affect the risk level.	**Quantified risk level trends for critical factors** - Quantified risk appetite - Credit risk strategy alignment with credit risk objectives - Credit risk appetite statement translated into credit criteria on loan application and review - Alignment of portfolio performance indicators with risk appetite metric - Portfolio indicators for senior management's reference
Identify the relationship of risk level change with loan provision	
Develop guidelines and standards on reporting to management when the aggregate exposure is approaching or exceeding portfolio limits.	**Exposure approaching or exceeding limits** - Regular review of risk level change - Credit risk mitigation and loan provisioning - IFRS9 management implication in portfolio risk management
Identify key regulations, report remedy, and make recommendations	
Evaluate the credit strategies and existing risk exposure of the bank in order to construct a suitable risk management approach.	**Evaluate credit strategy for management approach** - Large exposure and concentration - Breach on large exposure exceeding regulatory limits
Conduct regular review on the results of the mitigation instructions and provide suggestions on necessary changes.	**Review mitigation results for suggestions** - Balance sheet exposures - Risk weighting

1.3 Submodule 3: Manage and Control the Risks

1.3.1 ILO

Upon completion of learning, learners would be able to manage risk of credit assets and develop risk control measures/remedy.

<u>ILO</u>

Monitor portfolio – theory and practice

- Demonstrate knowledge of evaluating different risk management strategy
- Understand banks’ strategies and portfolio objectives
- Design measures to diversify risks into unrelated or less related business
- Manage credit risk with adequate tools
- Identify factors affecting the value of credit assets

Identify the relevant credit risk indicators – portfolio

- Identify the most suitable approach and develop the execution plan

Identify the relationship of risk level change with loan provision

- Evaluate the effectiveness of different approach and develop the execution

Identify the key regulations, report remedy, and make recommendation

- Provide suggestions on improvement

1.3.2 Content

The training programme designers may refer to the following list for the design of the learning and teaching programme.

<table>
<tr><th colspan="2">Module 1 - Submodule 3
Manage and Control the Risks</th></tr>
<tr><th>UoC Performance Requirements
(Exact stipulation in the UoC)</th><th>Suggested Learning/Teaching</th></tr>
<tr><td colspan="2">Monitor portfolio – theory and practice</td></tr>
<tr><td>Demonstrate professional knowledge in managing risk of credit assets by applying it to evaluate different risk management strategies for the purpose of designing a most suitable approach for the bank.</td><td>Manage risk of credit assets
- Risk exposure
- Concentration risk
- Assuming concentration risk
- Direct limit on concentration risk
- Contagion risk from concentration
- Concentration risk on collateral
- Principles of controlling risk concentration</td></tr>
<tr><td>Understand the credit strategies and portfolio objectives of the bank in order to build an alignment between the selected risk management approach and the bank’s strategies</td><td>Align risk management strategies with banks’ strategies on complex products and borrowers’ structure
- Portfolio risk control
- Quality credit risk policy
- Keep abreast of regulatory requirement both locally and cross-border-wise</td></tr>
<tr><td>Design risk management measures to diversify risks into different uncorrelated or less correlated business.</td><td>Measures to diversify risk
- Risk diversification approaches – simple versus statistical
- Credit risk mitigation – traditional versus portfolio approach
- Credit risk diversification has limitation</td></tr>
<tr><td>Mitigate credit risk by acquiring security, insurance, third party guarantee, etc.</td><td>Mitigate credit risk
- Security and third-party guarantee
- Insurance
- Other risk management measures and their limitations
• asset sales
• asset securitization
• credit derivatives
- BIS principles on controlling residual risk and hedging maturity mismatch
- Credit risk exit strategy
- New product launch</td></tr>
<tr><td>Identify factors affecting the value of the credit assets for assessing the purchase or selling price in order to quantify the risks.</td><td>Identify risk factors for quantification
- Acceptance criteria and factors affecting the value of the credit assets for purchasing and selling to quantify the risk
- Portfolio control on guarantee</td></tr>
</table>

	- Portfolio control on collaterals and risk mitigation
Identify the relevant credit risk indicators	
Assess the situation in order to identify the most suitable approach in risk management and develop the execution plan.	**Assess the situation for developing execution plan** - Assessment of the situation to identify the most suitable approach in risk management and execution - Examples of indicators of the account risk profile - Examples of portfolio indicators computed with conventional methods and statistical tools
Identify the relationship of risk level change with loan provision	
Evaluate effectiveness of different approaches of risk management for the purpose of transferring or mitigating credit risk.	**Evaluate effectiveness of mitigation** - Impact of account risk changes to provisioning - Impact of portfolio risk changes to provisioning
Identify key regulations, report remedy, and make recommendations	
Review current risk management measures and provide suggestions on improvement based on results of evaluation on different approaches for transferring or mitigating credit risks.	**Provide suggestions on improvement** - Reporting prudential limits - Clustering limits - Current risk management review

1.4 Submodule 4: Stress Testing

1.4.1 ILO

Upon completion of learning, learners would be able to understand stress testing and analyse the results to identify vulnerable segments in portfolios.

ILO

Monitor portfolio – theory and practice

- Demonstrate specialized knowledge in stress testing for development of suitable approach
- Understand credit strategies and portfolio objectives of banks
- Understand current macroeconomic environment and trends to identify key factors
- Identify factors that impose effects on risk level of loan portfolio
- Design methodology, analysis framework and tools aligned with objectives of testing
- Develop testing plan and conduct the test by altering assumptions in variables

Identify vulnerable sectors in the portfolio

- Analyse existing performance/risk of the portfolio to determine stress testing objectives
- Analyse performance of assets and liabilities under hypothetical scenarios
- Analyse the results of stress testing and identify vulnerability of different segment of loans

Identify Key Regulations, report remedy, and make recommendations

- Consolidate stress testing results and develop measures
- Develop contingency plans for vulnerable segments

1.4.2 Content

The training programme designers may refer to the following list for the design of the learning and teaching programme.

Module 1 - Submodule 4 **Stress Testing**	
UoC Performance Requirements (Exact stipulation in the UoC)	**Suggested Learning/Teaching**
Monitor portfolio – theory and practice	
Possess specialized knowledge in stress testing and apply it to evaluate different methods of execution in order to develop a suitable approach for the bank.	**Suitable approach to stress testing** - Enterprise collaboration - Normal conditions - Stressful conditions - Planning for stress testing - Limitations of stress testing
Understand the credit strategies and portfolio objectives of the bank and based on that evaluate the existing portfolio of credit assets.	**Evaluate existing portfolio** - Stress testing - Purpose - Functions • Proactive credit risk management - Outcomes • Remedial credit risk management - Stress testing design • Different scale and complexity • Stress events, risk models and potential challenges
Understand the Current macroeconomic environment and trends and consider these as key factors of stress testing.	**Key factors for stress testing** - Stress testing design • Macroeconomic and other factors, methodology, analysis framework
Identify factors (e.g., financial data, economic variables) that can impose effects on risk level of loan portfolio and develop financial models to quantify the sensitivity of loan performance to different scenarios.	**Quantify sensitivity of the portfolio with design methodology** - Testing plan and altering assumptions - Testing scenario from lessons learned
Design methodology, analysis framework and tools on stress testing which are aligned with the objectives of the testing.	
Develop testing plan and conduct the test by altering assumptions in different variables and record the effect on portfolio credit quality.	**Alter assumptions in different variables** - Stress testing programme • Scenario example (A) domestic economic downturn

	• Scenario example (B) decline in the real estate market • Scenario example (C) decline in the value and market liquidity of financial collateral • Scenario example (D) increases in classified loans and provisioning levels • Scenario example (E) rating migration of counterparties • Scenario example (F) default of major counterparties • Scenario example (G) decline in the value of taxi licenses/gross operating income of taxi drivers - Hypothetical scenarios - Quality assurance - Compliance
Identify vulnerable sectors in the portfolios	
Analyse existing performance/potential risks of the portfolio in order to determine the objectives for stress testing.	**Analyse situations with scenarios to identify vulnerable sectors** - Analysis accounts and portfolios - Insight from stress testing
Analyse the performance of different assets and liabilities under the various hypothetical scenarios.	
Analyse the results of stress testing and identify the vulnerability of different segments of loan portfolio.	
Identify key regulations, report remedy, and make recommendations	
Consolidate the results of stress testing into the risk management process and develop suitable measures.	**Consolidate results to develop suitable measures** - IFRS9 provisioning implication on planning - Mitigation of potential biases of IFRS9 provisioning
Develop contingency plans for vulnerable segments, e.g., strengthening the supervision process, imposing limits, devising existing strategies.	**Develop contingency plan** - Following up on the portfolio risk mitigation

1.5 Submodule 5: Account Monitoring and Problem Loan

1.5.1 ILO

Upon completion of learning, learners would be able to monitor the risk changes in accounts and portfolios, recovery, and workout of problem loans.

ILO

Monitor portfolio – theory and practice

- Identify method in borrowing account risk monitoring
- Keep up to date clients' current performance and future development
- Analyse the customers to identify risk level
- Track any irregularities
- Evaluate repayment record to identify possible causes of delay in payment
- Review accuracy of past document
- Identify deviation from agreed principles
- Analyse changes in client's financial situation
- Understand causes of problem loans
- Perform on-site inspection and regular due diligence
- Identify causes and sources of risk, report for prompt remedial actions
- Understand Theories and knowledge in banking lending

Identify delinquent payment's root causes

- Monitor and evaluate performance of clients' accounts
- Monitor indicators of credit quality
- Re-assess relationship and follow-up promptly

Identify the relationship of risk level change with loan provision

- Monitor borrowing accounts and advise customers of new or alternative services
- Determine amount of provision for problem accounts

Identify key regulations, report remedy, and make recommendations

- Restructure debts to improve clients' financial stability and solvency
- Classify the unpaid debt customers to make claims

1.5.2 Content

The training programme designers may refer to the following list for the design of the learning and teaching programme.

<table>
<tr><th colspan="2">Module 1 - Submodule 5
Account Monitoring and Problem Loan Review</th></tr>
<tr><th>UoC Performance Requirements
(Exact stipulation in the UoC)</th><th>Suggested Learning/Teaching</th></tr>
<tr><td colspan="2">Monitor portfolio – theory and practice</td></tr>
<tr><td>Demonstrate proficient knowledge in risk management in order to identify the most appropriate method in borrowing account risk monitoring.</td><td>Knowledge in borrowing account monitoring
- Objective of account monitoring
- Responsibility of account monitoring
- Functional units to perform account monitoring
- Following up problem loan</td></tr>
<tr><td>Keep up to date on the future development and current performance of clients’ business/ participating industry.</td><td>Keeping up to date industry performance
- Account quality monitoring
• Pillars of quality</td></tr>
<tr><td>Analyse client’s historic information, account profile, account activities/pattern, business outlook, predicted future activity, financial and business data, etc. for identifying risk level.</td><td rowspan="5">Reviewing, analyzing, comparing for tracking irregularities to identify risk level and root causes
- Document review
• Absolute compliance
• Throughout loan term
o Document update
o Document review to identify risk factors for risk mitigation/remedy
- Consolidate information to analyse changes</td></tr>
<tr><td>Analyse the customers, products activity and financial transactions profile of bank clients to track if any irregularities occur.</td></tr>
<tr><td>Evaluate the repayment record and transaction records of different accounts of the clients in order to identify possible causes for delay in payment.</td></tr>
<tr><td>Review the accuracy of past documentation (e.g., collateral valuable report, risk assessment, tracking report) and timeliness of problem identification in order to identify possible root causes for problem loans.</td></tr>
<tr><td>Compare the loan with lending guidelines to identify any deviation from the agreed principles.</td></tr>
</table>

Consolidate information from different sources in order to analyse the changes in financial situations of the clients when compared to the time of loan origination	
Demonstrate professional knowledge in problem loans management (e.g., causes for problem loans, early warning signals) by applying it to identify the root causes of different problem loans. Perform on-site inspection and regular due diligence review to identify early signals or delinquency. Identify causes and sources of risks and report to appropriate parties for prompt remedial actions.	**Identifying early signs of delinquency for problem loan management and prompt remedial actions** - Early delinquency signals - Causes of delay in payment
Understand theories and knowledge in bank lending in order to analyse the situation in different cases of problem loans.	**Theories and knowledge of lending** - Comprehensive external factor reviews to arrive at recommended account actions - Management attention - Problem loan impact - Principles of problem loan management and examples of some best practices
Identify delinquent payment's root causes	
Understand the process of credit monitoring and evaluate the performance of client's accounts to compare with the credit strategies and portfolio objectives of the bank to identify critical areas for further follow-up actions. Monitor indicators of credit quality (e.g., delinquency, risk rating trends) and identify changes in risk characteristics of loan portfolio.	**Identifying critical area and changes for follow up** - Information generated from credit indicators - Principle of portfolio credit risk management and monitoring - Portfolio level credit indicators
Evaluate information related to current and projected financial status of applicants, hence, to re-assess the bank/client relationship and carry-on necessary follow-up actions promptly.	**Evaluating current and projected financial status** - The migration of individual credits through various grades with automatic/judgmental credit rating system
Identify the relationship of risk level change with loan provision	
Monitor clients' borrowing accounts and advise them of new or alternative services to meet their changing needs.	**Monitoring accounts for advising alternative services** - Loan provisioning purpose - Motivation for improvement - Loan provisioning

	• General and specific • By loan and portfolio basis • Per loan classification
Determine the amount of provision for problem accounts and assess the impact on the bank's credit portfolio.	**Determining provision amount** - Quality of loan provisioning and credit operations accuracy
Identify key regulations, report remedy, and make recommendations	
Be able to restructure debts of clients to improve clients' financial stability and solvency, when it is necessary.	**Debt restructuring** - Credit risk management process in compliance with operational risk management - IFRS9 management application in pricing and product design
Classify the unpaid debt customers to make claims and provide necessary information to relevant parties, if warranted.	**Classifying unpaid debt customers for making claims** - Judgment on loan classification

2 Module 2

2.1 Submodule 1: Financial Analysis

2.1.1 ILO

Upon completion of learning, learners would be able to apply financial and non-financial analysis to assess clients' financial positions, needs and credit worthiness.

ILO

Accounting Concept
- Demonstrate knowledge on company financial analysis to develop a suitable approach for assessing application

Financial Ratios
- Demonstrate knowledge in the client industry for analysis to identify focus and scope of company analysis

Financial Ratios
- Identify information useful for understanding the business and employ approaches to obtain relevant information for account planning

Key Business Drivers
- Analyse financial statements and relevant documents
- Identify future potential challenges and opportunities of the companies
- Identify factors that have effects on company earning and cost structures
- Assess the risk of potential financial loss of doing business with client
- Identify key forces shaping the industry of clients' business
- Analyse value chain of the business and adopt a holistic consideration
- Compare performance, business model and operations of clients with companies of similar size in the same industry to produce a fair judgement

2.1.2 Content

The training programme designers may refer to the following list for the design of the learning and teaching programme.

<table>
<tr><th colspan="2">Module 2 – Submodule 1
Financial Analysis to Identify Customer's Needs</th></tr>
<tr><th>UoC Performance Requirements
(Exact stipulation in the UoC)</th><th>Suggested Learning/Teaching</th></tr>
<tr><td colspan="2">Accounting concepts</td></tr>
<tr><td>Demonstrate in-depth knowledge on company financial analysis by applying it to evaluate different common methodologies within the bank's framework in analyzing company performance and to develop a suitable approach for assessing the current banking facility application.</td><td>- Accounting is a science
- Dual transactions basics
- Values of financial statements
- Financial statements tailored for stakeholders
- Quality of financial statements
- Financial accounting standards
- Accounting standards for listed companies in Hong Kong
- Accounting policy
- Information to look for in financial statements
- Relation between income statement and balance sheet
- Investigative approach of credit risk management: Financial statement analysis and examples of questionable transactions
- Sample of financial statements</td></tr>
<tr><td colspan="2">Financial ratios</td></tr>
<tr><td>Demonstrate professional knowledge in the client's industry, e.g., key terms and terminology, performance indicators for analysis, business cycle, competitive landscape, latest development, etc. in order to identify focus and scope of company analysis.</td><td>- Sample financial statements to retrieve financial ratios for analysis, e.g.,
• Current ratio
• Quick ratio
• Gross profit ratio
• Operating profit
• Net profit margin
• Inventory turnover
• Receivable days
• Payable turnover
• Return on equity
• Return on assets
• Debt equity ratio
- Steps to prepare for financial analysis
- Bank product types affects the selection of critical financial ratios</td></tr>
</table>

Limitation of financial statements	
Identify information useful for understanding the business and employ different approaches to obtain the relevant information for account planning purpose (e.g., send request to clients, industry practitioners, and etc.).	- Scenarios on initial overall impression of the financial statements - Limitation of financial statements - Consequence of ignoring the limitations
Key business drivers	
Consolidate relevant financial data and evaluate financial position of client by analyzing financial statements, business contracts, ageing reports, etc.	Steps to identify and ascertain business drivers - Key business drivers - Analyzing strategic direction - Expression of the business model - Evaluation of the business model - Assessing risk of potential financial loss on doing business with the borrower - Identifying the key forces shaping the industry of the client's business - Analyzing value chain of the business to adopt a holistic consideration to assess risk and opportunities
Analyse the strategic direction and major business initiatives to identify the future potential, challenges and opportunities of the company.	
Evaluate the business models and identify factors that may impose significant effect on their earnings and cost structures hence to predict the prospect of the business.	
Assess the risk of potential financial loss that doing business with the client, ultimately determining whether to offer the credit facilities.	
Identify key forces shaping the industry of the clients' businesses and learn from the accuracy of historical forecasts to make adjustments to the assessment methods.	
Analyse the value chain of the business and adopt a holistic consideration to assess opportunities and risks associated with the client's operations.	
Compare performance, business model and operations of the clients with companies of similar size in the same industry hence to produce a fair judgement.	

2.2 Submodule 2: Financial Strength Assessment

2.2.1 ILO

Upon completion of learning, learners would be able to analyse clients' operational, financial, business, and internal factors to assess its financial strength and review clients' credit rating

ILO

Critical Analysis of Financial Statements (Internal Factors)

- Understand different credit products
- Identify factors affecting default risks and assess the impact on loan applications
- Understand corporate finance theories and concepts
- Understand special knowledge in corporate finance
- Evaluate and compare liquidity, profitability, and credit histories of companies
- Identify discrepancies or suspicious statements/reports
- Analysis comprehensively of financial standing of the borrower
- Conduct site visit to verify authenticity of documentation

Critical Analysis of Financial Statements (External Factors)

- Research on factors affecting default risks and assess the probability and impacts of default
- Interpret research findings on macroeconomic environment and industry
- Understand the business outlook of the applicants' business

Critical Analysis of Financial Statements (Business Models)

- Interpret financial statements to determine the financial standing of borrowers

Cash Analysis and Financial Strength

- Apply suitable methods to calculate the value of businesses or projects

2.2.2 Content

The training programme designers may refer to the following list for the design of the learning and teaching programme.

Module 2 – Submodule 2 **Financial Strength Assessment**	
UoC Performance Requirements **(Exact stipulation in the UoC)**	**Suggested Learning/Teaching**
Critical Analysis of Financial Statements (Internal Factors)	
Understand the characteristics of different credit products offered by the bank and apply the knowledge to compare and contrast features of them in order to judge the suitability of loan applicants.	- Knowing bank products - Examples of bank products - Loans with competitors
Have in-depth understanding of credit management in order to identify factors which might affect default risks and assess the impact on loan applications.	Examples: - Prudent procedures for approving credit - Credit approval, review and records
Demonstrate expert knowledge in theories and concepts across different areas of corporate finance in order to assess the risks of loan application.	- Generally accepted accounting principles - Corporate theories - Corporate finance theories - Examples of applications of corporate finance theories in credit risk management - Cases
Familiarize with special knowledge related to corporate finance in order to assess the risks of loan application.	
Understand liquidity, profitability, and credit histories of establishments being evaluated with those of similar establishments in the same industries and geographical locations.	Critical analysis on - Financial ratios - Financial ratios deviated from industry norms - Authentication of documents - The borrower's cash flows and credit repayments - The borrower's operational risk - The borrower's financial leveraging - Implications from cash flow analysis - Default scenarios other than cash flow issues - Constraints on cash flow analysis
Evaluate liquidity, profitability, and credit histories of establishments being evaluated with those of similar establishments in the same industries and geographical locations in order to identify discrepancies or suspicious statements/reports.	
Evaluate financial statements and identify incomplete information in order to have an accurate and comprehensive analysis on the financial standing of borrower (need for securities).	- Knowledge on industry cycles - Values of site visits - Checklist for site visits - Powerful site visits to authenticate documents

Conduct site visit to verify the authenticity of documentation submitted and obtain additional information for assessment	
Critical Analysis of Financial Statements (External Factors)	
Possess knowledge on the bank's business portfolio and conduct research on factors affecting default risks and assess the probability and impacts of default.	- External risk factors - Articulation of external risk factors - Interpreting research findings
Interpret research findings or other information on macroeconomic environment and industry analysis in order to assess business outlook and possible risks of the applicants' business.	
Interprets research findings on macroeconomic environment and industry analysis in order to understand the business outlook of the applicants' businesses.	
Critical Analysis of Financial Statements (Business Model)	
Interpret financial statements to determine financial standing of borrower.	- Limitation on financial statement analysis - Analysis of business models to supplement Financial Analysis
Apply suitable methods (e.g., net present value based on present market values, discounted cash flow valuation, etc.) to calculate the value of businesses or projects.	- Quantitative analysis to supplement business model analysis

2.3 Submodule 3: Credit Risk Assessment and Structure Credit Facility

2.3.1 ILO

Upon completion of learning, learners would be able to perform quantitative analysis about repayment capability, calculate potential losses, estimate risk-return, propose credit structure for eligible client.

<u>ILO</u>

Budget and Pro-Forma Analysis

- Calculate the value of the business or projects
- Compute the client's ability to repay a loan
- Determine the financial standing of applicants
- Determine the expected profitability of the company hence repayment ability
- Assessment of specific projects or assets for more accurate risk assessment

Quantitative Analysis and Risk Assessment

- Evaluate business risk, financial risk, and total corporate risk
- Conduct preliminary credit risk assessment
- Calculate the cost of offering the loan
- Calculate the amount allocated to loan loss reserve and capital charges
- Recommend regarding affordability of the client and solutions
- Determine pricing to ensure the returns are commensurate with the risk level
- Select suitable collateral or guarantee

Corporate Finance Knowledge and Structure Credit Facility

- Comprehend theories and concepts related to Credit Risk Management
- Evaluate factors affecting default risk
- Knowledge of different enterprise banking loan products and judging suitability of loan applicants
- Estimate the degree of risk involved
- Provide recommendations with consolidation of information from various analysis
- Make recommendation on approval (conditional approval)/rejection of application
- Recommend if assessment methods satisfy the changing lending criteria
- Recommend revised assessment criteria and approaches for determination of approval
- Specify revised principles for justification of support on applications which are violating credit risk policies
- Identify the client's purpose and objectives
- Develop a loan repayment plan
- Develop proposals to specify financing options and present terms and explanations in clear manner
- Develop a tailor-made financial package option

2.3.1 Content

The training programme designers may refer to the list below for the design of the learning and teaching programme:

<table>
<tr><th colspan="2">Module 2 – Submodule 3
Credit Risk Assessment and Structure Credit Facility</th></tr>
<tr><th>UoC Performance Requirements
(Exact stipulation in the UoC)</th><th>Suggested Learning/Teaching</th></tr>
<tr><td colspan="2">Budget and Pro-Forma Analysis</td></tr>
<tr><td>Evaluate and select the most suitable methods (e.g., net present value based on present market values, discounted cash flow valuation, etc.) to calculate the value of the businesses or projects.</td><td rowspan="4">- Basic cash budget analysis
• Analysis to help clients to identify clients’ purpose and objectives for loan demands
• Suitable method for budget and pro-forma analysis
• Monitoring of cash generation/preservation capability
• Cash budget and SMEs
• Purpose of a cash budget
• Sample format of a cash budget
• Non-cash items
• Preparing cash budget
- Advanced budget and pro-forma analysis
• Preparing advanced budget and pro-forma analysis
• Quality budget and pro-forma analysis for key stakeholders
- Limitation with pro-forma financial statement analysis</td></tr>
<tr><td>Compute clients’ ability to repay loan, estimate time for debt repayment given amount of debt, interest rates, and available funds.</td></tr>
<tr><td>Interpret and analyse financial information submitted (e.g., financial statements) to determine financial standing of applicants.</td></tr>
<tr><td>Conduct financial analysis on the business such as income growth, quality competence of management and market share to determine expected profitability of the business thus the repayment abilities of applicants.</td></tr>
<tr><td>Perform assessment on the specific projects or assets which require financing, analyse cash flow to be generated and valuation of assets in order to have a more accurate assessment on the risks involved.</td><td>- Verifying the quality of cash flow
- Estimating cash flow gaps without the loan
- Quantifying the time uncertainty of repayments
- Estimating the achievability of the cash flow drivers</td></tr>
</table>

Quantitative Analysis and Risk Assessment	
Conduct credit risk assessment by evaluating the business risk, financial risk and total corporate risk of the businesses/projects in consideration.	- Risk assessment on qualitative risk factors and quantifiable risk factors
Conduct preliminary credit risk assessment by evaluating the business risk, financial risk and total corporate risk of the businesses/projects in consideration.	
Calculate the cost of offering the loan e.g., funding costs, overhead expenses, administrative cost.	- Cost factors of loan offering
Calculate amount to be allocated to loan loss reserve and capital charges based on default probability, loss levels etc.	- Loan loss reserve and capital charge allocation
Provide recommendations regarding the affordability to enterprise clients and propose long-term, mid-term and short-term financing solutions.	- Clients' affordability – factors for consideration
Determine pricing of individual credits to ensure the returns are commensurate with the risk level.	- Credit risk expressed in figures - Internal credit risk rating reflects credit risk
Analyse the risks of repayment and select suitable collateral or guarantee to protect the bank in case of inability to pay.	
Structure Credit Facilities	
Comprehend the theories and concepts related to corporate credit management in order to assess the risks of loan application.	- Cash flow projection - Present values - Net present values - Capital asset pricing model.
Demonstrate professional knowledge in corporate loan financing by applying it to evaluate factors affecting default risks and assess the impact on loan applications.	- Project finance and syndicated loan applicable to various industry such as: • shipping industry • petroleum and oil refinery industry • other industries which demand substantial loan amount and long pay-back period.
Possess knowledge in different enterprise banking loan products of the bank and apply it to evaluate and compare the features of them in order to judge the suitability of loan applicants.	
Estimate the degree of risk involved in extending credit or lending money by consolidating information from different analyses e.g., track	- Analytical framework to recommend whether current assessment methods satisfy the

record, business performance, collateral valuation).	changing lending criteria of the banks. • Step (1) assess the specific risk of the borrower • Step (2) analyse and interpret the outcomes of critical financial analysis • Step (3) evaluate credit risks • Step (4) estimate the degree of risk involved in the loan (base case, stress case, default case) - Estimating the degree of risk involved in base, stress and default scenarios
Provide recommendations regarding the degree of risk involved in extending credit or lending money by consolidating information from different analyses e.g., track record, business performance, collateral valuation).	
Recommend approval (with or without conditions(s))/rejection on loan application and approved loan size with justification provided.	
Recommendations on whether the current assessment methods satisfy the changing lending criteria of the banks.	- Regular situation to structure credit proposal with sound credit granting process. - Sample credit structure proposal with T&C suggestions for approval - Credit structure with current assessment methods under changing lending criteria. - Credit structure with recommended revised assessment criteria and approaches for determination of approval - Justification for approval on application violating credit risk policy or lending criteria
Recommend revised assessment criteria and approaches for determination of approval (with or without condition(s))/rejection on loan application and approved loan size with justification provided.	
Specify revised principles for justification of approval on application which are violating credit risk policies or general lending criteria	
Provide justification for approval on application violating credit risk policy or lending criteria	
Identify the client's purpose and objectives for the loan by evaluating relevant information.	Examples - Justification for approval on application violating credit risk policy or lending criteria
Develop loan repayment plan and provide supporting information to substantiate the plan.	
Develop proposals to specify financing options available to applicants and present the terms and explanation in a clear manner.	
Develop tailor-made financial package options for applicants and structure the T&C (e.g., loan amount, repayment timeline, rates, etc.) based on earnings, repayment history, prospective risk level, etc.	

3 Learning Modes and Methods

Three types of learning modes are suggested as follows:

Self-study: learners read the materials provided by the trainer and complete the learning activities to elevate awareness of the content.

Class: learners have contact with the trainer and other RPs for interactive learning/assessment activities to improve knowledge and application of skills to result in desirable behaviors.

Case: learners extend learning beyond class with a simulation case in which the trainer will score the performance outcomes upon case completion.

4. Learning Context

Learners are best to learn in the work case context. Therefore, in all the suggested learning modes, learners are encouraged to refer to work cases to understand the knowledge, apply the skills, and arrive at the required behaviors to complete learning activities.

In some situations where sharing with peer learners on work cases might be inappropriate (e.g., when the training programme is open to enrolment to RPs from different commercial banks), Users may consider providing cases with simulated situations.

5. Format of Teaching and Learning Resources Suggested

For self-study, it is suggested that learners schedule completion of learning tasks at their paces within defined time frame.

For class, it is suggested to be workshop format to allow maximum learners' proactive learning.

For post-class case, the learners schedule the completion of the simulation case at their paces within the defined time frame.

6. Learning Activities, Time Allocation and Reference Sources

6.1 Learning Activities and Time Allocation

The Training Package suggests that both learning, and assessment activities are for learning and sharing to improve knowledge, application of skills, and achievement of behaviours.

Assessment activities are also learning activities. Users may also refer to assessment activities in Part F to arrive at an overall picture of all learning opportunities created for learners.

The following table lists out the suggested learning activities by learning modes and time allocation.

Learning Activities **Trainers assign self-study 1, 2, 3, and 4 of each submodule for completion before class.**		**NLH** **Module 1**				**NLH** **Module 2**			
Description	Administration Details	Self-Study	Class		Case	Self-Study	Class		Case
			Inter-active	Assess-ment			Inter-active	Assess-ment	
1.Reading The learner reads the materials or accesses to internet information assigned by the trainer.	Section G 3	36	-	-	-	22	-	-	-
2.Self-assessment on UoC required performance outcomes The learner reflects on competency based on past work cases handled.	Section E 6.3.1	12	-	-	-	8	-	-	-
3.Suggestion on credit guideline The learner reflects on the existing credit guidelines and makes suggestions on improvement area(s) which might enhance CRM.	Section E 6.3.2	22	-	-	-	9	-	-	-
4.Preparation of the "Best Credit Case Handled" Presentation The learner selects the best credit case handled and prepares a presentation deck for sharing in the class.	Section E 6.3.3	45	-	-	-	27	-	-	-
5.Newsroom The learner raises awareness of the importance of the subject credit risk management with current and past credit cases with valuable lessons learned.	Section E 6.3.4	-	3	-	-	-	1.5	-	-
6.Interactive learning (lecture) The trainer gives lecture or invites questions from the learners.	Not applicable	-	8	-	-	-	5	-	-
7.Practice – "Best Credit Case Handled" presentation The learner presents relevant work cases prepared above for sharing.	Section E 6.3.5	-	5	-	-	-	3	-	-
8.Practice - case drill The learner shares the experience about external factors and internal factors affecting the credit qualities of chosen cases from presentations.	Section E 6.3.6	-	3	-	-	-	1.5	-	-
9.Seminar on updates and case experience on operational risk and regulatory risk The trainer/guest shares updates and work case experience.	Section E 6.4.2	-	6	-	-	-	-	-	-
10.Simulation case (to be completed in 4 weeks after class) The learner completes a simulation case with the performance outcomes to be scored by the trainer.	Section E 6.3.7	-	-	-	105	-	-	-	63
11.Assessment		-	-	15	-	-	-	10	-
Total		115	25	15	105	66	11	10	63

6.2 Reference Sources for Learning Activities

Trainers may refer to the table below for developing the materials for the suggested learning activities.

Learning Activities	Materials
Reading	Example sources of materials - UoC - SPM - The HKMA Research - The HKMA Circulars - Banks' Credit Guidelines - Books on Credit Risk Management - The Basel Principles - Current Development in CRM technology - Content Notes for Reference
Self-assessment on UoC required performance outcomes	One self-assessment form per submodule for each learner to conduct self-assessment on performance outcomes
Suggestion on credit guideline	One credit guideline suggestion form per submodule for each learner to put down improvement suggestions
Preparation of "Best Credit Case Handled" Presentation	One guide per submodule for each learner to follow to prepare the presentation deck on work case analysis
Newsroom	One publicly known credit case per submodule
Interactive learning (lecture)	The learning contents prepared by the trainer
Practice – "Best Credit Case Handled" presentation	One scorecard per submodule
Practice - Case drill	A set of facilitation questions
Seminar on updates and case experience on operational risk and regulatory risk	The trainer arranges sessions to share updates on key regulations, operational risk, compliance and relevant cases
Case – Simulation case	Simulation case provided by the trainer

The trainer may design an integrated learning progress registration card for learners to monitor and report their completed learning activities. A sample is available on the next page.

6.3 Activity Objective, Administering Process and Samples

SAMPLE: Learning progress registration card for learners to monitor and report the completion status of the learning activities

Learning progress registration card (Learners to fill in and send to Trainer upon completion of all Modules)			**Module 1**					**Module 2**		
			Sub module 1	**Sub module 2**	**Sub module 3**	**Sub module 4**	**Sub module 5**	**Sub module 1**	**Sub module 2**	**Sub module 3**
1.	Reading (High Priority=50% time; Medium Priority=30% time, Low Priority=20% time)	Completed the Reading (put a tick ✓)								
2.	Self-assessment on UoC required performance outcomes	Actual Score (self-scored)								
		Maximum Score	Pre-set	Pre-set	Pre-set	Pre-set	Pre-set	Pre-set	Pre-set	Pre-set
3.	Suggestion on credit guideline	Passed to the supervisor (Put a tick ✓)								
4.	Preparation of "Best Credit Case Handled" Presentation	Completed the Reading (put a tick ✓)								
5.	Newsroom	Name of Case Discussed								
6.	Interactive Learning (Lecture)	Attended the Class (Put a tick ✓)								
7.	Practice – "Best Credit Case Handled" Presentation	Actual Score from trainer								
		Maximum Score	Pre-set	Pre-set	Pre-set	Pre-set	Pre-set	Pre-set	Pre-set	Pre-set
8.	Practice - Case Drill	Name of Case Discussed								
9.	Seminar on updates and case experience on operational and regulatory risk	Attended the Seminar (put a tick ✓)								
10.	Simulation Case	Actual Score from trainer								
		NLH logged								
		Maximum Score	Pre-set	Pre-set	Pre-set	Pre-set	Pre-set	Pre-set	Pre-set	Pre-set

Note 1: The maximum scores are pre-set by the trainer
Note 2: Learners submit the registration card via email to the trainer 1 week before start of the Modules and 4 weeks after end of all submodules within each Module
Note 3: Learners having completed the self-study activities 1, 2, 3 and 4 are admitted to the class
Note 4: Learners having completed all learning activities and assessment will be given performance grades

6.3.1 Self-Assessment

Objective of this Suggested Learning Activity

This suggested learning activity enables learners to have a head start on the required performance outcomes of the submodule. For example, while referring to past credit cases handled for completion of the self-assessment form, the learner gets an overall idea of the performance outcomes to improve so as to enhance his awareness to extract relevant learnings from peer learners when he attends the class.

Suggested Administering Process

- It is a self-paced learning task during self-study methodology
- The training programme designer prepares one self-assessment form for each submodule
- The trainer provides the self-assessment forms to learners at the beginning of the training programme
- The learner shares the self-assessment form with the direct supervisor/named delegate and registers the completion of the learning activity

Sample

A sample self-assessment form is provided on the next page.

Sample

Sample - Self-Assessment Form
on UoC Required Performance Outcomes
Module 1 submodule 1 – Early Warning Signal

Note to learners:
Please refer to the credit cases during the last 12 months in which you have successfully identified (or failed to identify) early warning signals of loan accounts/loan portfolios to complete the following self-assessment form. Please share the completed self-assessment form with your direct supervisor/named delegate, then register completion in your integrated scorecard for Module 1 submodule 1 under "Self-Assessment."

Instructions:
- *Please answer top of mind response – that which comes first to your mind*
- *Put a tick in the box that is most representative of you at this point in time*

Required Performance Outcomes	5	4	3	2	1
Monitoring of portfolio – theory and practice					
• Demonstrate proficient knowledge in credit risk management in order to identify the most appropriate method in risk monitoring					
• Understand the credit strategies and portfolio objectives of the bank in order to identify crucial areas for monitoring					
• Identify early signals of delinquency or system risk and escalate to appropriate parties for prompt remedial actions					
• Identify sources and causes of the changes in risk level, e.g., underwriting standards, economic conditions, personnel issue and recommendation					
• Demonstrate professionalism by applying impartial and unbiased judgment throughout the loan portfolio assessment process					
Identify credit indicators – account and portfolio					
• Monitor and ensure credit administration in compliance with contractual requirements and facility terms					
• Track risk indicators or credit quality (e.g., delinquency, risk rating trends) and detect changes in risk characteristics of loan portfolios					
Identify relationship between risk level change and loan provision					
• Regularly review the advantage and weakness of forecasting, reviewing approaches and adopting the most reliable measures					
Identify key regulations, report remedy to management and make recommendations					
• Report to senior management about the results of analysis on risk profile of overall loan portfolio.					

5: Demonstrate daily and continuously
4: Demonstrate frequently
3: Demonstrate sometimes
2: Demonstrate infrequently
1: Demonstrate rarely

6.3.2 Suggestion to Improve Credit Guideline

Objective of this Suggested Learning Activity

This suggested learning activity sensitizes learners about banks' credit strategies, key regulations, and the credit operational risk management cascaded and embedded into the credit guidelines.

The learner refers to past credit cases handled to identify root causes of the failures (or success) in detecting early warning signals and to suggest improvements. These to be embedded in credit guidelines to improve the timeliness in identifying early warning signals.

To accomplish this learning activity, the learner reviews relevant past credit cases and credit guidelines. The review and reflection process will increase the learner's awareness of the bank's strategy, key regulations, and credit risk operations.

Suggested Administering Process

- It is a self-paced learning task during self-study
- The trainer prepares one improvement suggestion form for each submodule
- The trainer passes the improvement suggestion forms to learners at the beginning of the training programme
- The learner shares the completed suggestion form with the direct supervisor/named delegate and registers the completion of this learning activity

Sample

A sample suggestion form is provided on the next page.

Sample

<u>Sample – Suggestion Form</u>
<u>Suggestion on Credit Guideline</u>
<u>Module 1 submodule 1 – Early Warning Signal</u>

Note to learners:
Learners should be familiar with all relevant credit guidelines. This learning activity helps to sensitize yourself about the importance of continuous improvement of credit guidelines in credit risk management.

Step (1) *Please refer to credit cases during the last 12 months in which you have identified (or failed to identify) early warning signals of loan accounts/loan portfolios. Then, reflect on the principal reasons for the success or the failure.*

Step (2) *To help the reflection, you may refer to (1) practices of other local and foreign banks, (2) research papers from the HKMA and the BASEL committee, and (3) research papers from other sources.*

Step (3)
Based on your findings and reflection, make one suggestion to achieve a more timely and effective identification of early warnings, e.g.,
- *Enhanced internal standards*
- *Enhanced practices*
- *Enhanced reporting process*
- *Enhanced escalation process*

Step (4) *To sustain the benefits of the above suggestions, please propose a credit guideline to embed it. The improvement suggestion should be proportionate to the bank's risk exposure level.*

Step (5) *Share the completed suggestion form with your direct supervisor/named delegate and register the completion of this learning activity.*

Credit guideline	Name of the credit guideline
Description of pain points	No pre-set word limit
Improvement suggestion	Suggest in 200 words
Benefits of implementing the suggestion	Describe in 100 words the benefits from the suggestion if it is implemented
Reference	List the credit risk management principles enlisted by BASEL or the HKMA. Key regulations should be considered

Sample analysis for the learner's reference

Pain point

E.g., timely identification of credit rating deterioration. The learner might have observed from several past cases that there has been a long-time gap between the occurrence of a trigger, e.g., utilization of OD exceeds the past six months' average rate and the rating deterioration.

Improvement suggestion

E.g., embed the following improvement in the named credit guideline: "Have the designated committee discuss early warning signals each week on zoom instead of bi-monthly in the meeting rooms".

Benefits of the improvement suggestion

E.g., one of the three quoted past cases would have reduced loss by the estimated amount or percentage.

Relevant BASEL principle

E.g., the learner may quote principle No 8: "Banks should have in place a system for their various credit-risk-bearing portfolios." Banks should ensure the accuracy and timeliness of information provided to management information systems. (Basel Committee Publications - Principles for the Management of Credit Risk - Oct 2000 (bis.org)

6.3.3 Preparation of the Best Credit Case Handled Presentation

Objective of the Suggested Learning Activity

This suggested learning activity requires learners to organize the case information according to the credit risk management process, i.e., identification of risk factors, measurement of risk level, and managing and controlling risk. In addition, the preparation process allows the learner to do a systematic walk-through of the case. The walk-through will increase the learner's confidence and readiness to tell the story via presentation in the class.

If work case sharing is inadequate (e.g., the training programme is open to public enrolment), the trainer may consider providing a simulated case for preparation and presentation.

Suggested Administering Process

- The trainer prepares one presentation scorecard with instructions and scoring criteria for the presentation of each submodule.
- The trainer passes the presentation scorecards to the learners at the beginning of the training programme.
- Each learner prepares a PPT presentation deck for a 5-minute presentation in the class.
- Each learner shares the PPT presentation deck before the class with the direct supervisor/named delegate and registers completion of the learning activity.

Sample

A sample preparation guide is provided on the next page.

Sample

Sample – Preparation Guide
For "The Best Credit Case Handled" Presentation
Module 1 submodule 1 – Early Warning Signal

Note to learners:
Please refer to credit cases handled during the last 12 months in which you have successfully identified (or failed to identify) early warning signals of loan accounts/loan portfolios to select the one which gives you valuable lessons learned. Please follow the preparation guide below to prepare a PowerPoint deck. You are to provide a 5-minute on-the-stage presentation during the class (or in small groups) for feedback from peer learners/the trainer. Please share the completed PowerPoint deck with your direct supervisor/named delegate before the class.

<table>
<tr><td>Step 1</td><td>Please select a work case in which you have attempted to demonstrate some or all of the following knowledge, skills and behaviors to identify relevant early warning signals.

Monitor portfolio – theory and practice
- Demonstrate proficient knowledge in credit risk management in order to identify the most appropriate method in risk monitoring
- Understand credit strategies and portfolio objectives of the bank in order to identify crucial areas for monitoring
- Identify early signals of delinquency or system risk and escalate to appropriate parties for prompt remedial actions
- Identify the sources and causes of the changes in risk level, e.g., underwriting standards, economic conditions, personnel issue and recommend
- Demonstrate professionalism by applying impartial and unbiased judgment throughout loan portfolio assessment process
Identify early warning signals
- Monitor and ensure credit administration in compliance with contractual requirements and facility terms
- Track risk indicators or credit quality (e.g., delinquency, risk rating trends) and detect changes in risk characteristics of loan portfolios
Identify relationship between risk level change and loan provision
- Regularly review the advantage and weakness of forecasting, and reviewing approaches and adopt the most reliable measures
Identify key regulations, report remedy to management and make recommendations
- Report to senior management about the results of analysis on risk profile of overall loan portfolio</td></tr>
</table>

<table>
<tr><td>Step 2</td><td>Prepare a PowerPoint Deck to enhance the organization of your analysis for the presentation in class. The 5-minute presentation should include the following contents:

<u>Monitoring of portfolio – theory and practice</u>

For example, one page on "Understanding the Client - Case Background"
e.g., describe economic sector, and industry of the client
e.g., describe the scale of the client, loan type, and loan size
e.g., describe the credit risk assessment upon booking and status as of the preparation date

For example, one page on "Identifying the Risk - Critical Risk Factors"
e.g., describe the essential economic, industrial, internal risk factors identified at the time of loan booking and the subsequent emergence of risk factors, where applicable
e.g., describe whether the emergent risk factors, if applicable, apply to the specific loan or to the portfolio</td></tr>
</table>

	<u>Identify early warning signals</u> For example, one page on Identification of credit risk indicators - describe relevant credit risk indicators for day-to-day monitoring - describe the detected early warning signals - describe how the judgment about the early warning signals has taken place **<u>Control the risk - identify the relationship between risk level change, loan provision, and others</u>**. For example, one page on “Estimation of the Potential Impact of the Risk Level Changes” to explain the consequence of early warning signals left undetected (e.g., increased loan provision, increased cost, reputation risk, and others). **<u>Make recommendation - identify key regulations, report remedies to management, and make recommendations.</u>** For example, one page on “The Reporting to Senior Management about the Case Outcomes” - remedial actions - suggested future measures - lessons learned *Please be reminded to exclude company names in the deck*

6.3.4 Newsroom

The objective of this Suggested Learning Activity

This suggested learning activity serves both as an ice-breaking tool to kick-start a class and an introduction to the ILO of the submodule. At the beginning, the trainer will select one notorious case with valuable credit risk management lessons learned. After this approximate 30-minute interactive session, the learner is likely to echo the importance of the ILO of the submodule.

Suggested Administering Process

- The trainer will prepare a list of publicly known cases (or cases he has handled) that match with the ILO of the submodule.
- The trainer will select one case for this learning activity.
- The trainer will prepare a set of facilitation questions to enable learners to draw out the critical lessons learned from these cases.
- The trainer may start the session by inviting learners to reveal how much they know about the circumstances and draw out lessons learned.

Sample

A sample set of facilitation questions is provided on the next page

Sample

Sample – Newsroom
Publicly Known Cases
Module 1 submodule 1 – Early Warning Signal

Sample questions from the trainer	Possible discussion points raised by the learners
Introduction	
Have you lately noticed the credit-related news of Country X?	e.g., country X has defaulted for the first time its sovereign bond
Trigger	
What is the trigger of this credit event?	e.g., country X has been unable to pay the interest/principal
Root Causes	
What are the root causes of this trigger?	e.g., possible Root Causes (1) e.g., possible Root Causes (2)
Early Warning Signals	
What early warning signals gives signs of credit quality deterioration and when? What are the means to verify the signals or to estimate the probability of happening?	e.g., credit rating deterioration [may specify changes with time] e.g., government statements [may select content and date] e.g., market news [may select sources and date]

6.3.5 Presentation on The Best Credit Case Handled

Objective of this Suggested Learning Activity

This suggested learning activity requires the learner to present a credit case in class. Peer learners would have the opportunity to raise questions, give feedback, share experience and practices, and make suggestions for better credit risk management. The interactive learning opportunity will elevate learners' knowledge, skills, and behaviours.

If work case sharing is inadequate (e.g., the training programme is open to public enrolment), the trainer may consider providing a simulated case for preparation and presentation.

Suggested Administering Process

- This is a class activity.
- The trainer distributes the sample presentation scorecards to learners at the beginning of the training programme.
- The trainer fills in one scorecard for each presentation performed in the class
- To facilitate the presentation session, the trainer may refer to the following steps.

Step 1: Before the presentation starts

- **Put a flip chart with the names of learners**
    - The trainer invites peer learners to participate in the scoring. The peer learners will come forward to mark scores for all presentations at the end of the session.

Step 2: After each presentation done

- **The trainer completes filling in the scorecard**
    - The trainer invites peer learners to ask questions or to share experience.
    - The trainer invites the peer learners to complete filling in the scorecard.

Step 3: After all presentations done

- **The trainer completes filling in the scorecard**
    - The trainer asks learners to come forward to the flip chart (prepared ahead in Step 1) and give their marks under each presenter.
    - The trainer asks learners to register their marks in their own integrated self-monitoring learning progress tool.

Sample

A sample presentation scorecard is provided on the next page

Sample

Sample – Presentation Scorecard
Presentation on The Best Credit Case Handled
Module 1 submodule 1 – Early Warning Signal

Scorecard

Presentation of The Best Credit Case Handled
Module 1 submodule 1 – Early Warning Signal

Notes to learners:

Before the Presentation
The trainer distributes this scorecard to each learner at the beginning of the programme.

During the Presentation
Each learner receives marks on the presentation according to the following criteria:
1. To what degree does the presenting learner cover comprehensively the required content
2. To what degree the presenting learner identifies the early warning signals comprehensively
3. To what degree does the presenting learner comprehensively estimate and monitor the risk impacts
4. To what degree does the presenting learner takes effective remedial measures and make a recommendation to the management

After the presentation
1.The trainer invites peer learners to ask questions and to share experience
2.The trainer and peer learners will give their marks to each learner after all presentations.
3.Each learner will register the scores in his own integrated self-monitoring learning progress card

Name of the Presenter:

To what degree the learner covered comprehensively the required content		**To what degree the learner identified comprehensively the early warning signals**		**To what degree the learner could comprehensively estimate and monitor the risk impacts**		**To what degree the learner took effective remedial measures and make recommendations to the management**	
Please circle the points you give to the presenter		Please circle the points you give to the presenter		Please circle the points you give to the presenter		Please circle the points you give to the presenter	
100%	5 marks	100%	5 marks	100%	5 marks	100%	5 marks
80%	3 marks	80%	3 marks	80%	3 marks	80%	3 marks
60%	1 mark	60%	1 mark	60%	1 mark	60%	1 mark
Insufficient facts	0 mark	Insufficient analysis	0 mark	Not clearly demonstrated	0 mark	Not clearly articulated	0 mark
Please add up the total of all the marks given (Maximum: 20 marks) ⇨							

Recap on the requirements for the presentation deck preparation:

Prepare a PowerPoint Deck to enhance the organization of your analysis for the presentation in class. The structure of the 5-minute presentation may include:

Please be reminded to exclude company names in the deck

<u>Monitoring of portfolio – theory and practice</u>

For example, one page on “Understanding the Client - Case Background”
e.g., describe the economic sector, and industry of the client
e.g., describe the scale of the client, loan type, and loan size
e.g., describe the credit risk assessment upon booking and status as of the preparation date

For example, one page on “Identifying the Risk - Critical Risk Factors”
e.g., describe the essential economic, industrial, internal risk factors identified at the time of loan booking and the subsequent emergence of risk factors, where applicable
e.g., describe whether the emergent risk factors, if applicable, apply to the specific loan or to the portfolio

<u>Identify early warning signals</u>

For example, one page on Identification of credit risk indicators
e.g., describe relevant credit risk indicators for day-to-day monitoring
e.g., describe the detected early warning signals
e.g., describe how the judgment about the early warning signals has taken place

<u>Control the risk - identify the relationship between risk level change, loan provision, and others</u>.

For example, one page on “Estimation of the Potential Impact of the Risk Level Changes” to explain the consequence of early warning signals left undetected (e.g., increased loan provision, increased cost, reputation risk, and others).

<u>Make recommendation - identify key regulations, report remedies to management, and make recommendations.</u>

For example, one page on “The Reporting to Senior Management about the Case Outcomes”
- remedial actions
- suggested future measures
- lessons learned

6.3.6 Case Drill

The Objective of the Suggested Learning Activity

The learning activity requires learners to deep dive into the good practices leading to the successful or non-satisfactory outcomes of credit cases. Also, learners will discuss how to sustain the best practices in credit risk management and the enhancement RPs' attitudes and behaviours.

Suggested Administering Process

- After the Best Credit Case Handled presentations, the trainer invites learners to pick one or two cases for the case drill.
- The learners presenting the selected cases would provide necessary information during the case drill. Alternatively, the learners can quickly search for more related information online and raise issues for discussion.
- The trainer also discusses the potential operations risk of these selected cases to alert the learners about the importance of developing, maintaining, and complying with adequate policies and guidelines for quality credit risk management.

Sample

A sample set of facilitation questions is available on the next page

Sample

Sample – Case Drill
Potential Question List
Module 1 submodule 1 – Early Warning Signal

Sample Facilitation Questions About the operations, regulations, and compliance risk of the cases	**Possible Discussion Points** Raised by the learners
Introduction	
From the Best Case Handled presented by (Learner's name), the listed Company X does not fulfill the regulatory disclosure requirements, what are some of these disclosure requirements?	Example: disclosure of pro-forma statements
Monitoring of credit quality	
Which department/unit monitors the credit quality? Does it monitor up to this kind of detail? How will the outcomes of the monitoring process reach you? What are other examples of monitoring relevant for early identification of credit quality deterioration?	Example: unit in the back office Example: only when specified in the T&C Example: retrievable from system, monthly report, weekly meeting Example: mention the relevant credit guideline or share the experience on monitoring
Best practices, attitudes, and behaviors	
What is your best practice for revealing early warning signals? What are the attitudes and behaviors to be discouraged?	Example: learners may share their own experiences of those of seniors/seasoned RPs

6.3.7 Simulation Case

Objective of the Suggested Learning Activity

The learner integrates adequate knowledge, applications, and behaviors acquired from self-study and class to complete the case.

Suggested Administering Process

Before the completion of a class on a submodule

- The trainer sends an engagement letter attached with simulation case

Three weeks after class completion of the submodule

- The learner completes the simulation case and send it to the Trainer

Four weeks after class completion of the submodule

- The trainer sends the completed "Simulation Case Feedback Form" to the learner
- The learner registers and sends the completed "Learning Progress Registration Card" to the trainer as evidence of having completed all learning activities of the submodule
- The trainer files the completed "Learning Progress Registration Card" and the "Simulation Case Feedback Form" as evidence of the learner's completion of all the submodule's learning activities
- The trainer may arrange online meetings for each learner to conduct 10 – 15 minutes presentation with a subsequent 10 – 15 minutes Q&A session by the trainer and other learners to ensure that the executive report is the own work of the learner.

Sample

- A 2-page sample letter with simulation case feedback form is provided on the following pages.
- A 18-page sample simulation case is provided in Appendix Four

Explanation of the case

For Module 1, the Users may consider adopting publicly known cases with much verified information in the public domains. For Module 2, the Users may use the actual non-financial listed companies in the post-class case study. These resources facilitate learners' understanding and discovering of the applicability and limitations of financial ratio analysis in the real-life situation.

Sample (Page 1) – Engagement letter to Learners
Module 1 submodule 1 – Early Warning Signal

[Date]

Dear [name of the learner],

Thank you for your keen effort on the ECF-CRM learning journey. You will find, together with this letter, the simulation case background for your preparation of an executive report, to be completed within the required timeline as a post-class practice on the knowledge acquired in the submodule [Early Warning Signal]. Satisfactory completion of the executive report will show that you possess the competency to achieve the intended learning outcomes below:

(1)	**(2)**	**(3)**
Demonstrate proficient knowledge in credit risk management in order to identify the most appropriate method in risk monitoring	Understand the credit strategy and portfolio objectives of the bank in order to identify the crucial areas for monitoring	Identify early signals of delinquency or system risk and escalate to appropriate parties for prompt remedial actions
(4)	**(5)**	**(6)**
Identify the sources and causes of the changes in risk level, e.g., underwriting, standards, economic conditions, personnel issue and recommend	Demonstrate professionalism by applying impartial and unbiased judgment throughout the loan portfolio assessment process	Monitor and ensure credit administration in compliance with contractual requirements and facility terms
(7)	**(8)**	**(9)**
Track risk indicators or credit quality (e.g., delinquency, risk rating trends) and detect changes in risk characteristics of loan portfolios	Regularly review the advantages and weakness of forecasting, and reviewing approaches and adopt the most reliable measures	Report to senior management about the results of analysis on risk profile of overall loan portfolio

The table below shows the required completion timeline

Date	**Learner's Action**
[Date: Three weeks after completion of the class on]	Complete and submit the executive report to the trainer together with information on the logged hours to complete the case
[Date: Four weeks after completion of the class]	Send the completed "Learning progress registration card" to the trainer, as evidence of having completed all learning activities of the submodule. Receive the feedback form from the trainer.

Please note that you may be invited to conduct a 10 to 15 minutes presentation on your executive report.

Thank you very much for your enthusiastic support again.

[Signature and title]

cc: learners *[Page 1]*

<u>Sample (Page 2) – Simulation Case Feedback Form</u>
<u>UoC Required Performance Outcomes</u>
<u>Module 1 submodule 1 – Early Warning Signal</u>

Note to the Trainer:
The learner has completed the classroom training on [name of the submodule]. Please score the specific performance outcomes (listed in the table below) of the learner based on the completed simulation case.

Instructions:
- Please answer the top-of-mind response
- Put a tick in the box that is most representative of the learner at this point in time

Required Performance Outcomes	5	4	3	2	1
Monitoring of portfolio – theory and practices					
• Demonstrate proficient knowledge in credit risk management in order to identify the most appropriate method in risk monitoring					
• Understand the credit strategies and portfolio objectives of the bank in order to identify crucial areas for monitoring					
• Identify early signals of delinquency or system risk and escalate to appropriate parties for prompt remedial actions					
• Identify the sources and causes of the changes in risk level, e.g., underwriting standards, economic conditions, personnel issue and recommend					
• Demonstrate professionalism by applying impartial and unbiased judgment throughout the loan portfolio assessment process					
Identify credit indicators – account and portfolio					
• Monitor and ensure credit administration in compliance with contractual requirements and facility terms					
• Track risk indicators or credit quality (e.g., delinquency, risk rating trends) and detect changes in risk characteristics of loan portfolios					
Identify relationship between risk level of risk level change and loan provision					
• Regularly review the advantage and weakness of forecasting, and reviewing approaches and adopt the most reliable measures					
Identify key regulations, report remedy to management and make recommendations					
• Report to senior management about the results of analysis on risk profile of overall loan portfolio.					

Number of hours logged to complete the simulation case: ______________ hours (at least 21 hours)
Initial and name of the trainer: ____dated ______

5: The learner’s specific performance outcomes: outstanding
4: The learner’s specific performance outcomes: above average
3: The learner’s specific performance outcomes: largely meet the basic requirements
2: The learner’s specific performance outcomes: inadequately prepared
1: The learner’s specific performance outcomes: not applicable in the selected simulation case

6.4 Source Materials for Learning Activities

6.4.1 Sources of Cases for Newsroom

The ice-breaking interactive session sensitizes learners within the 15-minute interactive time on the importance of the competency related to the submodule.

Potential sources of cases/information:

- Experience of trainers
- Experience of learners
- Credible sources, e.g., governments, international organizations

Example Links:
Sovereign Debt and Financial Crises: An Historical Analysis - IMF F&D Magazine
Bank for International Settlements (bis.org)

- The HKMA publications, e.g., speeches and researches

Examples Links:
Hong Kong Monetary Authority - The Asian Financial Crisis: What Have We Learnt? (hkma.gov.hk)
Hong Kong Monetary Authority - The Asian Crisis: Lessons for the Future (hkma.gov.hk)
Credit Risk During the Asian Crisis (hkma.gov.hk)
qbsp03e.pdf (hkma.gov.hk)
A framework to monitor vulnerabilities and resilience of EMEAP economies (hkma.gov.hk)

Case examples:
Related to sovereign risk
- 1980 & the 1990s – Emerging market crises in Argentina, Brazil, and Mexico
- 2008 - the global crisis
- 2010 - euro area crisis

Related to market risk
- The 1990s – Asian Financial Crisis
- BIS.ORG Research and Publication No. 52 on market changes before and after the financial crisis

Examples of risk appetite conception and risk appetite statement:

- Most of the banks include in their annual reports description of the principles guiding their risk appetite, and a few banks publish the risk appetite conception process and the description of their risk appetite, serving good reference for trainers.

6.4.2 Potential List on Sharing Topics in the Seminar on updates and case experience on operational risk and regulatory risk

Module 1
Guest speakers invited to share topics on: Operational risk for one or several of the following topics in each 60-minute seminar (sharing in live issues attract high level of attention): • Key regulations • Case related to credit operational risk • Loan classification • Capital adequacy and provisioning • Collateral authentication • Stress testing design overview • Contingency plan overview More topics for the trainer's consideration: • Project finance overview • Special industry financing overview • Commodity financing overview • ESG financing overview • Start-up technology company- financing overview

6.5 Learning Facilities Suggested

Suggested learning facilities are listed in the following table:

Classroom set up	For trainers	For learners
Laptop (Qty: 1 pcs) Projector (Qty: 1 pcs) Screen/Wall for Projection Flip Chart (Qty: 2 pcs) Flip Chart Paper (Qty: 50 pcs) A4 Size Blank Paper (Qty: 50 pcs) Colour Pens for Flip Chart (Qty: 6) Optional candies/drinks	Bring along lap-top	Bring along lap-top for - Economic, industry, and company information retrieved from the internet - Assessing data from the internet if internet links provided in the assessment questions - Assessing necessary information for responding to short and long questions - For written response on MCQ, short and long questions.

F. ASSESSMENT GUIDE

This section describes the assessment activities and methods to facilitate the collection of evidence and assess whether the learner has applied the competencies required in the context of workplace requirements, as prescribed in the assessment criteria of related UoC.

The assessments take place in class to allow learners to share and learn from their peer learners.

1 Mapping with ILO and Assessment Methods

Written assessment activity is recommended for the Module 1:

Mode	Assessment Methods	% Contribution to programme assessment	ILO				
			Submodule 1	Submodule 2	Submodule 3	Submodule 4	Submodule 5
Class	Written assessment - Short questions	20%	X	X	X	X	X
	Written assessment - Long question	40%	X	X	X	X	X
	Written assessment - One case-based question for Module 1	40%	X				

Written assessment activity is recommended for the Module 2:

Mode	Assessment Methods	% Contribution to programme assessment	ILO		
			Submodule 1	Submodule 2	Submodule 3
Class	Written assessment - Short questions	20%	X	X	X
	Written assessment - Long question	40%	X	X	X
	Written assessment - One case-based question for Module 2	40%	X		

2 Assessment Activities and Tools

The table below provides some suggested assessment activities. The assessment with short question and long question takes place at the end of each submodule in the class. The assessment with case-based question takes place at the end of each module.

Assessment Method	Assessment Activities	Deliverables of the Assessment Activities	Scored by	Time Allocation in Class
Continuous: written assessment for each submodule	Short questions	The learner completes three short questions	Trainer/ assessor	60 minutes
	Long question	The learner completes one long question composed of several related short questions	Trainer/ assessor	90 minutes
Final: written assessment for each Module	Case-based question	The learner completes at end of each Module one set of case-based questions which demand integration of knowledge, applications and behaviors on one of the submodules	Supervisor/ named delegate/ delegated approver	150 minutes

3 Assessment Objective, Administering Process and Samples

3.1 Assessment Objectives

Learners are expected to be able to achieve the required performance outcomes after completing the learning programme. Through assessment tasks, the learners would be able to demonstrate that they can integrate and apply their learning to different situations.

3.2 Administering Process and Samples

To facilitate learners' performance outcomes at QF Level 5, the trainer should design assessments based on practical commercial banking scenarios and context.

3.2.1 Assessment with Short Questions

Suggested process takes place in each submodule

Step 1: Before the Assessment

- The trainer instructs the learners to create their word documents for the answers and put the following information at the beginning of the word documents:
    - Name
    - Question-number
- The trainer gives the learners 10 minutes to complete one question individually
- After 10 minutes, the trainer goes to Step 2

Step 2: Learners Sharing Views

- The trainer gives the learners 5 minutes to discuss answers with one other learner
- Then, the trainer facilitates class-sharing for 5 minutes
- After the class sharing, the trainer requests the learners to complete another question within 10 minutes
- The trainer repeats Step 2 until the learners complete all three questions.

Step 3: After the Assessment

- The trainer requests learners to submit the answers to a designated email address
- The trainer scores the answers of the individual learners against the pre-set answers
- The learners get marks for answers that are similar in meaning and context to the pre-set answers
- The trainer registers the scores of the assessment

Sample

Sample short questions and response plans are provided after the explanation on the Short Questions.

<u>Explanation of the Short Questions and learning points</u>

Explanation

- The questions help learners apply the knowledge and skills obtained in class and the workplace, for example:
  - Experience with borrowers, supervisors, and working peers
  - Knowledge acquired from team, department, bank meetings
  - Knowledge extracted from interactions with the industry networks

Learning points

- The three short questions can be unrelated to one another, with different learning points. For instance,

  - Sample 1 below focuses on the identification of the early warning signals concentrating on data from internal processes with compliance of requirement, whereas
  - Sample 2 below focuses on identifying the early warning signals concentrating on data from external information collection and the subsequent recommendation of risk remedial actions.

The learner may respond to the questions with a plan demonstrating his achievement in terms of ILO listed in Part (E) 1.1.1

<u>Sample 1</u>

<u>Assessment with Short Question</u>

<u>Module 1 submodule 1 – Early Warning Signal</u>

Question	Time Allowed	Question
1	- Total: 20 min - Individual working: 10 min - Team discussion: 5 min Group sharing: - 5 min	**"Early warning signals help management make adequate, timely decisions to lower potential credit losses and capital requirements by identifying opportunities to rebalance portfolio risk level and improve asset quality before a possible default event."** **Question:** In credit risk management of commercial mortgage portfolio, what is the significance of credit risk administration functions in identifying early warning signals?

Debrief of the Short Question: Suggested response plan, answer checklist and assessment rubrics:

Content			
Monitor portfolio - theory and practice	**Identify early warning signals**	**Identify the relationship of the risk level change with loan provision**	**Identify regulations, report remedy and make recommendations**
Response plan to demonstrate selected performance requirements			
- Identify the most appropriate method in risk monitoring - Identify the crucial area for monitoring	- Identify early signals of delinquency or system risk - Identify sources and causes of the changes in risk level - Apply impartial and unbiased judgment	- Review advantages/ weaknesses of forecast, review approach - Adopt the most reliable measure	- Report to senior management about the results of analysis on risk profile of overall loan portfolio
Response			
<u>Example</u> - Can quote from HKMA SPM CR-G-3[3] - Banks should have adequate processes to ensure the designated departments complete timely and effective administration of all credit risk-bearing portfolios.	**<u>Example</u>** - Deviation of LTV ratio from targets/norms of commercial mortgage loan portfolios can be an early warning signal - The variation can be caused by systematic risk changes. Sources and causes of the changes should be identified - Perform additional analysis on historic LTV of relevant customers and economic sectors to form an unbiased judgment of the early warning signals	**<u>Example</u>** - Check whether the changes in risk indicators are in line with the forecast and review - Estimate if the changes are temporary or for an extended period - Estimate the impact on loan provision after the formation of an unbiased judgment on the changes in probability of default	**<u>Example</u>** - Credit administration has regular reporting fulfillment enabling senior management. - For significant early warning signals, report immediately to senior management the analysis and recommendation
1 point per bullet	**1 point per bullet**	**1 point per bullet**	**1 point per bullet**
	Maximum Points	**7 points**	

[3] Refer to Section G Subsection 3.1 to access CR-G-3 Credit Administration, Measurement and Monitoring

Sample 2

Assessment with Short Questions

Module 1 submodule 1 – Early Warning Signal

Question	Time Allowed	Question
2	- Total: 20 min - Individual working: 10 min - Team discussion: 5 min - Group sharing: 5 min	**"Early warning signals help management make adequate, timely decisions to lower potential credit losses and capital requirements by identifying opportunities to rebalance portfolio risk level and improve asset quality before a possible default event."** **Question:** What is system risk? Discuss the credit risk inherent in the entire portfolio. Please explain its relevance in identifying early warning signals of the portfolio. What are the possible remedial actions on a portfolio releasing warning signals?

Debrief of the Short Question: Suggested response plan, answer checklist and assessment rubrics:

Content			
Monitor portfolio – theory and practice	**Identify early warning signals**	**Identify the relationship of the risk level change with loan provision**	**Identify regulations, report remedy and make recommendations**
Response plan to demonstrate selected performance requirements			
- Identify the most appropriate method in risk monitoring - Identify the crucial area for monitoring	- Identify early signals of delinquency or system risk - Identify sources and causes of the changes in risk level - Apply impartial and unbiased judgment	- Review advantages/ weaknesses of forecast, review approach - Adopt the most reliable measure	- Report to senior management about the results of analysis on risk profile of overall loan portfolio
Response			
Example - Banks should have a team to conduct periodical environment scanning to identify changes in external risk factors - RPs should fully deploy industry networks to validate suspected changes in risk factors.	**Example** - System risk is a risk inherent in the entire portfolio. - It sparks risk events that can lead to collapse of some industries - Example: default of creditors on sub-prime mortgage causing the collapse in the sub-prime market, triggering the massive decrease of Lehman Brother's portfolio values, sending shock waves in the global financial markets	**Example** - System risk is complex and its early warning signals are difficult to perceive - Example: black swan events which no one has forecasted their happenings - Even continuous assessment of the external risk factors may be inadequate to shelter against systemic risk	**Example** - Report the outcomes of the check and balance exercise to identify the trade-off of lowered risk tolerance, revenue and client relation with large borrowers - Recommend lowering the risk alert level on focused products, borrowers, segments, and industries
1 point per bullet	**1 point per bullet**	**1 point per bullet**	**1 point per bullet**
	Maximum Points	**7 points**	

3.2.2 Assessment with Long Questions

Suggested Process takes place in each submodule

Step 1: Before the Assessment

- The trainer instructs learners to create their word documents for the answers and put the following information at the beginning of the word documents:
  - Name
  - Question-number
- Learners are allowed to go to internet for more relevant information
- The trainer gives the learners 60 minutes to complete one question individually
- After 60 minutes, the trainer goes to Step 2

Step 2: Group Sharing Views

- The trainer requests learners to submit the answers to a designated email address
- Then, the trainer facilitates class-sharing for 30 minutes

Step 3: After the Assessment

- The trainer scores the answers of the individual learners against the pre-set answers.
- The learners get marks for answers that are similar in meaning and context to the pre-set answers
- The trainer registers the scores of the assessment.

  .

Sample

A sample long question and its response plan are provided after the explanation of the Long Question.

Explanation of the Long Question and learning point

Explanation

- There is one long question for each submodule
- The question helps learners apply the knowledge and skills obtained in class and the workplace, for example
    - Experience with borrowers, supervisors, and working peers
    - Knowledge acquired from team-, department- and bank-meetings
    - Knowledge extracted from interactions with the industry networks
- The learners should present the total solution
- A long question consists of five sub-questions, all related to one situation

Learning points

- The learners would become aware that how, in real work environment, collecting data and information during risk signal identification is the initial step leading to identifying sources and causes of key risk drivers and subsequent unbiased judgments for continual risk signal identification.

Sample
Assessment with Long Question
Module 1 submodule 1 – Early Warning Signal

Corporate finance theory states that **"Enterprises must be able to make timely judgments according to the macroeconomic situation and adjust their financial behavior, such as reducing investment and cost, to preserve cash flow and decrease the risks of falling into financial distress. "However**, different enterprises have a varied judgment on risk, cash flow management, and financial risk, especially under unforeseen system events. Hence, the risk level of various enterprises is impacted by unforeseen system events to different degrees, from slightly affected to moderately or significantly impacted.

Optional Reading
Does Economic Policy Uncertainty Exacerbate Corporate financial distress risk? Jie Sun, Fangyuan Yin, Edward Altman and Lewis Makosa, Journal of Credit Risk 17(4), 71-99, DOI:10.21314/JCR/2021/013

Note to learners: Please organize response in analytical framework e.g., table format, hierarchy etc.

Credit Management Context
With the unforeseen pandemic outbreak since 2020, the environment scan shows warning indicators that the property markets may face a cyclical downturn in the short to medium term. Moreover, the pandemic now continues into its second[4] year. Therefore, you are reviewing the property development sector's portfolio credit risk indicators.

Task 1 (8 points)
- Indicate the credit risk indicators that banks use to monitor the credit portfolio quality
- Elaborate on the purpose of tracking these risk indicators
- For each credit risk indicator, please state the threshold change (e.g., unchanged, raise acceptance criteria, or lower acceptance criteria) in the past 12 months and the rationale for the changes, if applicable.

Task 2 (8 points)
- How do you ensure that the credit administration is carried out diligently? Please share some examples of your day-to-day experience.

Task 3 (8 points)
- Why is it essential for RPs to sensitize about borrowers' fulfilling contractual terms and conditions, and keep monitoring continuously?

Task 4 (8 points)
- Elaborate on the potential causes and sources for changes for the risk indicators identified in Task 1, e.g., underwriting standards, economic conditions, and personnel issues, focused on the loans to property developers.

Task 5 (8 points)
- While you continually monitor the risk characteristics of the loan portfolio, how are you sure about having applied impartial and unbiased judgment to identify early warning signals?

[4] This is the context of the question

Optional Reading on prudential measure on non-residential mortgage loans. Prudential Measures for Mortgage Loans on Non-residential Properties (hkma.gov.hk)…

Response Plan

Content	ILO	Task	Response Example	Assessment Rubrics
Monito portfolio – theory	- Identify the most appropriate method in risk monitoring - Identify crucial areas for monitoring	5	To make an adequate judgment to identify crucial monitoring areas and to identify adequate methods: - Understand the bank's risk appetite and business strategy (e.g., attend all of the bank's meetings) - Read updates on economic conditions (e.g., in-house economist reports, government, and 3rd party research reports) - Read updates on industries (e.g., read industries' research, join industry seminars, follow updates on regulatory changes. - Periodic updates (e.g., read financials of the concerned sectors, business cycles of the concerned industries, make appointments with owners/ executives of the concerned industries to get more information) - Conduct sharing at department meetings	2 points per bullet **Maximum points**: 8
Monitor portfolio - practices	- Identify early signals of delinquency or system risk - Identify the sources and causes of the changes in risk level - Exercise impartial and unbiased judgment	4	To have impartial and unbiased judgement to identify the sources and causes: - Monitor economic conditions e.g., GDP growth - Monitor geographical conditions e.g., whether deteriorating market conditions have a contagious effect on the similar market in the banks' target markets - Monitor stage changes of the industry cycle e.g., more prudent judgment for rapid growth or rapid decline stage - Inherent conditions in significant borrowers	2 points per bullet **Maximum points**: 8

			e.g., whether borrowers' businesses are highly concentrated without diversified income sources e.g., whether the borrowers' businesses are highly dependent on big players in the concerned market e.g., whether the borrowers have the financial strength to shelter against a decline of the industry cycle e.g., whether the borrowers' credit qualities are still satisfactory	
Identify early warning signal	- Monitor and ensure credit administration in compliance with contractual requirements and facility terms	1	- Monitoring of compliance with contractual requirements and facility terms will identify default situations e.g., default occurs when terms are not fulfilled but not necessarily non-payment e.g., liquidity shortage to make timely payment e.g., strategic non-payment by the borrowers - Continuous monitoring of individual accounts reveals non-compliance cases for aggregation to reflect the portfolio situation. e.g., credit indicators by loan type, by geographic locations, by debt servicing ratio, by secured or non-secured types - Continuous monitoring of the contagious effect of the concerned portfolio on the other portfolios - Continuous monitoring of the changes in the risk alert threshold	2 points per bullet **Maximum points**: 8
Identify the relationship of risk level change with loan provision	- Review advantages/ weaknesses of forecast, review approach and adopt the most	3	- The technology advancement enables the application of more sophisticated and timely computation of portfolio risk levels. However, the inputs for the model parameters are mostly assumption-based	2 points per bullet **Maximum points**: 8

	reliable measure		- Since all forecasting models, applied with statistical assumptions or judgmental assumptions, need periodic improvements, continuous monitoring becomes a compensating measure to identify early warning signals - The management reads the reports on early warning signals and makes a judgment call to fine-tune credit guidelines that may affect the intake of new businesses of exact nature and others and whether the portfolio ratings are to be reviewed and fine-tuned accordingly - As a prudent management measure, the changes in the portfolio risk levels have a consequential impact on loan provisioning	
Identify key regulations, report remedy, and make recommend-dation	- Report to senior management about the results of analysis on risk profile of overall loan portfolio	2	- Individual account credit risk changes measured with various indicators (e.g., non-compliance with control terms, delinquency, changes in market values, loan to value, debt servicing ratio, secured or non-secured portfolio percentage) would be aggregated and reported - The report should provide alerts at several levels, and there should be a pre-set response to each alert level - The insights generated by the analysis by credit administration power add value to the report at the senior management level - The insights generated by the analysis should form the foundation for periodic changes in the risk modeling assumption change to form a complete credit risk management feedback cycle	2 points per bullet **Maximum points**: 8
			Maximum	**40 points**

3.2.3 Assessment with Case-Based Question

Suggested Process takes place upon completion of each Module

Step 1: Before the Assessment

- The trainer instructs learners to create their word documents for the answers
- The trainer instructs learners to put necessary information at the beginning of their own word document:
    - Learner's name
    - Question-number
- The trainer reminds learners that they have 90 minutes to complete the question individually
- The trainer reminds learners that they may also refer to public information on internet
- After 90 minutes, the trainer goes to Step (2)

Step 2: Group Sharing

- The trainer requests learners to submit the answers to a designated email address
- Then, the trainer facilitates class-sharing for 60 minutes

Step 3: After the Assessment

- The trainer scores the answers of the individual learners against the pre-set answers
- The learners get marks for answers that are similar in meaning and context to the pre-set answers
- The trainer registers the scores of the assessment

Sample

A sample case-based question and its response plan are available on the following pages

Explanation of the Case-Based Questions and learning points

Explanation

Users may select several ILO to compile the case-based questions so that learners can integrate knowledge and skills to complete the response to the specific questions within 90 minutes.

The response format is consistent with the assessment using short and long questions. The learners refer to the limited information provided and respond to the questions with ingredients of similar cases from the live experience or the publicly available knowledge.

Learners will go through one case-based question upon completing all sub-modules in Module 1, similarly in Module 2.

For Module 1, the Users may consider adopting publicly known cases with much information in the public domains. For Module 2, the Users may use the actual non-financial listed companies in the post-class case study. These resources facilitate learners' understanding and discovery of the applicability and limitations of financial ratio analysis in a real-life situation.

Learning points
A learner performs a 360 degree inside-out identification of early warning signals, only to find out that risk signals could be inconsistent with different data sources and time frames.
The learners will become aware of the necessity to broaden the horizons on identification of early warning signals.

SAMPLE

Sample Case-Based Questions
Module 1 - Submodule 1 Early Warning Signal

The learner may respond to the questions with a plan demonstrating his achievement in terms of ILO listed in Part (E) 1.1.1

Case-Based Question

Part (1) Note to Learners

1. Learners may supplement the information provided in the case outline with private and public research of the related macro-economic, industry, and company information.

2. The nature, size, and complexity of each bank's portfolios vary. The learners will apply their banks' practices for the recommended actions.

3. Learners have 90 minutes to complete a case-based question. The response should be put on a word document. The answers should be submitted to a designated email address.

Part (2) Declaration

The following is a hypothetical case.

Part (3) Client's Background

Company A is a Mainland property real estate company that constructs residential and commercial properties on the mainland while investing actively in the overseas property market. It is NOT your bank's customer.

- **Founded** – 1990s

- **Fast Growing –** Like many other companies riding on the mainland's economic boom in the past 20 years, it's a fast-growing company.

- **Heavily Indebted –** Company A was recently known as the most debt-bearing developer with its USD300 billion financial obligations.

Part (4) Recent Deterioration in Financial Strength

On news headline – Company A has recently been spotlighted in the financial section of the newspapers. In addition, there have been rumors about its debt repayment capability for some time. There was first default recently.

Root Causes - People cited various reasons for the deterioration of the financial situation, including the Beijing policy change to curb property prices. There are blames such as poor management and reckless expansion. It seemed to the public that the authority was not likely to bail out the Company.

Part (5) Interim Financial Statements as of Dec 2021

Trainers may provide an internet link or Dropbox link for easy retrieval of information on the financial statements for the simulated case. The sample on Page 104 demonstrates one of the schedules compiled by learners.

Part (6) You have an Assignment

It is now August 25, 2021, and there has been continuous development regarding Company A's situation, which has caused the market's attention with its possible enormous potential impact on the mainland, the economic sector, and the related industries. You are an RP in a commercial bank. Your supervisor has informed you that you have become a member of a dedicated sub-committee. Each team member handles different tasks.

Part (7) Your Mission

The bank's portfolio contains similar clients of the same sector, though with different scales. As a Task Force member, you will be responsible for delivering specific tasks (1) to (4) and, based on that, make suggestions that the sub-committee leader will integrate into the recommendation list for senior management's consideration.

The Senior Management wants the individual designated Task Force member to demonstrate competency in knowledge, skills, and behaviours with the deliverables from (1) to (4).

With the outcomes from Task (1) to (4), you can support the recommendations requested in Task (5), which you may further support with rationales, such as financial and root cause analysis.

The recommendations should contain the following actions:

- Immediate remedial actions
- Immediate monitoring measures
- Follow-up actions
- Update credit risk objectives
- Update of policy, guide, and standards
- Update of risk management strategies

Task Number	Assessment on	Deliverables	Points
1	Monitor portfolio – theory and practice	Compare business performance over the years. <u>Part (i)</u> Complete a spreadsheet to compare financial data for three or more years. <u>Part (ii)</u> Comment on three significant trends as an early warning signal	**Maximum** 4 points **Maximum** 4 points

Task Number	Assessment on	Deliverables	Points
2	Monitor portfolio – theory and practice	Analyse the relationship between profit, share price, and credit rating of Company A. Part (i) Compute a graph with three variables of net profit, share price, and credit rating Part (ii) Make three observations relevant to the identification of an early warning signal.	**Maximum** 4 points **Maximum** 4 points

Task Number	Assessment on	Deliverables	Points
3	Identify early warning signal	During COVID19, cross-border travel came to a halt. On-site visits are impossible. Part (i) Based on the raw data provided, prepare an inventory of Company A's construction sites Part (ii) Suggest three potential early warning signals for the industry.	**Maximum** 4 points **Maximum** 4 points

Task Number	Assessment on	Deliverables	Points
4	Identify early warning signals	Analyse external environment, industry situation and internal management factors. Part (i) Analyse the root causes leading to the credit default of A Company. Part (ii) Will the above causes remain "permanent," and that loan classification need to be reconsidered if Company A is one of your clients?	**Maximum** 4 points **Maximum** 4 points

Task Number	Assessment on	Deliverables	Points
5	Make recommendations	From analysis drawn from Task (1) to Task (4), Part (i) Summarize lessons learned Part (ii) Make recommendations in the following areas: - Immediate remedial actions - Immediate monitoring measures - Follow up actions - Update of credit risk objectives - Update of policy, guide, and standards	 **Maximum** 4 points **Maximum** 4 points

Consolidated Statement of Profit or Loss and Other Comprehensive Income

	2014	%	2015	%	2016	%	2017	%	2018	%	2019	%	2020	%
Amount expressed in billions	$		$		$		$		$		$		$	
Revenue														
Sales of properties	107.5		126.4		203.9		302.4		452.8		464.6		494.6	
Rental income	0.1	100%	0.2	100%	0.6	100%	0.8	100%	1.2	100%	1.4	100%	1.3	100%
Property management services	1.3		1.3		1.9		3.0		4.1		4.4		6.6	
Other businesses	2.5		5.1		5.0		4.8		8.2		7.3		4.9	
less: Cost of sales	-79.6	-71%	-95.7	-72%	-152.0	-72%	-198.8	-64%	-297.2	-64%	-344.6	-72%	-384.6	-76%
Gross profit	31.8	29%	37.4	28%	59.4	28%	112.3	36%	168.9	36%	132.9	28%	122.6	24%
Fair value gains on investment properties	9.4	8%	12.9	10%	5.1	2%	8.5	3%	1.3	0%	1.5	0%	1.3	0%
Impairment losses on financial assets	0.0	0%	0.0	0%	0.0	0%	0.0	0%	-0.1	0%	-0.2	0%	-0.3	0%
(Loss)/gain on disposal of subsidiaries	0.7	1%	0.0	0%	6.6	3%	0.0	0%	2.2	0%	1.1	0%	-0.2	0%
(Loss)/gain on disposal of joint ventures and associates	0.0	0%	0.0	0%	0.3	0%	0.1	0%	-0.1	0%	0.0	0%	0.3	0%
(Loss)/gain on disposal of available-for-sale financial assets	-0.2	0%	0.3	0%	0.0	0%	-7.2	-2%	0.0	0%	0.0	0%	0.0	0%
Net foreign exchange gains and others	0.0	0%	0.0	0%	0.0	0%	1.0	0%	0.6	0%	0.6	0%	-1.7	0%
Losses in relation to the restructions of Strategic Investors' equity interest in a subsidiary	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	-3.5	-1%
Interest income	0.3	0%	1.0	1%	3.7	2%	4.1	1%	3.9	1%	4.6	1%	5.7	1%
Forfeited customer deposits	0.0	0%	0.2	0%	0.4	0%	0.6	0%	0.8	0%	0.9	0%	1.4	0%
Gain on disposal of investment properties	0.3	0%	0.2	0%	0.4	0%	0.2	0%	0.1	0%	0.1	0%	0.6	0%
Dividend income of FVOCI	0.2	0%	0.0	0%	0.1	0%	0.4	0%	0.3	0%	0.0	0%	0.0	0%
Management and consulting service income	0.0	0%	0.0	0%	0.0	0%	0.0	0%	1.1	0%	0.6	0%	1.8	0%
Others	0.6	1%	0.8	1%	0.3	0%	0.3	0%	0.5	0%	0.8	0%	0.8	0%
Selling and marketing costs	-9.2	-8%	-13.3	-10%	-16.0	-8%	-17.2	-6%	-18.1	-4%	-23.3	-5%	-32.0	-6%
Administrative expenses	-4.0	-4%	-6.1	-5%	-9.6	-5%	-12.2	-4%	-14.8	-3%	-19.8	-4%	-21.1	-4%
Other operating expenses	-1.4	-1%	-1.1	-1%	-2.7	-1%	-5.6	-2%	-5.2	-1%	-5.0	-1%	-6.1	-1%
Profit/(Loss) from operation	28.6	26%	32.3	24%	48.2	23%	85.2	27%	141.4	30%	94.9	20%	69.7	14%
Fair value gain/(loss) on financial assets at fair value through profit or loss	3.8	3%	2.5	2%	0.1	0%	-0.4	0%	0.1	0%	-1.9	0%	0.0	0%
Fair value gain/(loss) on derivative financial liabilities	0.0	0%	0.0	0%	0.0	0%	-0.8	0%	0.8	0%	1.0	0%	2.2	0%
Interest expenses														
Bank and other borrowings	-12.0	-11%	-17.8	-13%	-26.1	-12%	-44.4	-14%	-48.4	-10%	-51.4	-11%	-58.5	-12%
Senior notes	-1.7	-2%	-1.5	-1%	-2.0	-1%	-4.5	-1%	-5.1	-1%	-11.9	-2%	-19.9	-4%
Convertible bonds	0.0	0%	0.0	0%	0.0	0%	0.0	0%	-1.1	0%	-1.4	0%	0.0	0%
PRC bonds	0.0	0%	-0.9	-1%	-3.6	-2%	-3.8	-1%	-3.3	-1%	-3.8	-1%	-3.3	-1%
less: interest capitalised	13.6	12%	20.3	15%	26.3	12%	45.1	14%	49.9	11%	50.9	11%	69.5	14%
Exchange gains/(losses) from borrowings	0.0	0%	-2.8	-2%	-4.9	-2%	1.0	0%	-6.2	-1%	-4.0	-1%	10.3	2%
less: exchange losses capitalised	0.0	0%	0.7	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%
Other finance costs	-1.0	-1%	-0.8	-1%	-1.1	-1%	-1.2	0%	-0.4	0%	-1.2	0%	-0.3	0%
Share of profit/(loss) of associates	-0.1	0%	0.2	0%	0.6	0%	1.2	0%	0.3	0%	4.6	1%	0.4	0%
Share of profit/(loss) of joint ventures	-0.1	0%	-0.6	0%	-0.8	0%	0.2	0%	-1.1	0%	-1.6	0%	-1.8	0%
Profit/(Loss) before taxation	31.2	28%	31.4	24%	36.9	17%	77.5	25%	126.8	27%	74.2	16%	68.2	13%
Income tax expense														
Hong Kong profit tax	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%
PRC corporate income tax	-6.6	-6%	-5.8	-4%	-11.1	-5%	-22.6	-7%	-36.2	-8%	-25.6	-5%	-27.9	-6%
PRC land appreciation tax	-4.2	-4%	-4.5	-3%	-8.4	-4%	-18.8	-6%	-27.3	-6%	-21.1	-4%	-16.7	-3%
Deferred income tax														
PRC corporate income tax	-0.8	-1%	-2.4	-2%	0.7	0%	0.4	0%	2.4	1%	3.8	1%	5.1	1%
PRC land appreciation tax	-1.5	-1%	-1.5	-1%	-0.5	0%	0.7	0%	0.9	0%	2.4	0%	2.7	1%
Profit/(Loss) after taxation	18.0	16%	17.3	13%	17.6	8%	37.0	12%	66.5	14%	33.5	7%	31.4	6%
Other comprehensive income														
Items that may be reclassified to profit or loss:														
Change in value of available-for-sale financial assets, net of tax	0.2	0%	0.0	0%	-3.0	-1%	2.2	1%	0.0	0%	0.0	0%	0.0	0%
Share of other comprehensive income of investments accounted for using the equity meth	0.0	0%	0.0	0%	-2.7	-1%	2.4	1%	0.1	0%	0.0	0%	0.0	0%
Currency translation difference	0.0	0%	0.0	0%	0.8	0%	-0.7	0%	0.5	0%	-0.3	0%	-0.2	0%
Items that may not be reclassified to profit or loss:														
Revaluation gains arising from transfer of construction in progress to investment propertie	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%
Share of other comprehensive income of investments accounted for using equity method	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%
Change in fair value of financial assets at fair value through other comprehensive income, i	0.0	0%	0.0	0%	0.0	0%	0.0	0%	-0.4	0%	0.0	0%	-0.1	0%
Total comprehensive income for the year	18.2	16%	17.4	13%	12.7	6%	40.9	13%	66.7	14%	33.3	7%	31.0	6%
Profit/(Loss) attributable to:														
Shareholders of the Company	12.6		10.5		5.1		24.4		37.4		17.3		8.1	
Holders of perpetual capital instruments	4.3		5.1		0.0		0.0		0.0		0.0		0.0	
Non-controlling interests	1.1		1.8		12.5		12.7		29.2		16.3		23.3	
	18.0		17.3		17.6		37.0		66.5		33.5		31.4	
Total comprehensive income/(loss) attributable to:														
Shareholders of the Company	12.8		10.5		0.2		27.4		37.5		17.1		7.9	
Holders of perpetual capital instruments	4.3		5.1		0.0		0.0		0.0		0.0		0.0	
Non-controlling interests	1.1		1.8		12.5		13.5		29.2		16.2		23.2	
	18.2		17.4		12.7		40.9		66.7		33.3		31.0	

Part (8) Learner's Response Plan

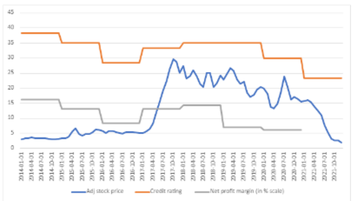
Task Number	Assessment on	Deliverables	Points
1	Monitoring of portfolio – theory and practice	Compare business performance over the years. <u>Part (i)</u> Complete a spreadsheet to compare financial data for three or more years. <u>Part (ii)</u> Comment on three significant trends as an early warning signal	**Maximum** 4 points **Maximum** 4 points

Response Plan

Part (i)	Points	Part (ii)	Points
Comparison of financial statements (See sample consolidated statement of profit and loss)	**Maximum** 4 points	Three significant trends were revealed from financial statement analysis as early warning signals. - Gross profit peaks in 2017 at 36% and drops until 2021 at 24%, lower than the 2010 level. - Profit from operations peaks in 2018 at 30% 2018 and drops until 2021 at a 14% level. - Repay a substantial loan from the provincial government instead of rolling-over.	**Maximum** 4 points

Task Number	Assessment on	Deliverables	Points
2	Monitoring of portfolio – theory and practice	Analyse the relationship between Profit, share price, and credit rating of Company A. Part (i) Compute a graph with three variables of net profit, share price, and credit rating Part (ii) Make three observations relevant to the identification of an early warning signal.	 **Maximum** 4 points **Maximum** 4 points

Response Plan

Part (i)	Points	Part (ii)	Points
	**Maximum** 4 points	Three significant observations regarding early warning signals: - In good years (2014 – 2018), credit rating moves in line with profit changes. - In a bad year, the credit rating changes lag behind profit drops - Share price growth rate disproportional to profit growth rate in a good year and remain high despite sustained profit plateau.	**Maximum** 4 points

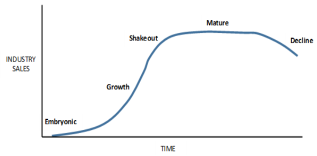
Task Number	Assessment on	Deliverables	Points
3	Identify early warning signal	During COVID19, cross-border travel came to a halt. On-site visits are impossible. Part (i) Based on the raw data provided, prepare an inventory of Company A's construction sites Part (ii) Suggest three potential early warning signals for the industry.	 **Maximum** 4 points **Maximum** 4 points

Response Plan

Part (i)	Points	Part (ii)	Points
[Internet link provided to learners] Company A owns 565 million square meters of development land and real estate project in 22 cities. e.g., Guangzhou e.g., Tianjin e.g., Shenyang e.g., Wuhan etc.	**Maximum** 4 points	One might be able to identify an early warning signal from the actual progress of the financed project - construction progress report - occupancy ratio - property unit price change - construction progress by visual (with help from branch staff on the mainland), etc.	**Maximum** 4 points

Task Number	Assessment on	Deliverables	Points
4	Identify early warning signal	Analyse external environment, industry situation and internal management factors Part (i) Analyse the sources and root causes leading to the credit default of A Company Part (ii) Will the above causes remain “permanent,” and thus loan classification needs to be reconsidered if Company A is one of your clients?	 **Maximum** 4 points **Maximum** 4 points

Response Plan

<table>
<tr><th>Part (i)</th><th>Points</th><th>Part (ii)</th><th>Points</th></tr>
<tr>
<td>Trainers may provide relevant Internet information link to the learners; or learners may search internet for relevant information


-</td>
<td>Maximum 4 points</td>
<td>The learner might draw a summary with relevant analysis:
<u>External factors</u>
The economic growth rate of A company’s primary market shrinks continuously
<u>Industry factors</u>
The construction rate is faster than the purchase by the market
<u>Internal factors</u>
Company A paid a significant amount of cash dividends. The company issued bonds at high rates to finance the construction projects</td>
<td>Maximum 4 points</td>
</tr>
</table>

Task Number	Assessment on	Deliverables	Points
5	Make recommendations	From analysis drawn from Task (1) to Task (4), Part (i) Summarize lessons learned Part (ii) Make recommendations in the following areas: - Immediate Remedial actions - Immediate monitoring measures - Follow up actions - Update of credit risk objectives - Update of policy, guide, and standards	**Maximum** 4 points **Maximum** 4 points

Response Plan

Part (i)	Points	Part (ii)	Points
- The learner draws lessons learned: - A listed company's disclosure in the annual reports might not contain all the necessary information for a thorough credit risk analysis. - The visible deterioration in a customer's financial status might be much harder to identify than the visual deterioration of the market environment. - The special purpose vehicles could have masked significant financial transactions. - The credit agency's rating might have a much longer time lag to adjust in a down-turning market than in an up-turning market.	**Maximum** 4 points	Immediate remedial actions - Review the trend of credit indicators for similar portfolios - Review the trend of credit indicators at account levels - Review the trend of credit indicators at counterparty levels - Immediate monitoring measures - Set a lower alert level for management to review the situations - Follow-up action - Perform stress-testing to identify vulnerable sectors in the portfolios: • Real estates • Construction sectors • Others - Update of credit risk objectives - Review and forecast the real estate market development for a relevant future period to consider if credit risk objectives need to be updated Update credit policy, guide, and standards - Increase review frequency - Lower review trigger - Tighten new loan criteria - Update classification of the loans in the relevant sectors Update of risk management strategy - Review the opportunity of portfolio rebalancing given the forecast of the economic situations and real estate market in a particular geography - Keep updated with the HKMA's latest circulars to review if any key regulations are to be complied with	**Maximum** 4 points

4 Assessment Criteria and Rubrics

Assessment Criteria

- When one response matches closely with one of the answers on the response plan, learner earns one point.
- The learner earns maximum points when there are more responses than those on the response plan, and each matches closely.
- Instead of looking at the score of individual assessment tasks, the trainer will refer to the integrated scores of all assessment tasks to review if the learners demonstrate essential knowledge and apply the knowledge in handling simulated situations and work situations.

Suggested Assessment Rubrics (Short Questions)

Maximum points from Question (1)	7 points	
Maximum points from Question (2)	7 points	
Maximum points from Question (3)	7 points	
Maximum Marks	20 points	20%

Suggested Assessment Rubrics (Long Questions)

Maximum points from Question (1)	8 points	
Maximum points from Question (2)	8 points	
Maximum points from Question (3)	8 points	
Maximum points from Question (4)	8 points	
Maximum points from Question (5)	8 points	
Maximum Points to Obtain (From Question (1) – (5))	40 points	40%

Suggested Assessment Rubrics (Case-Based Questions)

Maximum Points to Obtain	40 points	40%

5 Performance Grade

Calculation of scores

Module 1: Formula to Calculate Final Score

Short and Long Questions (a)	Case-based Questions (b)	Total score (a)+(b)
∑ Scores of all written assessment (--------------------------------------) 5	Scores of the case-based questions	

Module 2: Formula to Calculate Final Score

Short and Long Questions (a)	Case-based Questions (b)	Total score (a)+(b)
∑ Scores of all written assessment (-------------------------------------) 3	Scores of the case-based questions	

Performance Grades

The learner will achieve different outcome performance grade according to the total scores obtained in all the assessment activities. The passing criteria for individual Submodule and for overall Module are the same as stated below:

Performance Grade	Point Range	Definition
Distinction	91 – 100	The learner's work is distinctive. It exceeds the intended subject learning outcomes.
Good	76 – 90	The learner's work is good. It exceeds the intended subject learning outcomes.
Pass	50 – 75	The learner's work is satisfactory. It largely meets the subject learning outcomes.
Fail	21 - 49	The learner's work is below the required subject learning outcomes. The learner needs to retake all the assessments
Re-do	Below 20	The learner needs to retake the whole training programme

Please note that learners can meet the ECF-CRM benchmark by undertaking accredited training programme and passing examinations offered by the examination provider for the ECF-CRM qualifications.

G. SUPPORT MATERIALS FOR TRAINERS

The trainer is to provide the learning content. This section offers a quick reference to the content. Apart from providing the learning content, the trainer will also prepare a list of optional reading materials and a helpful website.

1 Module 1 Content Notes

1.1 Submodule 1: Early Warning Signal

Note to trainers:
Trainers can pick, change, and repackage the content sample below according to learners' needs

1.1.1 Introduction

Credit Risk Management takes place at both the account level and the portfolio level. Since various external and internal factors affect the credit risk level changes, day-to-day monitoring of account transactions and portfolio changes is essential. Measuring, analyzing, and controlling aggregated risks enables a bank to monitor the credit quality of loans by industries, counterparties, and geographies (and others). Early detection of credit quality deteriorating signal makes it possible for a bank to take loss prevention measures promptly. In addition, adequate credit risk management helps optimize the capital to support credit risk arising from credit portfolio.

1.1.2 Monitoring Portfolio – theory and practice

1.1.2.1 Basics in CRM for Identification of Appropriate Methods

Note to the trainer: RPs must be familiar with Credit Risk Management, constraints, and challenges, the systematic approach to tackle challenges, and the technology trend to overcome the obstacles.

An overall effective governance framework for credit process supports the RPs to carry out continual risk monitoring. RPs must be familiar with the circumstances leading to credit risk deterioration and the corporate finance models, which explain voluntary defaults to sensitize themselves with possible early warning signal.

(1) <u>Importance of credit risk management in CAMEL[5] rating</u>

RPs should be able to relate the credit risk management quality to the CAMEL rating. Credit Risk Management does not stand alone as an isolated function within a bank. Credit Risk Management Quality has implications on the CAMEL rating. The HKMA adopts the international "CAMEL" rating system to assess financial conditions and overall soundness of banks in Hong Kong. Inadequate credit risk management not just results in potential credit loss but could also create risks in other CAMEL risk areas (e.g., legal risk, reputation risk, and others). The table below shows the eight inherent bank risks:

Inherent Risk	Description
Credit risk	The risk that a borrower or counterparty may fail to fulfill an obligation. Credit risk assessment involves evaluating both the probability of default by the counterparty, obligor, or issuer and the exposure or financial impact on the AI in the event of default.
Market risk	The risk of an Authorized Institution's (AI) financial condition deteriorates due to the adverse movements in market rates or prices, such as foreign exchange rates, commodity, or equity prices. The primary determinant of the inherent market risk of a business line is the volatility of relevant markets. In assessing inherent market risk, one must consider the interaction between market volatilities and business strategies. For example, a trading strategy focusing exclusively on intermediation between end-users will tend to result in less market risk than a purely proprietary strategy.
Interest rate risk	The risk to an AI's financial condition resulting from adverse movements in interest rates. In determining the levels of interest rate risk, assessments are made of the levels of repricing risk, basis risk, options risk, and yield curve risk. In addition, evaluations are made of funding strategy with respect to interest rate movements and the impact of the overall business strategies on interest rate risk.
Liquidity risk	The risk that an AI may be unable to meet its obligations as they fall due. This may be caused by "funding liquidity risk", i.e., the AI's inability to liquidate assets or to obtain funding to meet its obligations. The problem could also be caused by "market liquidity risk," where an AI cannot easily unwind or offset specific exposures without lowering market prices significantly because of inadequate market depth or market disruptions.

5 Risk-based supervisory approach, <u>Microsoft Word - SA-1_8Oct_.doc (hkma.gov.hk)</u>

Operational risk	The risk of direct or indirect loss resulting from inadequate or failed internal processes, staff and systems or from external events. The evaluation of operational risk involves an assessment of both product and bank-specific factors. The relevant product factors include the maturity of the product in the market, the need for significant fund movement, the impact of a breakdown in segregation of duties and the level of complexity and innovation in the marketplace. A bank's specific factors, which can significantly increase or decrease the basic level of operational risk, include the quality of the audit function and programme, the volume of transactions in relation to system development and capacity, the complexity of the processing environment and the level of manual intervention required to process transactions.
Reputation risk	The potential that negative publicity regarding an AI's business practices, whether true or not, will cause a decline in the customer base or lead to costly litigation or revenue reductions. Market rumors or public perceptions are significant factors in determining the level of risk in this category.
Legal risk	The risk arising from the potential that unenforceable contracts, lawsuits or adverse judgments may disrupt or otherwise negatively affect the operations or financial condition of an AI.
Strategic risk	The risk of current and prospective impacts on earnings, capital, reputation or standing arising from poor business decisions, improper implementation of decisions or lack of response to industry, economic or technological changes. This risk is a function of the compatibility of an organization's strategic goals, the business strategies developed to achieve these goals, the resources deployed to meet these goals and the quality of implementation.

(2) Credit risk

Credit risk is the risk of an economic loss from the failure of a counterparty to fulfill its contractual obligations. Its effect on the bank is that it needs to replace the initially planned cash flows with an updated replacement cost. Credit risk arises during the lifetime of an obligation, from disbursement, subsequent drawdowns/transactions, payment, and settlement, and involves the possibility of non-payment.

Note to the trainer: the trainer may supplement the information on credit risk arising from trade finance and acceptances, interbank transactions, commitments and guarantees, interest rate, foreign exchange, credit derivatives (swap, options, forward rate agreements, and financial figures) according to needs of learners.

(3) Credit risk management system

Credit risk management system carries out the credit risk management activities, requiring banks to allocate adequate resources for the delivery of critical processes which are justified and supported by appropriate documentation:

- People
- Process
- Documentation

The table below lists out the three orientations of credit risk management:

	Credit Risk Management Orientation	Examples
1	Process	A risk management system refers broadly to the policies, systems, and procedures adopted by banks in identifying, measuring, monitoring, controlling, or mitigating, and reporting the various types of risk they face[6]. Credit risk management system is broadly in alignment with this description.
2	Purpose	A credit risk management system enables a bank's capacity to identify risks and react to financial stress. Credit Risk Management is the comprehensive risk management system to manage credit risk, the risk that a borrower or counterparty fails to meet its obligations.
3	Actions	A credit risk management system betters a bank's understanding of the adequacy of its capital and loan loss reserves concerning the credit risk taken. It enables a bank to cumulate its credit risk-related knowledge and experience for quality implementation of good practices of credit risk mitigation measures and remedial actions.

(4) Credit risk management governance

RPs must understand the system view of Credit Risk Management thoroughly. It is a continuous governance process of credit initiation, risk monitoring, risk mitigation, and check and balance on credit guidelines to ensure the bank's credit risk stays within the pre-set risk appetite to minimize loss and optimize capital utilization. Credit risk management is both a science and art, taking the investigative approach to assess credit risk.

(5) Credit risk management scale

Credit Risk Management requires resources: trained and skilled people and finance. RPs should be able to judge if the in-house credit risk management system has a sophistication that is in line with the bank's strategic positioning. The HKMA expects all banks to have comprehensive credit risk management systems appropriate to their types, scope, sophistication, and scale of operations. These systems should enable banks to identify, quantify, monitor, and control credit risk and ensure that adequate capital resources are available to cover the risk.

[6] HKMA SPM IC-1 General Risk Management Controls

(6) Credit process

The RPs should possess knowledge about end-to-end credit process, which is fundamental to credit risk management. Therefore, the HKMA has specific clauses (e.g., CR-G-1) on the relevant process for RPs' reference.

- Credit strategy and policy
- Risk Management
- Credit Initiation
- Credit Evaluation, Approval and Review
- Credit Administration
- Credit Measurement and Monitoring
- Problem Loan Management
- Independent Audit

(7) Credit risk management structure

The HKMA has a suggested basic structure of credit risk management system, but banks have some discretion, for example:

- Product type
- Degree of sophistication (markets, borrowers, counterparties)
- Scale

(8) Constraints and challenges

Portfolio credit management is to overcome constraints and challenges regarding the limitations and challenges of managing the credit risk of individual accounts. The table below shows examples on constraints and challenges:

Constraints	Challenges
Information asymmetry[7] affects the quality of Financial Analysis	System risk impacts industries and industry risk impacts borrowers and counterparties

[7] Refer to Module 2 content notes as well

(9) Technology solutions to overcome constraints and challenges

Note to the trainer: with the fast development of Artificial Intelligence technology applications in credit risk management, the RPs should be encouraged to keep abreast of the latest development in the banking industry regarding the application of machine learning[8] which will gradually supplement the traditional blind spots in credit risk behaviors.

The table below shows where artificial intelligence technology brings improvement in credit risk management:

Application of Artificial Intelligence for Estimating Probability of Default	Application of Artificial Intelligence in Early Warning Signal
Traditional probability of default (PD) models relies heavily on logistic regression. Logistic regression models are relatively easy to understand and interpret. However, some recent Artificial Intelligence technology experiments show that it outperforms logistic regression models in multiple performance measures.[9]	Traditional methods rely much on expert judgment. Artificial Intelligence is good at generating credit default signal by discovering patterns based on large volume, high-velocity data. With sufficient computational power, Artificial Intelligence algorithms can generate early warning signal using indicators from various sources and increase the indicators' accuracy.

(10) Analytical approach on risk

Meticulous analysis of financial and cash flow statements helps to overcome the issues of information asymmetry. In addition, studying external, industrial, and internal factors helps to have a comprehensive approach to identify and include all risk factors with a high potential of happening and significant impact on the risk level of the loans. The table below shows examples of risk factors:

External, Industrial, Internal Factor Analysis	External Risk Factors	Industry Risk Factors	Internal Risk Factors
Explanation	External risk factors which have general impacts on all the borrowers	Industry risk factors have general impacts on all the companies within the industry	Internal risk factors which are specific to the borrower or counterparty
Examples	Social-political risk Macro-economic risk	Industry regulatory risk	Business risk Financial risk

[8] Trainers may provide articles on the latest AI applications for credit risk management
[9] Artificial Intelligence for Credit Risk Management | Deloitte China | Risk Advisory

(11) Credit default circumstances

RPs should be aware of different circumstances when a borrower or counterparty fails to meet its obligations, which has a consequence on its credit rating and hence the performance of the loan portfolio. This practice applies to the banking and trading books, on and off the balance sheet. The circumstances of default are summarized below.

- Non-fulfilment of debt servicing
- Non-fulfilment of other terms and conditions

The RPs should be sensitized to the above circumstances so that appropriate reminders to the client would help the bank to arrive at a win-win situation where the borrower's creditability remains intact, and the bank keeps on meeting risk-return targets.

(12) Theories/models for credit risk management

One of the models which explains the voluntary default behaviour of a borrower is the **Merton Model**, which attempts to explain why shareholders would default with option theory. An RP should thoroughly understand this model to sensitize the circumstances under which a borrower is likely to default.

(13) Corporate finance theories relevant to credit risk management method

Note to the trainer: RPs should be familiar with the corporate finance theories which explain the corporate borrowers' behaviours which could lead to increased default risk.

The table below describes the corporate finance theories which explain the behaviours of the corporates, which might lead to potential circumstances resulting in credit default. For instance, if the shareholders encourage the board of directors' bonus pegged to stock price rather than the company's financial strength, it's natural to expect the board to develop a corporate strategy to maximize stock price.

Year	Corporate Finance Theory	Focus of the Theories	Possible behaviours
1960s	Trade-off theory	These studies focus on the analysis of benefits and costs deriving from leverage. They study how the firm balances the bankruptcy costs with the help of tax shields derived from taking on debt.	A company sets a target debt ratio which it aims to achieve. i.e., static capital structure.
1970s	Agency Theory	These studies focus on the conflicting interest between managers and shareholders; and between creditors and shareholders.	A company's shareholders make decisions through agencies, while the shareholders are agents for creditors. But creditors do not have a say in the management.
1st half 1980s	Pecking Order Theory	These studies focus on the information asymmetries among investors and firms.	A company's less informed investors need an incentive, i.e., a higher return to invest in risky securities. Internally generated funds, therefore, represent the best financing option, whereas using external capital would be the last finance alternative.
2nd half 1980s	SWOT PEST	These studies focus on the corporate finance structure based on the factors associated with industrial strategies and corporate organization.	A company's management band strength, quality of management, and industrial strategies impact its decision on the debt-equity mix.
1990s	Various studies	The studies in this period focus on the trade-off theory and the pecking order theory	Refer to the studies in the 1960s.
2000s	Various studies	The studies in this period focus on the study of the capital structure being a consequence of the necessity of market timing.	Conduct adequate empirical analyses of the structure of corporate finance.

1.1.2.2 Basics in Credit Strategies for Identifying Crucial Area of Monitoring

(1) Elements of credit strategy

Note to the trainer: RPs should be familiar with the modern portfolio theory of building a portfolio of more borrowers. Modern banking risk management builds upon the view that a portfolio of loans is less risky than single loan[10].

Adequate credit risk strategy consists of credit rating assessment, credit monitoring, risk mitigation, and timely payment follow-up. For instance, portfolio diversification is a credit risk strategy based on the premise that given a particular loan amount, the more the borrowers, the lower the probability of default, up to a certain extent, and vary according to circumstances.

(2) Portfolio credit risk management objectives

Note to the trainer: RPs should be familiar with the five portfolio objectives to exercise good credit risk management judgment.

Proactive management enables a portfolio to generate profit, produces a reasonable return on equity, enabling a bank to survive adverse situations. Credit risk management wants to achieve five objectives with adequate credit risk management at account and portfolio levels. The analytical framework below shows the relations between the objectives and credit risk management.

Portfolio Level Credit Risk Management	**Establish Risk Appetite**	**Rebalance Portfolio Risk Level**	**Rebalance Portfolio Return**	**Monitor Loan Provisioning**	**Review and Act upon information feedback**
Credit risk management objectives	**Compliance with credit policies**	**Select the opportunities with the adequate risk**	**Price the risk adequately**	**Minimize bad debt**	**Feedback to the credit policies improvement**
Account level credit risk management	**Solicitation**	**Risk Assessment**	**Pricing**	**Monitoring**	**Reporting**

[10] ***Additional Resources – Suggested Cases for Newsroom to discuss importance of having more borrowers***

- ***Peregrine Investment Holdings*** *- Investment bank failure caused by default of a single loan (1/4 of the Bank's equity capital) to an Indonesia taxicab operator.*
- ***Carrian Group*** *- The Group is the single largest borrower of the subsidiary of a Malaysian bank (exceed the Bank's equity capital). Its credit default also caused the failure of the bank.*

1.1.2.3 Basics to Identify Signals for Escalation

The RPs should possess knowledge about the end-to-end credit process because deterioration of credit quality generates noises, i.e., early warning signal that will show up throughout the process:

- Credit strategy and policy
- Risk management
- Credit initiation
- Credit evaluation, approval, and review
- Credit administration
- Credit measurement and monitoring
- Problem loan management
- Independent audit

Early warning signals for credit risk are indicators that specifically anticipate credit risk events. For example, the quantitative or qualitative indicators of asset quality, capital, liquidity, profitability, market, and macroeconomic metrics can be early signals. Together with other early warning indicators from the different risk areas (CAMEL), they provide information for timely remedial actions at account and portfolio levels.

<u>(1) Credit risk management process: Identify, Measure, Monitor and Control</u>

A complete credit risk management comprises the four stages of identification, measurement monitoring and controlling credit risk. Therefore, quality credit risk management requires cross-enterprise collaboration. Through collaboration, the bank can identify early warning signals' timeliness. The summary below shows the enterprise collaboration.

Credit risk management process	**Sources**	**Information level**	**Information source**		**Endeavor to reveal early warning signals**
			Internal	External	
Identify	Geo-political situation (Also refer to Note 1)	Portfolio		X	Analyzing the impact of geo-political situations on credit risk is particularly important for sizable banks with borrowers and counterparties in the regional or global markets
Identify	Macro-environment scanning (Also refer to Note 2)	Portfolio		X	Applying business tools such as PESTEL to assess outcomes of macro-environment scanning
Identify	Business environment scanning	Account		X	Applying business tools to summarize outcomes of competitive environment scanning: - SWOT Analysis - Five Force Model

					- Canvas Business model
Identify	Portfolio analysis	Portfolio	X	X	Analyzing the portfolio assuming stressful conditions using: - Stress testing - Sensitivity analysis
Measure (Also refer to Note 3)	Portfolio analysis	Portfolio	X		Analyzing the portfolio characteristics assuming normal conditions: - Product type - Product growth - Sector type - Sector growth - Internal credit rating - Trend and ratio - Risk migration - Risk concentration - Asset quality - Provision - Connected parties
Monitor	Borrowers' information	Account		X	Monitoring the borrower's situations - A key executive of a borrower is in ill health - A change in the borrower's leadership team - The borrower is the subject of litigation which have a significant impact on his financial position - The borrower has difficulty servicing other loans even though the loan in concern is still serviced timely
Monitor	Credit administration (Also refer to Note 4)	Account	X		Monitoring the fulfillment of terms and conditions of the loan account
Monitor	Migration of internal rating (Also refer to Note 5)	Portfolio	X		Monitoring the deterioration on repayment capability

Control	Collateral and guarantees review	Account	X		Reviewing the market value, legal right, and control - Market price increase/decreases - Condition of collaterals should be surveilled - Control over collateral is robust/questionable - Default event in another bank
Control	Alerts from reporting system	Portfolio	X		Establishing alert trigger when aggregated exposure approaches various pre-set portfolio limits as set out in the credit policy

Note (1) Consciousness of the geo-political situations – early warning signal
Globalization trend in the past decades has increased the interdependency between the prosperity of sovereign states. For instance, instability in one region could be a source and cause of instability in another.

Note (2) Generating early warning signal via environment scanning
RPs should be aware that continuous scanning of business and economic cycles is essential, and regularly stress-test the portfolio is a required discipline against adverse market scenarios.
For instance, a slowdown in business or a negative trend in the borrower's operations signals a potential weakness in the borrower's financial strength but has not reached a point to jeopardize the servicing of a loan. Poor performance in the industry in which the borrower operates.

Note (3) Generating credit risk indicators
RPs may refer to "Basics to detect changes of risk indicators" to grasp a quick understanding of the risk indicators.

Note (4) Generating early warning signal during credit administration fulfillment
Credit administration process provides an excellent pool of data and information that hints at credit behaviours (and their changes) on individual loan accounts. Organizing, aggregating, and reporting the data and information from credit administration completes the management information cycle from loan initiation down to loan maturity. It also provides an early warning signal as any non-fulfillment of terms and conditions of the loan is a hint of the deteriorating repayment capability of the borrowing accounts.

Note (5) Generating early warning signal via review on the migration of internal ratings
With the advancement of information, the internal rating has become increasingly important management and supervisory tool.

- Banks seek to improve the sophistication of their loan classification system beyond the grading system currently employed for regulatory reporting.
- Banks seek to adopt multiple grades for loans that are not yet irregular and to develop the ability to track the migration of individual loans through various internal credit ratings.

(2) Signals at account level

RPs should listen to the noises throughout the credit process because they could be early warning signals about the credit risk deterioration in accounts and portfolio levels. The table below lists out some credit risk management methods to detect noises continually.

Performed by	Proposed Frequency	Methods to identify early warning signals
Front office	On-going	Keeping regular contact with customers (including site visits and meetings)
Back office	Daily	Following up documentation deficiencies
Middle office	Daily	Reviewing exceptions and overdue accounts
Middle office/ Back office	On-going	Monitoring compliance with credit facility terms
Middle office/Compliance unit	Daily	Monitoring compliance with internal and regulatory limits
Back office	Weekly	Identifying and following up outstanding credit reviews and expired facilities
Back office Back office	Daily Quarterly	Performing collateral revaluation - Stock and shares - Real estate (classified accounts)
Middle office/Senior management	Monthly	Reviewing adequacy of provision for individual accounts
Middle office	On-going	Monitoring performance of large exposures
Front office/ Back office	Daily	Following up customers for late payments
Front office (less serious) / Middle office	On-going	Taking remedial action for loan recovery

(3) Signal at portfolio level

The analytical framework below shows how the early warning signal is identified at portfolio level with the monitoring of target-actual performance gaps:

<table>
<tr><th colspan="2" rowspan="2">Portfolio Performance</th><th colspan="2">Credit Risk</th></tr>
<tr><th>Quality of Loans Meets Target</th><th>Quality of Loans Below Target</th></tr>
<tr><td rowspan="2">Business Risk</td><td>Product % meets target</td><td>CRM
Monitor portfolio continuously

Business Strategy
Monitor portfolio continuously</td><td>Credit Strategy
Take Immediate remedial actions to lower portfolio credit risk and to ensure adequate loan provisioning

Business Strategy
Adjust the business strategy to reduce risk level of the new loan intakes</td></tr>
<tr><td>Product % below target</td><td>Credit Strategy
Look for enhancement opportunity</td><td>Credit Strategy
Take Immediate remedial actions to lower portfolio credit risk, to</td></tr>
</table>

		Business Strategy Reshuffle business targets within credit risk appetite for compensating profit	ensure adequate loan provisioning and capital adequacy **Business Strategy** Adjust the business strategy to reduce risk level of the new loan intake

(4) Signals at macro-economic level

The financial crisis in the economies in recent decades resulted in severe vulnerabilities in the region or the global markets. There are five types of exposure, including macro-environment, market, credit, US Dollar liquidity, and Contagion. In addition, several macroeconomic indicators might provide early warning. The indicators include, for instance, exchange rate, domestic credit, credit to the public sector, and inflation rate.

(5) Other essential signals

Note to Trainer: Do encourage RPs to share other essential signals learned from their professional career, be them at the account, portfolio, and macro-level.

1.1.2.4 Basics of Sources and Causes of Changes for Remedial Actions

(1) Knowledge management of all inhouse, external and industry information

Note to the trainer: RPs should be familiar with all sources and causes of changes in the risk level of different economies and industries to sensitize to the identification of early warning signal.

Many banks provide RPs with sufficient information/exposure to external environment changes with:

- Bank's proprietary economist report
- Bank's proprietary industry report
- Bank's proprietary expert sharing
- RPs share experiences among working peers
- Departmental sharing on lessons learned (e.g., default cases) from default event
- Sharing from the industry consultants engaged by the bank

It's RPs' responsibility to organize their knowledge[11] in an easily retrievable manner for more sharing among the peers within the team.

(2) Internal, external, and industrial factors

Note to the trainer: most RPs perceive the extreme challenge in identifying early warning signal. Instead, they should have an aerial picture of all potential risk factors.

[11] ***Additional Resources***
International rating agencies have comprehensive research libraries on sovereign defaults. There is also research on the characteristics of failed banks based on loss given default. These lessons learned provide insight into the identification of early warning signals.

The table below lists out some possible combinations of various sources and causes leading to a single or multiple default events:

External Factors				Industrial Factors	Internal Factors of Borrowers
Public Health	**Geo-political**	**Government Policies**	**Economic**		
Pandemic e.g., 2020 pandemic	**Conflicts** e.g., Indian-China border dispute **Wars** e.g., Ukraine-Russia war	**Monetary policy** e.g., nations' overall money supply increased after the 2007 financial tsunami **Fiscal policy** e.g., the Construction of high-speed rail in China stimulated economic growth **Foreign currency control** e.g., China, Malaysia, India, and some other countries still exercise some foreign currency controls **Sovereign debt policy** e.g., local governments across China have borrowed substantially in recent years to fund public infrastructure improvements and other capital investments **Profit tax and tariff** e.g., worldwide and territorial approaches to taxation	**Economic Cycle** - Growth - Rapid Growth - Stabilization - Decline **Inflation rate** e.g., the Global inflation rate for the consumer price index is above 9% (March 2022) **Unemployment rate** e.g., the Unemployment rate for Chinese people ages 16 – 24 grew from over 10% in 2018 to 18.4% in May 2022. **Commodity price** - Oil - Bean **Stock market Index** **Property market index** **Banks' competition** e.g., fierce competition leads to loan pricing decrease	**Cyclical** (Counter-cyclical) **Regulations** e.g., China put forward antitrust guidelines and rules in e-commerce platforms, social media providers, and live-streaming services since 2020 **Technology advancement** e.g., technology advancement has driven out some long-time businesses with traditional business models **Environment rules and regulations** e.g., China had significant reform on its Environment Protection Law in 2015 **Energy prices** e.g., World Bank's energy price index increased by 26.3% from	**Life stage** - Start up - Growth - Rapid growth - Plateau - Decline **Business model** - Key business drivers - Business strategy to ride on key business drivers **Management quality** - Management team analysis - Via analysis with SWOT Canvas **Equity/debt leverage** **Sensitivity to the Five Forces** - Suppliers power (e.g., reflected in negotiation power) - Customers power (e.g., reflected in price sensitivity) - Product substitute - Competitions (e.g., reflected in market share) - government - operations

		Foreign direct investment policy e.g., FDI is still prohibited and restricted in a number of areas		Jan – April 2022 and 50% from Jan 2020 – Dec 2021 **Supply chain switch** e.g., supply chain shift from China to some Southeast Asia countries since the Pandemic **Entrance hurdles** e.g., China forbids foreign investment in some sectors while encouraging it in others	

1.1.2.5 Exercising Unbiased Judgment

Credit Risk Management requires both scientific skills and the exercise of judgment. Knowledge management is the key to impartial and unbiased judgment.

(1) <u>Review and prioritize risk level of external, industrial, and internal factors</u>

RPs should understand that the systematic analysis of external, industrial, and internal factors is imperfect because of time change, information asymmetry, and technological advancement. All of these create uncertainties over time at account and portfolio levels. Such awareness enables the RPs to monitor changes continuously, identify and articulate the risk factor changes to the credit risk level changes. The table below shows examples of sources of risk:

Uncertainties	Sources of Risk at Account Level	Sources of Risk at Portfolio Level
Due to time changes	All external, industry and internal factors change with time (Note 1)	
Due to information asymmetry	Directors have fiduciary duty towards shareholders rather than creditor (Note 2)	
Due to technology changes	Technology advancement changes consumer behaviours drastically over time (Note 3)	

<u>(Note 1) Account level uncertainties arising from change of time</u>
Credit risk changes continually. Continual monitoring with adequate tools is essential to ensure banks take timely remedial actions. The table below lists out some tools to gather data and information for assessing risk and its changes.

To Gather Data and Information for Risk Assessment			
Initiation	**Interim Review**	**Continual Monitoring**	**Unforeseen Event**
Borrower level - delinquency analysis **Portfolio level** - portfolio analysis	**Borrower level** - Site visit - Interview with borrower - Peer comparison **Portfolio level** - Portfolio monitoring	**Borrower level** - Five Force Model - SWOT analysis - Canvas business model **Portfolio level** - Environment Scanning on macro environment and industry environment	**Portfolio level** - Stress testing - Scenario analysis

(Note 2) Information asymmetry
Company directors owe the fiduciary duty to act in the best interest of shareholders. Therefore, creditors neither have complete information nor influence on the companies' business decisions.

Because of the above asymmetric characteristics of the director's duties towards shareholders and creditors, information asymmetry, among other uncertainties, might exist between directors and creditors. The analytical framework below shows some examples on information asymmetry:

<table>
<tr><th></th><th>Known to Borrowers</th><th>Unknown to Borrowers</th></tr>
<tr><th>Known to Lenders</th><td>Snapshot information
- Audited balance sheet
- Audited income statement
- Audited cash flow statement
Principles and regulations
- Company policies
- Accounting principles
- Law and regulations</td><td>Credit portfolio behaviours
- Cumulated knowledge on portfolio behaviours over time</td></tr>
<tr><th>Unknown to Lenders</th><td>Dynamic information
- Day-to-day business, income, and expenditure momentum
Assumptions
- Exhaustive and proprietary assumptions on pro-forma statements
- Exhaustive and proprietary assumptions on cash budget</td><td>Unpredictable credit risk events
- Black swans, an unpredictable event that is beyond what is normally expected of a situation and has potentially severe consequences</td></tr>
</table>

Note (3) Technology advancement and consumer behaviours
Technology changes could drive changes in consumer behaviours fast and dramatically, without pre-empting warning to non-leader entities. There are lessons learned from renowned companies. The table below shows some well-known examples.

Industry	Technology Change with Significant Impact on Competitive Landscape
Camera company	Digital camera replaced traditional camera
Shaving product company	Digital sales platforms, and shaving behavior change, replaced traditional retail distribution channels
Smart phone company	Touch screen technologies replaced keyboard

(2) <u>Review and prioritize contagious effects on portfolio performance</u>

Upon aggregating uncertainties at the account level to the portfolio level, RPs should consider the correlation between industries, sectors, counterparties, and others, which results in either reduction or contagious effect on portfolio risk levels.

The table below shows examples of credit portfolio scenarios that may trigger contagious effects on portfolios. Therefore, identifying early warning signals of all these scenarios is essential. In addition, analyzing the causes and sources of root causes of these signals enables mitigation measures to minimize contagious risk to be taken timely.

		Credit Risk Indicator	
Sources and Causes		**Target Met**	**Target Missed**
Product percentage distribution	**Meets target**	Stable business environment	Unforeseen changes in - Systematic factors e.g., deteriorating economic conditions due to COVID19 pandemic outbreak - Industry factors e.g., European green policy requests all cargo fleets to achieve carbon emission targets
	Miss target	- Tendency to acquire loans from familiar sectors - Marketing strategy yet to be aligned with business strategy	- Marginal credit applications approved

(3) <u>Assign independent party for risk monitoring</u>

With identified early warning signals such as borrowers' difficulties in business situations, delinquency, or other irregular symptoms in any accounts, banks should assign competent credit RPs to conduct a detailed review of the creditworthiness and the repayment ability of the customers concerned.

- Management should appoint an independent officer to conduct the in-depth review
- The independent officer should recommend remedial actions to protect the bank's interest.
- The independent officer should subsequently report to the Credit Committee or senior management on the results of the remedial actions.

1.1.3 Identify Early Warning Signal

1.1.3.1 Overview of Credit Administration Function

(1) Compliance with T&C

Note to the trainer: RPs should be familiar with credit administration regarding loan account credit quality. The monitoring is basic but essential to upkeep the quality of the loan account, hence the portfolio.

Banks should have designated departments administering their various credit risk-bearing portfolios. Credit Administration Department also performs the critical control and risk management functions. The table below shows the risk monitoring functions:

Control and Risk Management Functions[12]	Credit Risk Monitoring
- Ensure that new credit applications have been property approved	- Sustaining credit risk culture by compliance with credit guidelines
- Enter facility limits promptly and accurately into the computer system	- Reflecting credit risk in the portfolio risk level indictors
- Prepare loan documentation (loan agreements, guarantees, transfers of title to collateral to the bank)	- Ensuring secondary source of repayment when the credit goes default
- Arrange for the safe custody of important legal documentation	- Ensuring legitimate entitlement upon credit default
- Verify customer's authority to borrow	- Ensuring legitimate entitlement upon credit default
- Conduct valuation of collateral	- Monitoring periodically of the protection provided by the secondary source of repayment when the credit goes default
- Establish effective liens on deposits	- Ensuring source of repayment upon credit default
- Check whether drawdowns have been approved	- Ensuring that the drawdown purpose is the same as the loan application purpose.
- Arrange funding and coordinating with the Treasury function to fix interest rates for loan disbursement	- Ensuring risk taken is commensurate with the spread between funding cost and revenue
- Keep track of customers' compliance with credit terms	- Detecting early warning signals with the follow-up on irregularity regarding compliance with the credit terms
- Monitor the receipt of repayments	- Ensuring timely follow-up of any irregular repayments and detect if there are irregular events which could be default events
- Obtain customers' current financial information	- Detecting early warning signals with the follow-up on irregularities regarding compliance with the credit terms
- Keep credit files complete and up to date	- Ensuring timely identification of any missing information as potential hints of early warning signals.
- Producing management information on the credit portfolio	- Providing feedback to the management regarding compliance of credit guideline, changes in credit risk levels, irregularities, and credit portfolio performance.

[12] Section G Subsection 3.1 of HKMA SPM CR-G-3 Credit Administration, Measurement and Monitoring

(2) Operational Review

Operational risk will flow over to credit risk in many circumstances. For instance, the oversight of the timely receipt of the complete set of interim financial statements might be a human error in the operational risk. However, the risk could flow over to the credit risk if the delayed submission is an early warning signal that the borrower has an issue with the auditor on the company's audited reports. Therefore, the RPs should be aware of, in compliance with and review all the operational risk management processes to control any possible operational risk.

1.1.3.2 Basics to Detect Changes of Risk Indicators

Credit risk analysis is a rigorous study of credit risk through meticulous dissections to overcome information asymmetry. Tracking credit risk indicators helps to fulfill the credit risk study objectives.

(1) Key drivers of credit risk (EAD, PD, LGD, Tenor): single debt and portfolio

The table below shows examples of risk focuses during different stages of a loan, including their quantification such as exposure at default, probability of default, loss given default and tenor risk, as well as control measures:

<table>
<tr><th>Stages of Loan</th><th>Credit Indicators</th><th>Quantification</th><th>Means of Risk Control</th></tr>
<tr><td>1.
Disbursement stage
What's the loss if the borrower goes default?</td><td>Exposure at Default (EAD), or credit exposure</td><td rowspan="2">Three concepts of exposure
Gross Exposure i.e., total commitment

Net Exposure i.e., used amount

Adjusted Exposure i.e., Net Exposure X expected usage given default</td><td rowspan="2">Credit limit
Per underwriting criteria</td></tr>
<tr><td>2.
Repayment stage
What is the loss if borrower goes default the remaining balance?</td><td>EAD, or
credit exposure
(Decrease gradually as the outstanding loan decreases)</td></tr>
<tr><td>3.
Disbursement and repayment stage
How likely the borrower will default?</td><td>Probability of Default (PD)</td><td>Statistical indicators
Represent the likelihood that a borrower will default during the lifetime of the credit.

The following indicators are means to measure the same risk expressed from different perspectives:</td><td>Credit rating
Accept an application if it has best rating of "1"</td></tr>
</table>

		e.g., default rate e.g., default Probability e.g., probability of default	
4. **Default stage** What will be the recovery amount?	**LGD** **i.e.,** 100% less Recovery rate	**LGD decreases over time** Credit Exposure less the amount of money recovered upon default, expressed as a percent of the gross exposure.	**T&C** Have borrowers to sign security packages upon underwriting to have stronger protection e.g., T&C to ensure speedy recovery upon default e.g., the bank is a creditor of higher seniority e.g., availability of lien on assets
5. Tenor What is the period in which some or all the loan amount is at risk?	**Tenor**	**Two concepts of tenor** - Notional tenor - Effective tenor	**Regular repayments** Shorten the tenor effectively

Note (1) Probability of default

The probability of default is a statistical indicator representing the likelihood that a counterparty will default in the future. The credit agencies develop models to compute the likelihood of default assignment to an individual account for underwriting consideration and ongoing credit risk monitoring. As a result of the 2007 financial crisis, the credit agencies' rating is subject to controversy[13]. In the wake of the financial crisis in 2007, the rating agencies came under criticism from investigators and economists.

Note to trainer: Encourage the learners to share examples of portfolio risk monitoring to draw out the basic understanding and to share the concepts more in depth. Example of relevant reading from Basel shows in the footnote.

Credit risk of single debt could be reduced when it is put into a portfolio. When traces of single debt in a portfolio becomes blue, one monitors the portfolio behaviours[14] to identify changes in credit risk. The list below suggests the indicators for portfolio risk management:

- Default correlation which is the key driver to the default of several debts by different debtors
- Value at risk which is higher for a higher probability of default
- Probability of default which are affected by default correlation

[13] Reference case: **Merrill Lynch** – sold more than $30 billion of collateralized debt obligations for a minimal amount in 2008.

[14] Measuring portfolio credit risk correctly: why parameter uncertainty matters, April 2009 (bis.org)

(2) Challenges to estimate credit risk

RPs must be familiar with the various hurdles to assess the credit risk level of an account. Considering the credit risk level, an RPs will be more capable of soliciting means to contain the credit risk within the bank's risk appetite.

Interactive and multi-dimensional risk factors

Identifying the relevant risk factor is challenging. When analyzing the risk factors, there are also multiple dimensions to consider. The table below illustrates an analytical framework that considers external and internal factors impacting a budget airline business probability of default, taking the wrong side to cover the energy price risk.

Risk Factors	**Impact on**				**Probability of Happening**			**Direction of Impact**	**Impact upon Happening**		
External factors	Business strength	Financial strength	Management strength	Cash flow	High	Medium	Low		Significant	Moderate	Weak
Energy price		X		X	X			Negative	X		

Information asymmetry about management team quality and integrity

RPs find it hard to ascertain management team quality if there is a lack of good relationship with borrowers. Public images of borrowers alone do not necessarily reflect management quality. The table below shows some examples where management integrity has disappointed the public:

Case	**Company Nature**	**The Situation**
1	Lab Test on Blood	The start-up company's claim on technology exists in theory but has not yet been proved.
2	Real Estate Development	Notorious credit default cases in the 80s showed over-expansion with substantial loans to single borrowers led to bank failures.

Assessing the borrower's resilience in face of adverse situation

The PD is the most valuable predictor in a loan initiation as it affects the bank's profitability and indirectly impacts the bank's other risk areas. Therefore, assigning an internal rating to each loan account is an effective credit risk management technique.

(3) Suitable method to aggregate risk at portfolio level

RPs should be familiar with each credit risk aggregation method's pros and cons to understand their evolvement and select the suitable method to track credit risk, apart from considering the portfolio scale and the bank's resources to manage credit risk. The table below shows some examples of the risk management method fitting different life stage of a loan:

Evolution Of Credit Risk Measurement	Stage (1) Notional Amount	Stage (2) Risk Weighed Amount	Stage (3) Amount of Risk Weighed with Credit Rating	Stage (4) Internal Portfolio Credit Model
Aggregation of exposures	Add up the Credit Exposure of each account	Add up the adjusted credit exposure of each account i.e., Credit Exposure X Estimated adjustment for the Risk	Add up the adjusted credit exposure of each account i.e., Credit Exposure X PD implied by the risk rating	The most sophisticated method with integration of all dimensions of credit risk to arrive at the portfolio level risk[15]
Pros	Simple	Simple	Refined representation of credit risk	Refined representation of credit risk
Cons	Ignore Probability of default	Ignore probability of default	Portfolio diversification effect not taken into account	Elevated cost of data aggregation for credit risk management e.g., model development, auding
Potential negative consequence	Overstate profitability of shareholders	Overstate profitability of shareholders	Understate profitability of shareholders	To be explored

(4) Convention of risk rating

From score 1 to 10, for instance, the smaller the number, the higher the quality. For example, a borrower with a credit rating of 10 has a higher default risk than another borrower with a credit rating of 1. Each rating has an associated default probability per different banks.

[15] The HKMA Requirements: The more sophisticated IRB[15] (Internal Risk-Based Approach) are due to meet specific requirements laid down by the HKMA.

(5) External credit rating agency service and precautionary measures

Credit rating agencies rate many debt securities. In such cases, the ratings assigned by the agencies will be valuable guides for institutions to classify debt securities. Therefore, external credit assessment institutions must adopt a methodology with objectivity assessed against rigors and systematic assessment methodologies to ensure the issue of credible and reliable credit assessments. Besides, the assessment methodologies must include all factors relevant to determining an entity's creditworthiness, documented, and with the back-testing method established in the concerned market segments before being recognized by the HKMA. Banks should take precaution that such credit rating, however, should not replace the institution's judgment on the credit soundness of the issuers.

(6) Limitation on use of credit rating agency's service and alternatives

There are limitations to the use of credit rating agencies' services. The credit ratings are basically per public information and additional information provided by the issuer, and financial, external, and industry information gathered by the agencies, which are all dynamic to affect future performance. Besides, credit rating agencies may withdraw the rating due to the absence of complete, available, and reliable information. Alternatives to credit rating agency's services include but are not limited to the followings:

- A bank could deploy only its internal rating system or only purchase available rating reports from the agency
- A bank could deploy the credit rating software developed by the rating agency
- A bank could develop its internal rating system and buy the agency report for reference/validation

(7) Internal credit rating system – large borrowers

Many variants of internal risk rating systems apply to large borrowers. Therefore, a bank should adopt the variants that could map the current loan classification grading system for regulatory reporting.

(8) Internal credit rating system – small business borrowers

There are challenges in two dimensions, namely, the availability of data and the relevant evaluation completeness.

(9) Benefits of multiple grades

Adding multiple grades for credits not yet irregular enables a bank to track the migration of individual credits through the various stages. This monitoring method will facilitate the early identification of deteriorating credits so that banks can take remedial actions to minimize credit losses.

Rating Attributes	Considerations In Developing Best Practices in Developing Risk Rating System
Dual rating	The rating system provides the measures including the probability of default (PD) and loss given default (LGD).
Rating granularity	For instance, rating 4+, 4, 4- instead of 4 only makes it easier to manage the portfolio because more minor risk level changes could trigger an early warning signal.
Consistency	Consistency application without deviation is the best practice. A 4 is a 4, no matter who the customer is.
Data-driven	The indicators/components must rely on precisely defined data such as the Debt Service Coverage Ratio.
	Qualities such as “management experience” can be quantified, e.g., “Strong” means the management team has served in the industry for a certain number of years. “Weak” means less than certain defined number of years in business.
Transparency	Final risk rating documentation includes all information so that different analysts can see how the rating was derived.
Technology	A bank could consider deploying a ready-to-use software solution with an intuitive user interface.
Rank order	Rank order the risk from least to most. To tackle increasing rank order granularity, a bank can differentiate “strong 4’s” from “weak 4’s”.
Reporting	The system features built-in for storing data and providing ad hoc reporting capability to analyse the portfolio from numerous perspectives, such as rating concentration and migration over time.
Easy to use	Best practices that promote ease of use for users include input only once, having data linked with core systems, providing drop-down choices, and offering an option for user self-developed analysis.

To assign a credit rating to the borrower account when there is multiple rating, a bank needs to have a mechanism to determine the credit ratings to be given. The table below indicates examples of some possible solutions:

Establish Mapping	Establish Rules about Sources	Establish Rules about Inconsistency
Map the equivalence of internal credit rating to credit ratings provided by different rating agencies	Establish priority of deployment hierarchy regarding internal credit rating and external credit rating Establish priority of deployment hierarchy among different external credit rating	Adopt the prudence principle and use the most conservative rating

(10) Direct influence of internal credit rating on banks’ actions

The more an RP understands the role of internal rating assignment in the credit risk management process, the more he will be sensitized to the probability of defaulting on a loan account. He becomes more sensitized to identify early warning signals, where appropriate, to protect the bank’s interest.

A bank should apply an internal rating system in such a way as to exert a direct and observable influence on a bank's decision-making and actions. The table below shows some suggested applicable categories. Different banks may have more extensive applications.

Decision Categories	Application of Internal Rating System in Direct and Observable Influence in the Area of
Pricing	Variant pricing on product per borrower's rating
Limit	Setting limits for individual accounts
	Setting limits for portfolio exposures
Capital	Modelling and managing economic capital
	Assessing total capital requirements in relation to credit risks under the bank's Capital Adequacy Assessment Process
Risk appetite	Assessing risk appetite
Business strategy	Formulating business strategies to acquire new exposure and collection on problem loans
Evaluation against targets	Ascertaining profitability targets
	Ascertaining other performance targets
Remuneration	Framing performance-related remuneration for staff responsible for rating assignment/rating approval

(11) Benefits of assigning credit rating to borrowing accounts

Each bank will derive its benefits from the credit rating with the cumulation of more knowledge, experience, and validation through modeling. The list below shows some potential benefits of the internal rating assignment.

Quantification	The internal rating assignment is a risk quantification process. Unlike abstractly assessing the risk on probability and impact, the internal rating is statistically quantifiable and visible for management decision-making.
Efficiency	The internal rating is applied impartially with unbiased judgment throughout the loan portfolio assessment process, which elevates credit risk management efficiency.
Reliability	The internal rating that meets the regulators' input criteria will gain reliability to both internal management and regulators.
Insight Generation	Portfolio risk becomes visible, enabling management to ask great strategic questions and look for insights from the risk rating analysis.

(12) Relationship between regulatory requirement and internal credit rating

A bank might prefer to deploy an internal credit rating rather than an external one but keep that as a reference, though both are subject to regulatory requirements. *A trainer may refer to Recognition_of_External_Credit_Assessment_Institutions_Revised.pdf (hkma.gov.hk) regarding the external credit rating and CA-G-4 (hkma.gov.hk) regarding internal credit rating. Refer to 1.1.5.1 for the IRB approach.*

The table below compares the features of internal and external credit rating:

	Internal Credit Rating Team	Rating Agency
Data Challenge	Challenging to obtain updated data in quantity	Easier access to company data with their more influential on companies to provide updated data in quantity
Investment in financial resources	For large banks, the relative cost is insignificant. For smaller bank, the relative cost is significant.	Cost of preparation is paid by the companies which want to get rating for debt issuance.
Investment in HR resources	Recruiting specialized professionals and assign ratings to their counterparties.	Developing in talents to specialize in industries with heavy investment
Expertise	Evolving around the portfolio characteristics of the bank	Making service available for all entities of - Sovereign countries - Supranational - Municipalities' - Public finance borrowers - Large companies
Focus	Focusing on bank credit products	Focusing on companies which issue public debt
Information source	Sourcing from the public domains and any private information that the banks own	Dedicating analysts' resources to specialize in - Industry - Geography Global Offices situated near the entities being rated Direct access to the executives of the rated entities
Independence	Assessment made by teams independent from the marketing officers and the credit approvers of concerned cases	Independent opinion of the credit quality
Methods/Models and rating mechanism	Proprietary methodology/model and rating mechanism being a black box to the public without transparency	Publishing their methodologies and ratings for all rated entities on the web site
Application of the rating	Applying in multiple areas in the bank's risk management (Also refer to the regulatory review of this submodule)	Applying in the areas - Lending money - Loan pricing - Selling products
Brand Names	Inhouse service without separate brand name and for the bank's use only	Brands well known to the public such as - Moody's - S&P - Fitch Rating

RPs should note that despite the quality of credit rating on individual accounts, when the credit risks of loan accounts are aggregated to the portfolio level, the risk behaviors are different from the simple aggregation of risk.

(13) Evaluation on impact of the changes in the risk factors

Borrowers' accounts might have interactions, i.e., "covariance" and "correlation." With a more sophisticated aggregation method, aggregation of changes in credit risks at the borrower's account level might partially offset the risk level of each other. However, the covariances and correlations of accounts and portfolios might not be evident with less sophisticated modelling. The table below shows how asking strategic questions will be of value in evaluating the impact of the changes in risk factors.

	Portfolio Concentration	**Portfolio Correlation**	**Portfolio Vulnerability**	**Portfolio Objective**
Ask strategic questions and obtain the answer through understanding the portfolio behaviors.	Is there bias/concentration risk in the loan portfolio? Is the concentration favorable or unfavorable?	Are there correlated sectors within the loan portfolio? Does the risk of some sectors have contagion effect on others?	Are there sectors in the portfolio which are more vulnerable than others?	Are the credit risk diversification effort results effectively in portfolio risk profile change?

	Risk Assumption	**Risk Avoidance**	**Risk Diversification**	**Risk Mitigation**
Ask strategic questions and obtain the answer through understanding the portfolio behaviors.	Are there room for the bank to take up more risk? Is the bank willing to take up more risk? Does the bank have adequate risk capital for more credit risk?	Should we elevate the underwriting hurdle?	Should the bank diversify? Should the bank remain concentrated in the portfolio?	Should the bank add more mitigants to the new applications?

1.1.4 Identify the relationship of the risk level change with loan provision

The trainer's and guest specialists' sharing in seminar during the class:
The trainer will update the latest development on loan classifications, providing rules and regulations, the relevant credit cases, lessons learned, and experience sharing. Alternatively, the trainer may arrange for veteran RPs as guest specialists to share these topics in the suggested one-hour seminar during the class, or, for in-house training, combine the sharing in the regular credit conferences of the banks. The seminar can take place as the last session of the class.

1.1.4.1 Regular Forecast and Review Requirements

(1) The HKMA guideline

RPs should be familiar with the HKMA guidelines on the loan classification and related loss provision (refer to Submodule 5) to form a system view of the loan performance influenced by the changes in the loan provision, e.g., an increase in loan provision increases the carrying cost of and decreases the profitability of a loan.

(2) Multiple risk rating

RPs should be familiar with judgmental rating and risk rating migration; both serve as signals of credit risk change. Banks are encouraged to adopt a system that can map with but is more sophisticated than the 5-grade loan classification system currently employed for regulatory reporting. There are practical purposes to enable banks to perform credit risk management with more insights on:

- Credits that are not yet irregular
- The migration of individual credits through the various grades

The table below shows the difference between automatic-rating and judgemental rating

Automatic Rating System	Judgment Rating System
Based on - a pre-determined set of objective rating criteria e.g., past account performance	Based on - underlying creditworthiness of the borrower - financial strength of the guarantor(s) - financial strength of the collateral pledged - risk of specific transactions

(3) Loan provisioning and expected credit loss

Where losses are certain and likely, a bank makes specific provisions. Then, on top of these specific provisions' requirements, a bank makes general provisions in advance with the accounts yet to be identified. The table below shows conditions of provisioning:

Specific Provisioning	General Provisioning
Condition Where losses are certain and likely **Provision** The percentage to be provided will depend on the circumstances	**Condition** Over and above specific provision **Provision** Based on the historical loss experience Based also on the assessment of future economic trends in the market in which they operate

Since the 2007 Global Financial Crisis, it's recognized the cost of delayed provision of credit loss by the banks. Hence, accounting standards changed and required banks to provision against loans based on expected credit losses.

(4) Continual assessment of loan provisioning

The analytical framework below does not mean to be an exhaustive list but indicates the types of considerations for continual assessment of the forecasting of loan provisioning.

Consideration for Loan Provisioning	Consideration for Relevant Time Horizons
- Historic performance of each internal rating class of credit assets - Macro-economic outlook - Covariance and correlation of different sectors within the portfolio	- Historical performance of each internal rating class of credit assets - Present and future outlook

1.1.5 Identify Key Regulations, Report Remedy and Make Recommendations

1.1.5.1 Risk Profile Analysis and Reporting

The trainer's and guest specialists' sharing in seminar during the class:
The trainer will update the latest development on key regulations updates, the relevant credit cases, lessons learned, and experience sharing. Alternatively, the trainer may arrange for veteran RPs as guest specialists to share these topics in the suggested one-hour seminar during the class, or, for in-house training, combine the sharing in the regular credit conferences of the banks. The seminar can take place as the last session of the class.

Adopting the IRB approach will be an irreversible trend with IT technology advances and the availability of trained AI talents. Therefore, RPs should keep abreast of the direction and acquire a taste for the more sophisticated language applied in risk rating modelling. More information is available in CA-G-4 (Valuing Risk Rating Systems under the IRB Approach).

(1) Standardised and IRB approach and justifications[16]

The standardised approach improves granularity and risk sensitivity calibration of credit exposures and reduces excessive reliance on external credit rating, with a more granular approach for unrated exposures. The internal ratings-based approach constrains the use of internal models where appropriate (e.g., due to insufficient data to model portfolios with low-default history); and imposes minimum floor values for bank estimates; and specifies more refined requirements on estimation practice of banks.

Justification using different estimates

Banks may not necessarily use the exact estimates for regulatory capital calculation and internal purposes. However, the analytical framework below helps to justify using different estimates for regulatory capital calculation and internal purposes.

Risk Factors Consistency	Estimates Consistency	Rationale for the Differences
A bank can demonstrate consistency amongst the risk factors and rating criteria used in generating the estimates for regulatory capital calculation and those for internal purposes.	A bank can demonstrate consistency amongst the estimates used in regulatory capital calculation and those for internal purposes.	A bank has a comprehensive qualitative and quantitative analysis of the logic and rationale for the differences.

Justification using different models

Banks may keep more than one rating model for the same portfolio: one for calculating regulatory capital and the other for the benefit of benchmarking. The models may be developed in-house, from external resources, or in a combination. The analytical framework below shows the justification for maintaining different models for different purposes.

Justification of Model Applications	Use Test
A bank should provide documented justification for its application of a specific model to a specific purpose. In the documentation, the bank should justify the role it has assigned to that model in its credit management process.	The HKMA will assess whether the "use test" for IRB systems has been met, it will consider the extent to which a bank makes internal use of the system as a whole, rather than applying the test on an individual model basis.

[16] Implementation of the Basel III Final Reform Package (hkma.gov.hk)

The HKMA lays down the principle that: every bank should hold sufficient capital to cover credit risk and seek to strike an appropriate balance between risk and reward. However, banks achieve the capital requirements **not** by avoiding credit risk exposure but by managing the risk a bank chooses to take to minimize potential credit losses. Early warning signals identified during portfolio management help a bank to take prompt review actions on capital adequacy.

(2) Regulatory capital versus economic capital

Once a bank can quantify credit risk with adequate methods, its next question is, "How much risk could the bank bear to take up?" The answer is dependent upon the amount of the bank's capital and the bank's capability to grow capital. Therefore, RPs should be aware of two categories of capital to sensitive themselves to the desirable loan applications. The analytical framework below attempts to summarize and compare these two capital categories.

Characteristics	Regulatory Capital	Economic Capital
Nature	Mandatory	Strategic
Prescription	Minimum levels of capital prescribed by regulators (BASEL accord: 8% of Risk Weighted Credit Portfolio)	Judgmental decision
Nature of decision	Formula Driven: defined in terms of balance sheet figures by risk class assets	Judgmental: decisions with justification
Target absorption	Absorb losses	Absorb unexpected losses

(3) Credit loss absorption

One method that enables the easy perception of economic risk is the compilation of credit loss distribution.

Based on Credit Loss Distribution	Regulatory Capital	Economic Capital	Deposits
Expected loss and below	Cost of doing business		
From above expected loss to below the insolvency		Cost of taking risk for more return	
Above insolvency			Loss offsetting by Deposits

According to the HKMA, "Loss-absorbing capacity is an essential prerequisite to an effective application of the "bail-in" stabilization option." *The Trainer may refer to the HKMA's elaboration on the credit loss absorption on* Hong Kong Monetary Authority - Loss-absorbing Capacity (hkma.gov.hk)

(4) Senior management's role in credit risk monitoring

The senior management is ultimately responsible for the overview of credit process which includes credit strategy and policy, risk management, credit initiation, credit evaluation, approval and review, credit administration, credit measurement and monitoring, problem loan management and independent audits. The credit monitoring functions are performed at different levels.

The Board or the Credit Committee oversees credit monitoring on a portfolio basis and may take part in reviewing large or connected exposures. The back office provides support to the process through the measurement and reporting of credit risk exposures for management information. The middle office monitors limits and other risk parameters set down by the Board, reviews exception reports and checks that problem accounts are properly graded and provided against. It also performs periodic reviews and analyses the quality of the credit portfolio under stress-tests or other techniques. The front office monitors individual accounts on a day-to-day basis and recommends changes in internal credit rating and provisions where necessary.

(5) Tools for senior management's credit risk oversight

RPs should be familiar with the implication of the credit risk indicators of the portfolio to the senior management and try to obtain insight from the indicators by asking strategic questions.

Risk Indicators	Default Risk	Exposure Amount	Recovery Rate
Aggregate exposure versus portfolio limit by industry, country, product, type of counterparty - banks - non-bank financial institutions - corporates - retail customers, etc.		✓	
Total portfolio by internal credit rating and trend		✓	
Total exposure to groups of related countries		✓	
Large exposures		✓	
Connected lending		✓	
Asset-based lending with loan-to-value rations exceeding pre-set limits (e.g., mortgages with loan-to-value ratios exceeding 70%)			✓
Overdue accounts with ageing analysis (i.e., amounts overdue one, three, six months etc.)	✓		
Credit downgrades and loans rescheduled during the period	✓		
Interest suspended	✓		
Adequacy of provisions	✓		
Facilities expiring soon	✓		
Undrawn commitment ratio (i.e., undrawn facility amounts as a percentage of total facilities	✓		
Loan-to-deposit ratio	✓		
Results of stress-tests - Policy or limit amendments - Hedging - Exposure reduction (e.g., through asset sales, securitization, etc.)	✓		

- Contingency planning for actions to be taken should a particular scenario happen			

1.2 Submodule 2: Risk Mitigation

<u>Note to trainers</u>
Trainers can pick, change, and repackage the content sample below according to learners' needs

1.2.1 Introduction

Risk mitigation is a crucial credit risk management technique to reduce specific borrowers' account and portfolio level risks. Continuous risk mitigation is essential for banking system stability. Many past bank failures have occurred due to risk concentrations of some kind. Therefore, banks must properly manage risk concentrations from exposures to counterparties, industries, economic sectors, countries, or regions.

While some concentration risks are common to the local banking industry and cannot be avoided, banks can manage them by adopting proper risk control and diversification strategies. Safeguarding against risk concentrations should form a vital competence of the bank's risk management system. RPs should be familiar with the implication of credit risk indicators of the portfolio to senior management and try to obtain insight from the indicators by asking strategic questions.

1.2.2 Monitoring Portfolio – Theory and Practice

1.2.2.1 Optimal Risk Level

Note to the trainer: RPs should be familiar with risk tolerance, how much risk a bank could take (risk tolerance), risk appetite (willingness), risk limit (ceiling of risk appetite), and risk profile (actual risk taken).

(1) Risk appetite

An AI's risk appetite (or risk tolerance) describes the level of risk a bank is willing to take regarding its financial capacity, strategic direction, and regulatory constraints. Examples are capital and liquidity requirements.

The Board is responsible for setting the overall risk appetite of the bank and approving its risk appetite statements. There is no standard way of expressing risk appetite. However, a bank's risk appetite statements should be comprehensive, including appropriate risk targets that are consistent with one other, and reflect a suitably wide range of measures and actionable elements that clearly articulate a bank's intended responses to a range of possible events, e.g., a loss of capital or a breach in risk limits.

(2) Importance of defining risk appetite

Comprehensive documentation on risk appetite is essential for internal and external audits for regulatory compliance. In addition, understanding the above enables RPs to exercise sound judgment on whether a credit transaction fits the banks' risk strategies.

Banks' risk appetite involves the careful maneuver of

- customer selection
- project selection
- underwriting criteria

Banks determine their risk appetite according to their financial and non-financial resources they have at their disposal. The table below shows considerations of risk tolerance level:

Financial Resources	Non-Financial Resources
- A bank's paid-in capital and retained earnings, together forms the bank's equity - Other capital which could be called upon to increase the capital, after fulfilling required conditions	- Robust Governance with the Competences of • The staff • IT systems • Internal procedures, and • Control systems

(3) Process of setting risk appetite

Note to the trainer: Sample conception of risk appetite statement of international, regional, or local banks with details could be located on the internet. There are overseas banks that publish documentation with sufficient details to understand their risk appetite conception process. The trainer may prepare for the interactive lecture with these materials.

There are several perspectives to determine risk-taking. For example, the following shows three views to understand banks' risk appetites.

View (1)
Risk-taking is an integral part of the banking business which is carefully balanced among

- Risk tolerance
- Financial soundness
- Business viability
- Risk-Return

View (2)
Credit risk appetite prescribes the risk a bank is willing to assume

- Type
- Nature
- Extent

View (3)
Two considerations to determine risk appetite are

- Regulatory requirements
- Business risk-taking

The table below summarizes briefing the regulatory and business perspective in defining risk appetite:

Perspective	Definition	Supported by
Regulatory[17]	A bank's risk appetite describes the level of risk it is willing to take regarding financial capacity, strategic direction, and regulatory constraints (e.g., capital and liquidity requirements).	Risk Capital per statutory requirements
Business	A bank may define risk appetite at the aggregate level and types of risk it is willing to assume within its risk capacity to achieve its strategic objectives and business plan.	Economic Capital to support extra risk assumed for extra return

The Board of Directors is responsible for setting the bank's overall risk appetite statement, recommended by the senior management. The level of detail and sophistication of a bank's risk appetite statement should be commensurate with its business nature and risk management needs. The list below describes the setup process:

- Express the overall risk appetite
- Set out the maximum level of each material risk
- Address quantifiable risks with quantitative measures
- Translate the quantitative measures into risk limits applicable to business units
- Include qualitative statements that articulate the motivations for taking on or avoiding certain types of risks which are less quantifiable in nature
- Include critical background information and assumptions
- Stay forward-looking to include financial targets consistent with the risk appetite.
- Outline the possible measures and actionable elements in response to possible events such as loss of capital or breach in risk limits.

[17]HKMA SPM IC-1 General Risk Management Controls (hkma.gov.hk)

1.2.2.2 Utilize Risk Management Tools

(1) Ongoing monitoring framework

Credit risk monitoring completes the feedback cycle to the management on establishing risk appetite, and risk limit. It indicates the actual credit risk profile in a snapshot. Identifying the root causes of the changes will provide insight to the management regarding implementing banks' risk policies and reviewing the adequacy of the risk mitigation measures. The table below captures the outcomes of an effective credit risk monitoring system:

Definition Credit Monitoring	Objectives Credit Monitoring
Credit monitoring refers to the day-to-day monitoring of the performance of individual credits and the overall portfolio. The monitoring process is carried out at the loan account level by the account officers in the front line and at the portfolio level by the functional units in the back office.	An ongoing monitoring framework ensures that - the account borrowers/counterparties service the credits in compliance with Terms and Conditions (T&C) - the credit risk level is within the limits and parameters stipulated in the credit policy - that early warning signals are detected timely for prompt remedial actions - that the performance of the remedial actions is tracked with feedback to relevant parties - that the bank complies with the regulatory limits - that loan provisioning is realistic - That the Credit Committee or senior management can monitor • The overall portfolio quality • The trends • The reassessment of the appropriateness of the credit risk strategy and policy

The tools commonly deployed to manage portfolio risk are:

(2) Risk limits

Exposure limit by type, nature, amount

(3) Risk profile

Risk profile assessment is a point-in-time evaluation of a bank's risk exposure level and type. The assessment includes an evaluation of the bank's material risks, including credit risk.

1.2.2.3 Impacts of External Factors

RPs are best to have a system view and be familiar with the update on the economic situation and regulatory environment, how the economy affects different industries, whether the industry is highly cyclical with the economic cycle, what is the business model of the borrowers to leverage the critical business drivers to achieve optimal income and enhance financial strength.

Understanding the above will enable the RPs to exercise judgment on the outlook of the borrower's creditability and look for adequate mitigants for each revealed risk.

(1) <u>Environment scanning</u>

Many banks perform proactively full-scale environment scanning to identify critical economic, industry, and regulatory risk trends relevant for credit risk management. The table below shows examples of environmental scanning:

<table>
<tr><td rowspan="4">Scanning for Changes in External Factors</td><td>Public Health condition</td><td>- 2020 pandemic braked the global economy</td></tr>
<tr><td>Geo-political conditions</td><td>- regional conflicts
- regional wars</td></tr>
<tr><td>Government policies and conditions</td><td>- monetary policy
- fiscal policy
- foreign exchange policy
- government debt policy
- tax and tariff
- foreign direct investment policy</td></tr>
<tr><td>Economic conditions</td><td>- economic cycle
• growth
• rapid growth
• stabilization
• decline
- Inflation rate
- unemployment rate
- economic sector growth
- commodity price
• oil
• crops
- stock market index
- property market index
- banks' competition leading to changes in underwriting criteria</td></tr>
</table>

Scanning for Changes in Industrial Factors	Industry conditions	- industry cycle - cyclical/ countercyclical - government regulations - technology evolvement - environment rules and regulations - energy prices - supply chain switch - entrance hurdles
Scanning for Changes in Internal Factors	Borrowers' situation	- Life stage • start up • growth • rapid growth • plateau • decline - Business model • key business drivers • business strategy to ride on key business drivers - Management quality • management team analysis • via analysis with ○ SWOT ○ Canvas - equity/debt financial strategy - sensitivity to the Five Forces • suppliers' power (e.g., reflected in negotiation power) • customers power (e.g., reflected in price sensitivity) • product substitute • competitions (e.g., reflected in market share) • operations

(2) Sources of intelligence

The RPs are responsible for collecting information from various sources of intelligence, including but not limited to:

- Company information
- Public information
- Media data collected by machine and analyzed by AI
- Credit rating agency
- Industry network

1.2.2.4 Diversify Concentration Risk

(1) Strategy of portfolio diversification

Note for the trainer: The credit portfolio diversification strategy to reduce risk is an idea originated from the modern portfolio theory of the 1950s by Nobel Prize Winner Harry Markowitz. The theory states that, given a desired level of risk, an investor can optimize the expected returns of a portfolio through diversification.

Portfolio diversification is feasible on

- Products (e.g., products with different cyclical cycles)
- Tenor (e.g., yield with different maturities)
- Borrowers (e.g., broaden customer base)
- Counterparties (e.g., expanding counterparties)
- Economic sectors (e.g., economic sectors with different cyclical cycles)
- Geographies (e.g., economic sectors with other geopolitical profiles)

To the extent that diversification would reduce portfolio risk, there is specific/inherent risk in the credit risk portfolio that risk mitigation tactics could address.

(2) Risk mitigant definition

Risk mitigants are sought after to provide a certain comfort level to the credit risk borne by banks. Mitigants reduce uncertainty. Risk mitigants are “comforts” to the identified credit risk.

(3) Risk mitigant types

Risk mitigant is sought at the account level to reduce high-risk application (or renewal, or on demand under stressful situations) to an acceptable risk level.
However, there are principles for risk mitigation:

- A credit application should be able to stand alone without the mitigation
- The borrower’s management integrity
- There is one (or multiple) ascertained source of repayment
- There is a second source of repayment
- There are means to preserve the cash flow

(4) Risk mitigant strength

Risk mitigants can be described as strong or weak. The table below provides some examples on the risk mitigants with collaterals and guarantees:

Mitigation	**Quantitative** More quantifiable and rely on 3rd party or secondary source of income, assets, and wealth	**Qualitative** Rely on borrowers; incomes, assets and wealth ascertained by its qualities
Strong mitigation	- Collateral provided by borrower - Insurance policy	
Weak mitigation		- Borrower’s business strategy - Borrower’s market share

1.2.2.5 Formulate Risk Mitigation Measures

Note to Trainers: trainers may consider discussing basic measures to protect banks from undue risk exposure. However, the more sophisticated tools[18] is out-scope of the Training Package.

(1) <u>Risk mitigants provided by the borrowers or third parties</u>

The analytical framework below attempts to give some examples of risk mitigation methods:

Means to Identify Risk Mitigants	Type	Risk Mitigation
Understand borrowers' - Incomes - Assets - Wealth	Qualitative	- Pledge of deposits - Secured with collateral - Personal guarantee
Understand borrowers' - Integrity	Qualitative	- Borrowers' reputations on the social media
Understand borrowers' - Five Force Model - SWOT - Canvas business model	Qualitative	- Entrance hurdles - Core competency - Market share
Understand key person's risk - CEO founder	Quantitative	- Key person life insurance
Understand creditors' priority - Seniority on payment	Quantitative	- Can arrange receiving share in priority as senior creditors.
Understand the purposes of the facilities - Seek borrowers to sign comprehensive loan covenants	Qualitative	- Regular repayment - Timely receipt of financial statements - Receipt of growth plan, cash budget - Timely receipt of construction completion report
Analysis, analysis, analysis - Financial ratio analysis - Cash flow analysis - Sensitivity analysis	Quantitative	- Subject to outcomes - Foreign exchange hedging contract

(2) <u>Risk mitigation proactively managed</u>

Portfolio risk mitigation is also achieved with more sophisticated methods, including but not limited to the followings:

- Asset sale
- Securitization
- Credit derivatives

[18] The more sophisticated tools include securitization, insurance, credit derivatives, and others

1.2.2.6 Credit Risk Mitigation Techniques at Right Timing

(1) Identification of needs for risk mitigants

Three risk mitigation moments are: upon credit initiation, during loan life/upon disbursement, and credit renewal. First, an RP identifies the need for risk mitigants after performing a meticulous analysis of the client's creditworthiness during credit initiation. Second, an RP monitors the loan accounts during loan life to detect early warning signals and requests for risk mitigants. Finally, upon credit renewal, an RP reviews the history of the loan accounts and the business outlook. The table immediately below shows examples of noises identified in various units across credit risk management that should be relevant for insight generation. The table below shows how the insights generated above will become feedback for improving the policy, process, and procedures to achieve credit risk management objectives:

Credit Risk Management	Credit Risk Management Related Roles and Responsibilities
Active board and senior management oversight	The Board of Directors' duty and responsibility in credit risk management: - Approving credit strategy and policies - Credit approval and monitoring for large or connected transactions - Delegation of credit authority - Oversight of credit risk management
Credit committee/senior management	The Credit Committee/Senior Management's duty and responsibility in credit risk management: - Credit policy review - Implementing credit strategies and policies - Establishing credit policies and manuals - Credit approval and monitoring within delegated limits - Approving internal credit rating and provisions - Overseeing loan recovery progress
Front office	The Front office is - Credit initiation/appraisal - Credit approval of small limits - Recommending internal credit ratings and provisions - On-going monitoring of individual accounts
Middle office	The Middle office has duties and responsibilities on credit risk management as follows: - Recommending risk management methodology - Limit/exceptions monitoring - Independent credit evaluation/review - Credit approval within delegated limits - Independent review of internal credit
Back office	Checking Credit Approval and documentation - Lien Perfection - Fund Disbursement - Credit file maintenance - Measurement and reporting of credit risk exposure - Collateral valuation

Internal audit and compliance	- Credit audit - Compliance audit

(2) Strong credit risk culture is essential for identification of risk

Enterprise collaboration is essential for adequate credit risk management. A strong credit risk culture enhances the timely identification of needs for risk mitigants. The seamless collaborative effort across credit risk management functions within a strong credit culture is demonstrated in the daily roles and responsibilities in the analytical framework below:

Organizational Units	Board of Directors	Credit Committee	Front Office	Middle Office	Back Office
Enterprise Collaboration to Achieve Four Pillars of Credit Risk Culture					
Establish an appropriate credit risk culture	Approve credit strategies and policies	Implement credit strategies and policies		Portfolio review and analysis	
		Establish credit policies and manuals		Stress-testing	
		Credit policy review			
Enforce prudent procedures for approving credit			Credit initiation/ appraisal	Independent credit evaluation and review	Collateral valuation
	Credit Approval and Monitoring (Large and connected transactions)	Credit approval and monitoring	Credit approval (small limits)	Credit approval (within limits)	Fund Disbursement
Maintain effective systems for credit administration, measuring and monitoring	Decide on risk appetite	Approve internal credit rating and provisions	Recommend internal credit ratings and provisions	Independent review of internal credit rating and provisions	Measurement and reporting of credit risk exposure
			On-going monitoring of individual accounts	Limit/ exceptions monitoring	Credit File maintenance
		Overseeing loan recovery progress		Problem loan workout	Lien perfection

(3) Implementation of risk limit with comprehensive credit policy

Having defined the risk appetite, banks set up risk limits to define the boundaries of risk-taking. Examples of credit risk policies related to risk mitigation techniques are:

- Policy on collaterals and guarantees
- Policy on asset sale and securitization
- Policy on credit derivatives

The analytical framework below shows regulatory descriptions and practical functions related to the implementation of the risk limits:

	Regulatory Description[19]	Practical Functions
Function	To control banks' exposures to various quantifiable risks associated with its business activities - Credit risk - Market risk - Interest rate risk - Liquidity risk	To allocate the aggregated risk-taking mandate to business lines and portoflios
Framework	Set in line with banks' risk appetites to ensure consistency between risk limits and business straegies	The main risk limits are established in banks' risk management policies.
Framework	Set in line with banks' risk appetites to ensure consistency between risk limits and business straegies	The main risk limits are established in banks' risk management policies.
Approval	The Board may wish to approve limits as part of the overall annual budget porcess	The risk limits are approved by the Board of Driectors.
Objectives	Limits should be used to contol different sources of risk concentration: - Arise directly from exposures to borrowers and obligors - Arise indirectly through investments backed by particular asset types - Arise from similar exposures across different business activities	The limit system sets boundaries for the accepted level of credit, market, liquidity and operational risk within the established risk appeteite.
Scaling	Risk limits should be suitable for the size and complexity of a banks' business activities and compatible with the sophistication of its products and services and should not merely seek to meet the minimum regulatory requirements or the general market practices.	
Risk Limit	Risk limits should be set at various levels: e.g., Individual business lines, business units, the business entity, the business group	
Documen-tation	Banks should have a clearly documented methodology for allocating overall risk limits across business lines and unites.	
Review	Limits are subject to regular review and are reassessed in the light of changes in market conditions or business strategies.	
Education	Risk limits should be clearly communicated to the business units and understaood by the relevant staff.	
Monitoring	Limit utilization should be closely monitored. Any excesses or exceptions should be reported promptly to the Chief Risk Officer and the senior management for necessary action.	

[19] HKMA SPM IC-1 General Risk Management Controls (hkma.gov.hk)

(4) Check and balance on the risk-return

With risk appetite established, banks would choose the exposures that give returns commensurate with the risk it has assumed. The credit policies contain the scopes, the risk limits, and the profit target to ensure the credit applications fulfil the risk and return balance at the loan initiation and review stages. The table below shows some of the application examples:

Scope	Limits Serve as Guidance to	Exposure Limit	Profitability Target
Target market	- Capture opportunities in the market where the bank has an appetite for - Have strategies and products developed per the market needs and opportunities	X	X
Minimum credit standard	- Accept only the credit applications which meet the minimum requirements (Usually, only a rating of "1" would be accepted. If the identified risk from an applicant is lower than "1", the bank would explore risk mitigation measures with the applicant to lower the risk level)	X	X
Sectors	- Draw attention to the economic sectors at different stages from "start-up," "growth," "rapid growth," "maturity," "Stagnation," and "Decline" - Manage the exposure by counterparties in various economic sectors (e.g., public sectors, local government sectors, others)	X	X
Products	- Develop products in line with the market risk appetite and the bank's risk appetite, minimum credit standards, and sectors	X	X

1.2.3 Identify Needs for Risk Mitigants

1.2.3.1 Quantified Risk Level Trends for Critical Factors

(1) Quantified risk appetite

Each bank develops its risk appetite statement according to the regulatory requirements, the strategic business direction, and capital and cash constraints. The risk appetite metrics/dashboard, therefore, is also varied. There are suitable academic materials available on the subject[20]. The table below shows some of the potential metrics:

Risk Type	Metric	Risk Tolerance Range
Strategic	ROE	e.g., 10% - 15%
	New Loan Growth	e.g., 5% - 5% per quarter
Credit, market, and liquidity	% Loan delinquency (30 days +)	0.5% - 1.9%
	Credit Concentration	<15%
Operations	% Of high-risk operational control issues	<10%
	Operational Losses as % of Total Revenue	<1%
Compliance	% Of high severity compliance issues	0
Reputational	% Retention of High-Potential Key Manager	>80%

(2) Credit risk strategy alignment with credit risk objective

Having stipulated the risk appetite, banks align credit risk strategies and credit risk objectives. Banks should thoroughly consider one's situation, review the goals, and adopt a realistic strategy. A simple or sophisticated approach toward portfolio management depends on the needs and resources of the bank, which selects the adequate portfolio management accordingly.

[20] Implementing an effective risk appetite, James Lam, IMA, Aug 2015, 8150b134bafd42aaaf5267bf49d6d2a3.ashx (imanet.org)

(3) Credit risk appetite statement translated into credit criteria on loan application and review

Credit risk appetite is about setting boundaries around the banks' activities. That could take setting limits for business divisions, geographical regions, industries, products, top customers, and other customers based on their risk grades. The table below shows some examples of the credit risk appetite meant to be aligned with the bank's risk appetite metrics:

Target Market	Underwriting Criteria (Minimum Credit Standard)	Sectors	Products
- Geography - Sector - Industry - Products	- Exposure at Risk - Internal Risk Rating - Tenor - Purpose of the credit - Type of credit facilities - Capacity to borrow - Security - Repayment capability (Cash flow analysis, Sensitivity analysis) - Profitability - Terms, Conditions	- Growth Stage - Rapid Growth Stage	- Developed in line with target markets

(4) Alignment of portfolio performance indicators with the risk appetite metric

The analytical framework below shows examples of how banks’ considerations define the portfolio boundaries per credit risk appetites:

	Portfolio Boundary	
Credit Risk Appetite Metric	**Target market** - Geography - Sector - Industry - Products	**Target market boundary** - Geography exposure limit - Sector exposure limit - Industry exposure limit - Product exposure limit
	Underwriting criteria - Exposure at Risk - Internal Risk Rating - Tenor - Purpose of the credit - Type of credit facilities - Capacity to borrow - Security - Repayment capability - Profitability - Terms, Conditions	**Underwriting boundary** - Ceiling - Credit Risk Rating - Maximum Tenor - Working Capital, Project Finance, Commodity Finance, etc. - Collateral, guarantees - Cash flow analysis, sensitivity analysis, NPV, IRR - Return on risk-adjusted capital Based Pricing
	Sector - Growth Stage - Rapid Growth Stage	**Sector** - Exposure limit - Exposure limit
	Product - Developed in line with target markets	**Product** - Exposure limit

(5) Portfolio indicators for senior management's reference

The RPs should be familiar with the implications of the portfolio credit risk indicators to senior management and try to obtain relevant insight by asking strategic questions. The table below shows examples of credit risk indicators:

Credit Risk Indicators	Default Risk	Exposure Amount	Recovery Rate	Liquidity	Set the Boundary
Aggregate exposure versus portfolio limit - by industry - by country - by product - by type of counterparty • Banks • Non-bank financial institutions • Corporates • Retail customers		✓			✓
Total portfolio - by internal credit rating and trend		✓			✓
Total exposure - by groups of related countries		✓			✓
Large exposures		✓			
Connected lending		✓			
Loan-to-value ratio - asset-based lending with loan-to-value ratios exceeding pre-set limits (e.g., mortgages with loan-to-value ratios exceeding 70%)			✓		
Ageing - overdue accounts with ageing analysis (i.e., amounts overdue one, three, six months etc.)	✓				
Risk migration - credit downgrades and loans rescheduled during the period	✓				
Interest payment - interest suspended	✓				
Loan Provisioning - adequacy of provisions	✓				
Expiry - facilities expiring soon	✓				

Undrawn Commitment - undrawn commitment ratio (i.e., undrawn facility amounts as a percentage of total facilities				✓	
LTV - loan-to-deposit ratio				✓	
Outcomes of stress-testing - policy or limit amendments - hedging - exposure reduction (e.g., through asset sales, securitization, etc.) - contingency planning for actions to be taken should a particular scenario happen	✓				

1.2.4 Identify the Relationship of Risk Level Change with Loan Provision

1.2.4.1 Exposure Approaching or Exceeding Limit

<u>The trainer's and guest specialists' sharing in seminar during the class:</u>
The trainer will update the latest development on loan classifications, providing rules and regulations, the relevant credit cases, lessons learned, and experience sharing. Alternatively, the trainer may arrange for veteran RPs as guest specialists to share these topics in the suggested one-hour seminar during the class, or, for in-house training, combine the sharing in the regular credit conferences of the banks. The seminar can take place as the last session of the class.

(1) <u>Regular review of risk level change</u>

Continuous review of the risk level change to identify corresponding mitigation is an essential credit risk management process. RPs should evaluate the forecasting and review approach to recommend possible improvements in risk rating assessment to enhance loan provisioning quality further.

(2) <u>Credit risk mitigation and loan provisioning</u>

Credit Risk Mitigation Techniques protect banks' interests and, at the same time, effectively mitigate the risk exposure. The risk mitigation, under some circumstances, lowers the loan provisioning. The table below shows an example:

Example

For the purposes of the HKMA's loan classification system, security refers to

- Tangible assets such as cash, properties, and securities
- Guarantees issued by a Central Government or Central Bank of a country without payment difficulties, an authorized institution or an overseas bank which is under adequate supervision

Determination of the lesser provision

- The value of tangible security means its net realizable value, being the current market value of the security less any realization costs
- Market value should be measured based on up-to-date valuation and is defined in terms of the price at which an asset might be sold at the valuation date assuming:
  - A willing buyer and seller
  - Transaction is at arm's length
  - A reasonable period has been allowed for the sale; and d) the asset is freely exposed to the market

(3) IFRS9 management implication in portfolio risk management[21]

The IFRS9 has impact on the risk mitigation strategy. The analytical framework below shows some examples of preventing migration of credit risk rating and mitigation actions when migration happens:

Measures To Prevent Migration of Credit Risk Rating	Measures to Mitigate Portfolio Risk when Migration Occurs
- Validate / Redefine portfolio mix and risk appetite considering: • Steer commercial focuses on the more resilient sector throughout the economic cycle • Stress cost opportunity for the origination of longer-term products or uncollateralized exposures - Evaluate higher-risk clients to limit their potential migration - Implement management dashboards to • Closely monitor watch lists and early warning signals • Anticipate migration and • Implement remediation actions - Derive loan origination policies and structure trigger company actions and contingency plans if specific pre-defined credit deteriorating scenarios are met - Create new formal loan classification criteria for loans with a high migration risk to apply risk management, including higher provision levels that reduce sharp deterioration if transition materializes	- Accelerate measures and processes that promote sustainable debtor capacity for repayment - Establish automated flags and MIS to reduce time to cure the client's situations - Set efficient timelines for the restructuring process and accelerate triggers of recovery/contingency actions for exposures - Promote solutions in clients with potential injection of fresh money - Implement clear and effective hand-over policies among management units, such as workflow management tools to support the overall recovery strategy

[21] Research by Alvarez & Marsal, IFRS impacts the credit risk management strategy.

1.2.5 Identify Key Regulations[22], Report Remedy and Make Recommendation

<u>The trainer's and guest specialists' sharing in seminar during the class:</u> **The trainer will update the latest development on key regulations updates, the relevant credit cases, lessons learned, and experience sharing. Alternatively, the trainer may arrange for veteran RPs as guest specialists to share these topics in the suggested one-hour seminar during the class, or, for in-house training, combine the sharing in the regular credit conferences of banks. The seminar can take place as the last session of the class.**

1.2.5.1 Evaluate Credit Strategy for Management Approach

<u>(1) Large exposure and concentration</u>

While banks define their risk tolerance, risk appetite, risk limits, and risk profile, they need to refer to some principles stipulated in the regulations, considerable exposure, and concentration risks. The table below summarizes banks' practices to establish limits on various kinds of risk concentration:

Various Kinds of Risk Concentration	A Bank Should Carefully Manage and Avoid Excessive Risk Concentration
- Large exposure to individuals, in particular exposure exceeding 10% of the bank's capital base	- Establish limit on the individuals
- Large exposure to groups of borrowers with similar • Entity characteristics • Economic sector • Geographical sector	- Establish limit on similar borrowers
- Large exposure in relation to facilities exceeding 10% of the capital base (Notwithstanding the 25% limit on large exposures under SS 81 of the Banking Ordinance.	- Establish limit on facilities
- Concentration on types of lending with similar • Characteristics • Tenor • Pricing • Repayment	- Establish limits on lending with similar risk characteristics
- Inter-dependencies leading to contagion effects e.g., stock market price impact on default rate e.g., property price impact on default rate	- Analyse the portfolio intelligently to identify the inter-dependencies e.g., correlation analyses e.g., sensitivity analyses

[22] Return of Capital Adequacy Ratio, Part IIIb – Risk-Weighted Amount for Credit Risk Standardized (Credit Risk Approach) Form MA(BS)3(IIIb), Microsoft Word - CI - part IIIb.doc (hkma.gov.hk)

- Collaterals and guarantees	- Avoid over-reliance on collateral or guarantees. The primary consideration should be borrowers' debt-servicing capacity: • Establish limit on the same type of collaterals • Establish limit on the financial securities from the same issuer • Establish limit on the financial securities from the same market • Establish limit on the guarantee from the same guarantors
- Business with companies in the internet sector	- Make the decision based on sound banking principles and a bank should not be swayed by what's fashionable
- Extension of credit to asset-dependent sectors e.g., stock markets e.g., property markets which may leave a bank unduly exposed to a collapse in asset prices with consequent increased defaults by debtors	- Manage carefully and avoid excessive risk concentration
- Mismatch of funding, where long-term domestic lending is financed by short term external borrowing e.g., reversal of capital flows can lead to a liquidity squeeze and exposure to possible adverse exchange rate movements.	- Establish prudent mismatch limits to control such risks.

(2) Breach on large exposure exceeding regulatory limits[23]

The large exposure of the portfolio must be closely monitored at all times from loan inception and throughout the loan life, as there is consequence of breaching the compliance requirement **(Cap.155S).**

Example (1) Consequence of failure to comply with a prescribed notification requirement or remedial action

- This is an offence. The person charged is to prove that he took reasonable precautions and exercised due diligence to avoid committing such an offence by himself or any person under his control.
- The bank itself and every director, every chief executive and every manager of the bank are liable to penalties such as fine and imprisonment.

The breach of statutory limits under the BELR may indicate that the HKMA will consider whether the HKMA's power to revoke the authorization of the bank is exercisable and if so, whether it should be exercised because

- The bank does not have adequate systems of control to ensure the specified limit within limit
- The bank does not carry out its business in a prudent manner

Example (2) Consequence of failure to comply with a prescribed notification requirement or remedial action

The HKMA may consider taking other appropriate actions such as

- Increase the bank's minimum capital adequacy ratio
- Limit the bank's business expansion

Example (3) Consequence of failure to comply with a prescribed notification requirement or remedial action

The bank will agree a timetable to bring the exposure quickly below the statutory limit or any agreed limit and to report progress on a regular basis.

[23] Hong Kong Monetary Authority - Exposure Limits (hkma.gov.hk)

1.2.5.2 Review Mitigation Results for Suggestions

(1) Balance sheet exposures

There is regular reporting on banks' exposures. The table below shows the examples on the quarterly reporting on exposure by category:

Class I	Sovereign exposures	Class VII	Collective investment scheme exposures
Class II	Public sector entity exposures	Class VIII	Cash items
Class III	Multilateral development Bank exposures	Class IX	Regulatory retail exposures
Class IV	Bank exposures	Class X	Residential mortgage loans
Class V	Securities firm exposures	Class XI	Other exposures which are not past due exposures
Class VI	Corporate exposures	Class XII	Past due exposures

(2) Risk weighting

The risk-weight for an exposure under any of Classes I, II, IV to VII is determined based on its credit assessment rating assigned by an external credit assessment institution (ECAI) recognized by the HKMA. Each of these six ECAI ratings-based portfolios has its own risk-weighting framework under which risk-weights are mapped to a scale of Credit Quality Grades represented by the numerals 1,2,3,4,5 or 6, as the case may be.

Appendix – Risk Appetite Conception and Statement

Risk appetite conception[24]:
Refer to the sample link in the footnote, a bank conceives risk appetite with all-rounded consideration: regulatory, strategy and capital planning. Its Board should thoroughly understand the bank's current risk position relative to its risk appetite and how the position would be changed if the risk appetite was changed. In this regard, stress tests may be used to generate a dynamic view of the bank's capital and risk positions.

Example of risk appetite statement

With a clear understanding on the risk tolerance capacity, a bank drafts the risk appetite statement which is a written articulation of a bank's risk-taking, risk mitigation and risk avoidance, taking into consideration the banks' statutory requirements. It contains risk category-specific statements and forms a tool for the Board of Directors and senior management to guide and monitor the bank's risk-taking activities.

Note to trainers: there are banks which publish the risk appetite conception process and the risk appetite statement at high level.

Requirements on risk appetite statement
There is no standard way of expressing risk appetite. However, there are some requirements set by the HKMA in certain areas. The table below shows some of the examples:

Requirements	Description
Approval	By the Board on any changes
Risk targets	All relevant risks of the bank be taken into account - Those that could be quantified - Those that are more difficult to quantify All relevant risk - On-balance sheet transactions - Off-balance sheet transactions Consistent with one another risk Consistent with the bank's - Nature - Complexity of business
Scope	Reflect a suitably wide range of measures and actionable elements
Consistency	Clearly articulate the bank's intended responses to a range of possible events e.g., a loss of capital, e.g., a breach in risk limits
Reality check	Management actions documented in the statements should be realistic and feasible for - Restoring capital - Reducing risk in adverse situations
Monitoring	Robust procedures and controls are in place for - Setting the risk appetite - Monitoring the risk appetite
Principle	Prudent approach

[24] Risk Appetite Statement (nib.int), Risk Appetite Statement, Nordic Bank

1.3 Submodule 3: Manage and Control the Risks

Note to trainers:
Trainers can pick, change, and repackage the content sample below according to learners' needs

1.3.1 Introduction

Submodule 2 has introduced various risk mitigation techniques and measures to reduce banks' credit risk exposures. Despite all these techniques, however, some banks have decided to concentrate on specifically chosen portfolios in which they have cumulated expertise in risk management.

The HKMA released research in 2018 that said: "The net effect of sectoral loan concentration on the credit risk of banks, which is a question that remains inconclusive in banking research due to the potential trade-off between concentration risk and specialization gain.

While some concentration risks are common to the local banking industry and cannot be avoided, they can be managed by adopting proper risk control and diversification strategies. Therefore, safeguarding against risk concentrations should form an essential competence of banks' risk management system.

1.3.2 Monitoring Portfolio – Theory and Practice

1.3.2.1 Manage Risk of Credit Assets

Note to trainers: RPs should be familiar with the bank's risk tolerance, risk appetite, risk limit, and risk profile (through credit risk monitoring). However, RPs also have to manage two credit risks that are not direct observation through account level risk monitoring, namely, the contagion risk and the risk of collaterals and guarantees. Understanding the above enables RPs to exercise sound judgment on whether a credit transaction fits the bank's risk strategy and to arrange adequate risk mitigants to prevent undue credit risk.

(1) Risk exposure

The amount exposed to credit risk is exposure risk. Exposure includes any risk pertinent to the default of a counterparty:

- All exposures that require capital under the Capital Rules
- All exposures on- or off-balance sheet
- All exposure to trading books or banking book
- Indirect exposure to a credit protection provider
- The exposure of collateral, if its value is recognized in the calculation of the counterparty credit risk

(2) Concentration risk

Risk concentration can be viewed as any exposure with the potential to produce substantial losses to threaten banks' capital strength or earnings or otherwise undermine public confidence in the bank.[25] The table below lists out some related examples:

Additional Resources for Trainers:
The HKMA pointed out in its research articles that concentration risk presents the two sides of the same blade. Unbalanced portfolio structure was the culprit of several significant bank crises in the past. The table below lists out some of the classic cases.

Case	Bank	Country for Reference	Years
1	Lehman Brothers	USA	2000s
2	Barings Bank	UK	1990s
3	Bank Bumiputra (Carrian Group Case in HK)	Malaysia	1980s

(3) Assuming concentration risk

BIS[26] pointed out that limit systems often do not capture concentration risk that arises from distinct but correlated exposures. Besides, limits are often decided on the basis of a variety of business considerations and strategic objectives, of which controlling concentration risk is only one aspect.

[25] Refer to Section G Subsection 3.1 for HKMA SPM CR-G-8 Large Exposures and Risk Concentrations
[26] Studies on credit risk concentration (An overview of the issues and a synopsis of the results from the research Task Force project), Working Paper No. 15, November 2006, Basel Committee on Banking Supervisor. Studies on credit risk concentration: an overview of the issues and a synopsis of the results from the Research Task Force project - November 2006 (bis.org)

(4) Direct limit on concentration

The analytical framework below shows examples of concentration risks controlled by exposure limits:

Risk	Description	Examples	Causes And Sources of Risk	Cases With Valuable Lessons Learned
Large exposure	At individual counterparty	Single name exposure	Single customer concentration exceeds economic capital	Carrian Group and Bank Bumiputra
	In groups of linked counterparties	Linked counterparties exposures	The financial situation of one company affects that of one or more in the linked counterparties	Bank Bumiputra in Carrian Group Case
Sector exposure	In specific economic/ industry sectors	Shipping industry Aviation industry Retail industry Real estate industry Construction materials industry	Highly cyclical	Cyclical downturn during COVID19 outbreak since 2020
Sovereign exposure	In specific geographical locations	Local government granting credit facilities to large property developers	Political instability	Russia's situation[27]
Tenor	Concentration of maturities	A bank having liquidity shortage to meet highly concentrated maturities	Should carefully manage the maturity schedules	
Funding	Short-term debt to fund long term purpose	A balance between asset maturity and liability maturity not maintained	Difficulty to roll over short term funding	
Foreign currency	Foreign currency debt repaid by local currency incomes	A bank borrows long-term in foreign currency to fund short-term loan.	Sovereign monetary policy change	Dramatic decline in exchange rate of Korean Won in 1997s

[27] Bloomberg news, April 9, 2022, Russia's First Default in a Century Looks All But Inevitable Now - Bloomberg

<u>(5) Contagion risk from concentration</u>

The table below shows the various forms of contagion risk:

<table>
<tr><th>Forms Of Contagion Risk</th><th>Description</th><th>Examples</th><th>RPs To Exercise Extra Care In</th></tr>
<tr><td>Correlation of countries</td><td>Adverse development in a particular country may have effect on other countries that have a close economic linkage with it</td><td>War in Ukraine might have been related to high inflation due to food price increase.</td><td>Adverse development in major countries which are parts of essential supply chains</td></tr>
<tr><td>Correlation of sectors</td><td>Financial problem in a particular industry may have effect on other industries that have a close economic linkage with it</td><td rowspan="2"><u>Positively Correlated</u>
- Real Estate Development
- Construction materials

<u>Negatively Correlated</u>
- Healthcare industry
- Retail industry

As a general rule, negative correlation is better than positive correlation in the portfolio.</td><td>The correlations of accounts and portfolios that vary over business cycles and across firms</td></tr>
<tr><td>Correlation of defaults</td><td>One default case may have effect on the other seemingly regular cases</td><td>The correlations among borrower’s default circumstances</td></tr>
</table>

This list below shows the basic derivation of contagion risk when two portfolios are correlated.

(6) Concentration risk on collateral

As risk mitigation measures, banks will have the borrowers secure wholly or partially a loan. When a preference for similar collaterals cumulates, other credit asset concentration risk arises. The table below shows one example:

Forms of Concentration Risk	Description	Examples	Sources and Causes of Risk
Collateral	Collateral in land or share	Correlation between collateral in land/properties from Real Estate Industry	Cyclical

(7) Principles of controlling risk concentration

The table below lists out some of the principles of controlling risk concentration:

Situations	Principles	Elaboration
All	Manage concentration risk Avoid excessive risk concentration	e.g., exposure to individual counterparties e.g., exposure to groups of counterparties with similar risk characteristics e.g., exposure to economic sector e.g., exposure to geographical sectors e.g., exposure to types of lending with similar characteristics - Property Lending - Taxi Loan
All	Exercise care to avoid exposures not subject to statutory limit	
All	Ensure that prudent credit granting criteria are met	e.g., extension of large credit facilities exceeding 10% of a bank's Tier 1 capital
Internal risk rating	Ensure that the internal rating system in use is commensurate with the nature, size, and complexity of banks	e.g., internal ratings are assigned to individual counterparties as a basis for setting internal exposure limits for those counterparties
Statutory limit	Understand that the statutory limits are not necessarily indicative of the level of risks to take	e.g., statutory limit of 25% does not mean that as high a level of exposure as this is appropriate for a particular counterparty or a particular bank
Statutory limit	Ensure that prudent credit granting criteria are met	e.g., extension of large credit facilities exceeding 10% of a bank's Tier 1 capital
Collateral	Avoid undue reliance on collaterals, guarantees, and credit derivative contracts	e.g., collaterals/guarantees to support large exposure, as reduction of exposure does not imply that the excess risk on credit risk mitigation covered exposure is eliminated

Counter-Party	Ensure that level of exposure is commensurate with that counterparty's financial strength and creditworthiness	e.g., exempted exposure e.g., exposure covered by credit risk mitigation
Group of linked counterparties	Capture, ideally, all parties linked in such a way that the financial strength of any of them may affect that of the others	e.g., a bank may choose to apply linking by economic dependence
Other risks	Monitor and control other risk adequately	e.g., legal risk, operational risk, market risk
Stress scenarios	Conduct stress-testing and scenario analysis to assess the potential losses arising from changes in economic cycles, interest rates, market movements and liquidity conditions.	Refer to Submodule 1.5 for Stress Testing

Align Risk Management Strategies with Banks' Strategies on complex products and borrowers' structure

(1) Portfolio risk control

The desirable risk profile is documented and communicated via various credit policies. A credit risk policy guides a bank's management regarding adequate business development. The credit risk policy indicates and embeds a bank's tolerance with the expression of various limits on the credit asset portfolios. Among other limitations, credit policies must include the risk tolerance indicators/maximum/ceiling. Furthermore, for some risk tolerance levels, there are regulatory requirements. The desirable risk profile is documented and communicated via various credit policies.

A credit risk policy guides a bank's management regarding adequate business development. The credit risk policy indicates and embeds a bank's tolerance with the expression of various limits on the credit asset portfolios. Among other limitations, credit policy must include the risk tolerance indicators/maximum/ceiling. Furthermore, for some risk tolerance levels, there are regulatory requirements.

Examples of Credit Risk Policy

- Credit Risk Policy – Large Exposure and Risk Concentration
- Credit Risk Policy – Loans and Credit Facilities
- Credit Risk Policy – Collaterals and Guarantees
- Credit Risk Policy – Loan Provisioning
- Credit Risk Policy – Derivatives
- Credit Risk Policy – Mitigation Techniques

(2) Quality credit risk policy[28]

- The credit risk policy should follow the principles of prudence.
- A credit policy should not be relaxed because of competitive pressures.
- The credit risk policy should be enforced and applied consistently.
- The credit facilities are for credit-worthy customers.
- Banks should avoid risk concentrations.

[28] Refer to Section G Subsection 3.1 for HKMA SPM CR-G-1 General Principles of Credit Risk Management

- Locally incorporated banks with overseas branches should establish credit policies adapted to local conditions.
- All relevant employees need to be aware of the credit risk policies. They should understand the credit policies and apply them at the consolidated and individual subsidiaries' levels.

<u>(3) Keep abreast of regulatory requirement both locally and cross-border-wise</u>

Each bank has a written statement of its credit risk strategy and policy which should be consistent with its risk appetite, level of capital available for credit activities and credit management expertise. Each bank should keep abreast of regulatory requirement both locally and cross-border-wise.

The table below shows a sample outline of credit policy – large exposure and concentration:

Sample Outline of Credit Policy

The policy should include a minimum as in the following. In addition, the policy would have variations for banks with different business natures and scales.

Policy Outline

- **Definition**: The definition of exposure
- **LC**: Use criteria for identifying a group of linked counterparties
- **Limit:** The individual and aggregate exposure limits for various types of counterparties. The 25% statutory limit under Rule 44 (1) should not necessarily be considered the maximum limit for counterparty exposures.
- **Limit:** The aggregate maximum exposure limits for industry, an economic sector, a country, a region, or a group of borrowers which have a similar or homogeneous risk.
- **Limit:** Set the internal limits on both a solo and a consolidated basis
- **Exceed limit**: When exceeding the limit, the party authorizing the excesses is: e.g., the bank's Board of Directors or Credit Committee with delegated authority from the Board.
- **Authority**: The delegation of credit authority within the bank for approving significant exposures
- **Secured and non-secured:** No risks are free. Document any differentiation between the limits for secure and unsecured exposures.
- **Clustering limit:** The clustering limit (the maximum amount of aggregate non-exempt, non-bank significant exposures, in terms of amount or percentage of the bank's Tier 1 capital, which may exist at any time.
- **Procedures:** The procedures for identifying, reviewing, monitoring, and controlling significant exposures
- **Report**: The allocation of responsibility for reporting large exposures to the HKMA and ensuring compliance with the Banking (Exposure Limit) Rules (BELR)

Part XV of the Banking Ordinance (BO) (e.g., SS81B) and other prudential obligations concerns concentration risk.

1.3.2.2 Measures to Diversify Risk

<u>(1) Risk diversification approaches – simple versus statistical</u>

The table below compares the two methods of credit risk diversification:

Simple and Straight Forward Diversification	Sophisticated and Statistical Method
- Increasing the number of borrowers with smaller loan sizes to form a portfolio of the same amount (before diversification) helps to lower the portfolio risk	- Analyse the credit risk profile of accounts in a portfolio to identify the ones with correlations - Study the risk profiles of typical uncorrelated or less correlated accounts - Fine-tune the credit policies to accommodate the updated desirable borrower's risk profile

<u>(2) Credit risk mitigation – traditional versus portfolio approach</u>

The table below compares the two approaches of credit risk diversification:

	Portfolio Approach	Traditional Approach
Pros and cons	Highly efficient but imperfect credit portfolio behaviours may affect outcomes of analysis	Intuitive, but require RPs to cumulate experience to make the intuitive judgment
Endorsement	The portfolio approach of credit risk is one of the central themes of the BASEL Accords.	Endorsed by the Board of Directors
Focus	Correlations between portfolios	Focus on reducing the concentration risk by dispersing the portfolio among as many variables as possible so that a large and diversified portfolio is obtained
Method	Based on Markowitz's portfolio section theory	Diversify across borrowers' - Name - Sector - Industry - Geography - Countries - Product
Decision	Mathematical	Based on "Intuition," "Experience," and "Expertise"
Compensation to the traditional model	Behavioural patterns Covariance among - Sector - Industry - Geography - Countries - Products Portfolio analysis	Traditional model coupled with application of simple information technology might result in longer turnaround time to understand the behavioural patterns
Loophole	Past data analysis	Correlation between homogeneous groups is not clearly visible

	Risk measured by volatility (standard deviation) which may not be agreed by risk management veteran Correction assumed to be fixed and constant	
Constraints	Credit assets with higher default risk will "dominate" the negative correlation between portfolios.	

<u>(3) Credit risk diversification has limitation</u>

Credit risk diversification is possible to a certain extent only. The analytical framework below shows some examples of the limitations:

Risk Type	Description	Nature	Lessons Learned
Systematic risk	External factors which impact all portfolios. e.g., economic factors e.g., sovereign factors	Cannot be eliminated by combining assets to become a very "diversified" portfolio	2008 US Sub-prime crisis 1997 Fast East Asian Crisis
Unsystematic/ diversifiable risk Concentration risk - Country - Region - Sector - Industry - Collateral - Currency - Counterparty - Tenor - Funding source	Industry risk factors Company risk factors	Can be reduced with adding assets with negative correlations into the portfolio	Adequate underwriting criteria to select successful application based on bank's risk appetites

1.3.2.3 Mitigate Credit Risk

(1) Security and third-party guarantee

The financial strength and payment capability is the primary consideration of a credit offer. The collateral and guarantees are a secondary source of repayment and other purposes. The analytical framework below shows some examples:

Purpose	Collaterals	Guarantees
Risk Mitigation (Exposure Reduction)	Secondary source of repayment upon booking	Secondary source of repayment upon booking
Loss Reduction (Gain control of title)	Primary source of repayment upon default event	Primary source of repayment upon default event
Early Warning Signals	Indicate borrowers' deteriorating repayment ability (e.g., mark-to-market in margin financing)	Default incidence of guarantor in another bank
Eligible for applying lower capital risk weight to credits secured by collaterals	Possible	Non-applicable

(2) Insurance

Credit insurance is exclusive to protecting trade receivables. It covers a company against the risk of not being paid by the customers after a sale. For most borrowers, the largest single current asset is trade receivables. Therefore, credit insurance coverage is one of the means to protect the borrowers' earnings.

(3) Other risk management measures and their limitations

There are other risk management measures, including but not limited to the following strategy:

- Asset Sales
- Asset Securitization
- Credit Derivatives

RPs should be familiar with the BIS Principles on controlling residual risk using the above measures.

Asset sales, asset securitization and credit derivatives

- **Experts required**

Asset sales, asset securitization, and credit derivatives are more sophisticated methods of portfolio risk management. The operationalization of these risk management measures requires a designated taskforce/team with skilled RPs, and legal, accounting, and treasury experts. In addition, the Credit Risk Committee and Senior Management must understand the measures' end-to-end process and risk management for approval.

- **Limitations to consider when choosing credit risk mitigation techniques**

In controlling the risk of a credit portfolio, banks need to consider both available instruments in the markets and the limitation of the risk management measures for consideration. The table below shows a sample summary:

<table>
<tr><th>Limitations for Considerations[29]</th><th>Examples of Instruments</th></tr>
<tr><td>The bank’s own knowledge and experience in such techniques</td><td rowspan="7">- Collaterals with priority claims
- Standby letter of credit
- Guarantees by third party
- Netting agreements against deposits from the same counterparty
- Set strict loan covenants
- Credit derivatives and other hedging instrument</td></tr>
<tr><td>Cost-effectiveness</td></tr>
<tr><td>Types and financial strength of the counterparties</td></tr>
<tr><td>Types and financial strength of the issuers</td></tr>
<tr><td>Correlation with the underlying credits</td></tr>
<tr><td>Availability, liquidity and realizability of the credit mitigation instrument</td></tr>
<tr><td>The extent to which legally recognized documentation can be adopted</td></tr>
</table>

Residual risk monitoring[30]

While using Credit Risk Mitigation techniques reduces or transfers credit risk, it simultaneously may increase other risks (residual risks). Residual risks include legal, operational, liquidity, and market risks.

Examples on managing residual risk in legal area – legal certainty

- For banks to obtain capital relief for any credit mitigation techniques, they must fulfill the conditions. Firstly, all documentation of collateralized transactions must be available. Secondly, documentation of on-balance sheet netting, guarantees, and credit derivatives must be binding on all parties and legally enforceable in all relevant jurisdictions.
- Banks must have conducted the sufficient legal review to verify the above have a well-founded legal basis to reach this conclusion and undertake further review necessary to ensure continuing enforceability.

[29] Refer to Section G Subsection 3.1 for HKMA SPM CR-G-1 General Principles of Credit Risk Management

[30] Section 22.6, https://www.bis.org/basel_framework/chapter/CRE/22.htm

(4) BIS principles on controlling residual risk and hedging maturity mismatch

The BIS advocates that banks should adequately control the residual risk, resulting in the reduction or transfer of credit risk. If these risks are not sufficiently controlled, banks may be imposed additional capital charges or take other supervisory actions.

Note to the trainer: Trainers may consider sharing the lessons learned from AIG in the class and prepare long questions or case-based questions based on simulated scenarios.
Link for reference only: What Went Wrong at AIG? (northwestern.edu)

Note to the trainer: Trainers may alert learners that a maturity mismatch[31] *occurs when the residual maturity of a hedge is less than that of the underlying exposure. Hedges with maturity mismatches are only recognised when their original maturities are greater than or equal to one year. Maturity of hedges for exposures with original maturities of less than one year must be matched to be recognised. In all cases, hedges with maturity mismatches will no longer be recognised when they have a residual maturity of three months or less.*

(5) Credit risk exit strategy

Banks should have strategies to assume credit risk and exit from existing credit risk. As credit risk diversification has a limit, transfer of credit risk would be the alternative to control/reduce risk.

(6) New product launch[32]

Upon every new product launch, representatives of the credit risk management system will ensure the proposed credit guidelines have considered CAMEL risk factors and their risk mitigation. In addition, launching adequate new products will add revenue and new correlations to the portfolio. At the same time, understanding the correlation of the new product with the existing portfolio is essential. The table below is a brief summary of the considerations on new products' risk:

Types of Risk Related to New Product	Practice
RPs should be alert when new products with different risk characteristics than the products in the existing portfolio are introduced for consideration.	- Ensure that the Board of Directors understand the risks fully. - Conduct formal risk assessment of the product and activities - Establish, duly approved as appropriate • Credit policy • Credit procedures • Credit controls

[31] Section 22.97 & 22.99, https://www.bis.org/basel_framework/chapter/CRE/22.htm
[32] Refer to Section G Subsection 3.1 for HKMA SPM CR-G-1 General Principles of Credit Risk Management

1.3.2.4 Identify Risk Factors for Quantification

(1) Acceptance criteria and factors affecting the value of the credit assets for purchasing and selling to quantify the risk

Banks can achieve proper risk monitoring and control of the concentration risk in collaterals with the relevant credit risk policy spelling out the acceptance criteria regarding collaterals. The table below is an example of the policy outline:

Credit Policy	Acceptance Criteria on Collaterals	
Price	Determinable market value; OR Reasonably established and Verifiable	
Market	Readily available secondary market	
Repossession	Legally enforceable and without impediment	
Secure control	Movable asset - Take physical custody (Gold, precious metal, taxi medallion) - Means to locate (Machine, equipment, vehicle) - Must have expertise to manage - Must have system to manage	
Expertise and System	Must have expertise to manage	Must have system to mange
Term of validity	Aligned with the term of the underlying obligations which it secures	
Caution	Collaterals with material positive correlation with the credit quality of borrowers.	- Shares of borrowers - Shares of borrowers' related company
LTV	List of acceptable collaterals	Maximum loan-to-value

(2) Portfolio control on guarantee

Proper risk monitoring and control of the guarantees are achieved with the relevant credit risk policies which spell out the acceptance criteria regarding collaterals. The table below shows an example of the policy outline:

Credit Policy	Acceptance Criteria of Guarantees	
Title	Direct claim on the guarantor	
Condition	Unconditional and irrevocable	
Legal	Legally enforceable with proper documentation	
Term of validity	Aligned with the term of the underlying obligations which it secures	
Financial strength of the guarantor	Thoroughly assess the financial strengths as "adequate for discharging the obligation under the guarantee"	- Not linked to the borrower - Not affected by the financial position of the borrower - The financial strength is reviewed during the annual credit review
Nature of the underlying loan	Unsecured	Except if guarantee issued by - Central governments - Central banks - Banks - Oversales incorporated banks Under adequate supervision with repayment capability

(3) Portfolio control on collaterals and risk mitigation

Credit risk control and monitoring of collaterals' value enables timely remedial actions taken on the impact of contagion risk. Credit risk mitigation techniques protect the banks' interest and, at the same time, effectively reduce the risk-weighted amount. The table below shows some examples of mitigation measures embedded in credit policy:

Risk	Sources and Causes	Mitigation Measures Embedded in Credit Policy
Valuation	Valuation method	- Regular revaluation - Based on current market value • With willing buyer and seller • At arm's length • Reasonable period for sale • Freely exposed to market - Based on reasonable and prudent assumptions - Valued at realizable market value • Net of carry cost • Net of repossessed collateral • Net of legal fee • Net of other associated charges for disposal
	High volatility	- Apply conservative haircut - Quantum of haircut depends on volatility - A sudden rebound in price is ignored - Top-up
	On bad debt	- More prudent valuation
	Valuer's competency	External - Establish criteria to accept external value - Keep a list of external valuers and surveyors - Back-test the valuation with actual sales proceeds versus estimated value Inhouse - Cross check inhouse valuation with external valuers - Independent from marketing or credit initiation
	Severe conditions	• Stress testing (depends on the outcomes, may have further mitigation measure)

1.3.3 Identify the Relevant Credit Risk Indicators

1.3.3.1 Assess the situation for Developing Execution Plan

(1) Assessment of the situation to identify the most suitable approach in risk management and execution

Banks should have flexible information systems and analytical techniques that provide sufficient information on the risk profile and structure of the credit portfolio for

- continuous evaluation of the existing forecasting and review approach
- evaluating the effectiveness of different approaches to risk management for risk mitigation or transfer

(2) Examples of the indicators of the account risk profile

- Product/Type of facility
- Terms – repayment
- Terms – interest rates
- Terms – others
- Size of exposure – Secured
- Size of exposure – non-secured
- Size of exposure - groups of related borrowers
- Size of exposure – Sectors (geographic, industry)
- Account performance – delinquency
- Internal credit rating – current
- Internal credit rating – future over the life of the individual loans in the portfolio
- Outstanding versus commitments
- Types ad coverage of collateral

(3) Examples of portfolio indicators computed with conventional methods and statistical tools

Banks could compile risk indicators at the portfolio level with simple exposure aggregation. Banks could also compile risk indicators by applying statistical tools on the exposure at default[33]. RPs who would like to understand the basics of application in credit portfolio analysis may catch up with the research reports from BIS.org.

With the deployment of statistical tools for portfolio analysis, several benefits exist.

- Simulation of different approaches in risk management with direct risk limits becomes possible to develop the most suitable strategy.
- Simulation of different approaches of risk mitigation measures becomes possible for developing the most suitable mitigation strategy.

The table below shows some examples of portfolio risk indicators:

Forms of Concentration Risk	**Methods to Compute Indicators of Concentration in Particular Counterparties**
Large Exposure	Individual count
	Groups of linked counterparties
Sector Exposure	Specific economic sectors
	Specific industry sectors
Sovereign Exposure	Specific geographical locations
Collateral Exposure	Collateral assets in land or shares
Correlation	Sector correlation leading to contagion effect
	Default correlation leading to contagion effect
Others	Foreign currencies
	Maturity funding

The table below shows an example of Portfolio Risk Indicators with application of statistical methods:

No. of Loans	10	50	100	500	1,000	2,000	3,000
VaR (95%)	0.0526	0.0508	0.0459	0.0393	0.0386	0.0378	0.0389
VaR (99%)	0.5264	0.1695	0.1009	0.0786	0.0773	0.0763	0.0758
VaR (99.9%)	0.5263	0.1864	0.1284	0.0982	0.0971	0.0950	0.0947

Credit VaR at the specified level of confidence expressed as a fraction of total portfolio exposure. The calculations assume PD=1% and asset correlation of 20%. The economic capital (credit VaR) varies over a sequence of loan portfolios.

[33] Page9, Studies on credit risk concentration: an overview of the issues and a synopsis of the results from the Research Task Force project - November 2006 (bis.org)

1.3.4 Identify the Relationship of Risk Level Change with Loan Provision

1.3.4.1 Evaluate Effectiveness of Mitigation

The trainer's and guest specialists' sharing in seminar during the class: **The trainer will update the latest development on loan classifications, providing rules and regulations, the relevant credit cases, lessons learned, and experience sharing. Alternatively, the trainer may arrange for veteran RPs as guest specialists to share these topics in the suggested one-hour seminar during the class, or, for in-house training, combine the sharing in the regular credit conferences of the banks. The seminar can take place as the last session of the class.**

(1) Impact of account risk changes to provisioning

May refer to the Section 1.1.4

(2) Impact of portfolio risk changes to provisioning

RPs should be familiar with the implication of portfolio level credit risk indicators to the senior management and try to obtain insight from the indicators by asking strategic questions. The table below shows some examples of credit risk indicators:

Credit Risk Indicators	Default Risk	Exposure Amount	Recovery Rate	Liquidity	Boundary	Concentration
Aggregate exposure versus portfolio limit - By industry - By country - By product - By type of counterparty • Banks • Non-bank financial institutions • Corporates • Retail customers, etc.		✓			✓	✓
Total portfolio by internal credit rating and trend		✓			✓	✓
Total exposure to groups of related countries		✓			✓	✓
Large exposures		✓				✓
Connected lending		✓				✓
LTV asset-based lending with loan-to-value ratios exceeding pre-set limits (e.g., mortgages with			✓			

loan-to-value ratios exceeding 70%)						
Ageing Overdue accounts with ageing analysis (i.e., amounts overdue one, three, six months etc.)	✓					
Risk migration Credit downgrades and loans rescheduled during the period	✓					
Interest payment Interest suspended	✓					
Adequacy of provisions	✓					
Facilities expiry	✓					
Undrawn commitment Ratio i.e., undrawn facility amounts as a percentage of total facilities				✓		
Loan-to-deposit ratio				✓		
Results of stress testing - Policy or limit amendments - Hedging - Exposure reduction (e.g., through asset sales, securitization, etc.) - Contingency planning for actions to be taken should a particular scenario happen	✓					✓

1.3.5 Identify Key Regulations, Report Remedy and Make Recommendation

1.3.5.1 Provide Suggestions on Improvement

(1) Reporting prudential limits

If a bank, in the opinion of the HKMA, is exposed to a significant level of risk concentration that may affect its financial stability, the HKMA may set prudent limits on the bank's exposures case-by-case basis to particular

- Counterparties
- Economic sectors
- Geographical sectors

(2) Clustering limits

If a bank has many sizable single exposures, it needs to set an internal limit on its large exposures and risk concentration policy to control the aggregate of its non-exempt large exposures, which should be

- Realistic
- Should not be so high that it could never be breached

The HKMA will consider whether

- The level of the bank's capital adequacy ratio
- Consistency with the bank's large exposures and risk concentrations policy
- The number of exposures
- The individual size and nature of business of borrowers concerned
- The characteristics of the bank, including the nature of its business and the experience of its management

(3) Current risk management review

With the deployment of statistical tools in credit risk management, quantitative analysis can be conducted to construct various scenarios. Though this will give RPs relatively visible outcomes in the comparison of different simulated risk mitigation measures, RPs should bear in mind that the assumptions should be validated carefully from two perspectives: the historical data generated from within the bank and the forecasted data generated with economic outlook, industry outlook and the inherent risk of companies within the target markets.

1.4 Submodule 4: Stress Testing

Note to trainers:
Trainers can pick, change, and repackage the content sample below according to learners' needs

1.4.1 Introduction

A banking crisis is hard to predict. A global database of banking crises was first compiled by Caprio and Klingebiel (1996). The latest version of the database, updated to reflect the recent global financial crisis, is available as Laeven and Valencia (2012). It identifies 147 systemic banking crises (of which 13 are borderline events) from 1970 to 2011. It also reports on 218 currency crises (defined as a nominal depreciation of the currency vis-à-vis the U.S. dollar of at least 30 percent, which is also at least ten percentage points higher than the rate of depreciation in the year before) and 66 sovereign debt crises (defined by government defaulting on its debt to private creditors) over the same period. The database has detailed policy responses to resolve crises in different countries. Analyses based on the dataset, such as Cihák and Schaeck (2010), suggest that consistently predicting banking crises is very difficult, but there are some variables (such as those capturing high leverage and rapid credit growth) that indicate an increased likelihood of a crisis.

Although the crisis is hard to predict, portfolio management enables proactive credit risk management before serious problems arise. What's more, stress testing has become relevant to advert banks' management regarding the credit portfolio performance during stressful conditions.

1.4.2 Monitoring of Portfolio – Theory and Practice

1.4.2.1 Suitable Approach to Stress Testing

Banks conduct portfolio analysis with assumptions of “normal” conditions and “stressful” scenarios from time to time.

(1) Enterprise collaboration

Various credit risk management functional units perform the portfolio analysis continuously or regularly to ensure timely identification of early warning signals and subsequent remedial actions. The table below summarizes the fundamental portfolio analysis:

At Portfolio Level	Proposed Frequency	Performed By
Performing portfolio analysis and risk assessment by type, sector, and internal credit rating	Monthly	Middle office
Performing trend and ratio analysis	Monthly	Middle office
Conducting loan migration analysis or stress test	Monthly	Middle office
Reviewing portfolio risk concentration	Monthly to Quarterly	Middle office/senior Management/credit committee/Board of Director
Monitoring compliance with internal and regulatory limits	Daily	Middle Office/compliance unit
Monitoring connected lending	Monthly to Quarterly	Credit committee/Board of Director

While there is a proposed frequency in the SPM, the frequency of monitoring with portfolio analysis should be increased if there are identified weaknesses or the facilities are approaching the limit.

(2) Normal conditions

Credit risk characteristics of a portfolio determine how external factors (e.g., macroeconomic factors, industry factors) and internal factors (e.g., entities financial strength, business strength) impact its risk level.

Understanding the portfolio's characteristics and sensitivity to the changes in external and internal risk factors is therefore essential for a bank's planning and control of credit risk with CRM techniques.

(3) Stressful conditions

While a bank might not have a crystal ball on hand, it relentlessly collects early warning signals, implements risk mitigation measures, sets standards to control the portfolio risk, effect risk transfers, and ensure adequate underwriting criteria for new loans booked.

However, with technological advancement leading to globalization, interlinkage between different credit risk portfolios increases and becomes more complex.

Stressful conditions in one geography might have a contagious effect on another, similar to economic sectors and counterparties. Therefore, portfolio analysis is beneficial to credit risk management under these circumstances.

(4) Planning for stress testing

Analysis from a portfolio perspective enables the credit risk management to understand the key drivers which impact the portfolio level risk upon changes in the external risk factors. As a result, the management obtains insights into credit risk management planning and control. The analytical framework on the next page shows examples of asking the right questions for stress testing scenarios:

Strategic Questions to Ask about Credit Risk Management	Under Normal Conditions	Stressful Scenarios		Type of Analysis
		Under Assumed Stressful Conditions	Contingency Plan Adequacy	
What is the risk profile of the credit portfolio?	X	X	X	- Exposure at risk - Probability of Default - Recovery rate - Tenor
How much more risk the bank could take?	X	X	X	
How has the new product launch changed the portfolio risk?	X	X	X	
How much loan provision is adequate?	X	X	X	
How adequate is the liquidity to meet the risk commitment?	X	X	X	
Is risk return commensurate with the risk appetite?	X	X	X	- Risk-return
How adequate is the bank's capital to absorb the risk?	X	X	X	- Credit Loss Distribution - Tail risk
What is significant risk of the credit portfolio?	X	X	X	Concentration by - Country - Geography/ Location - Sector - Industry - Product - Counter-parties - Tenor - Maturity - Collateral - Guarantee
Which are the vulnerable sectors in the portfolios?	X	X	X	
How effective has the portfolio diversification strategy been?	X	X	X	
What should be the prioritization of diversification?	X	X	X	
What should be the prioritization of risk transfer in case of early warning signals?	X	X	X	
What is the concentration risk to the bank's advantages?	X	X	X	
How effective was the portfolio diversification when default rate suddenly surges with change in the economic conditions?	-	X	X	Correlation of - Country - Geography/ Location - Location - Sector - Industry - Product - Counter-parties - Tenor - Maturity - Collateral - Guarantee
What are the interlinks in the credit portfolio?	X	X	X	
What will be the contagion effect when a particular industry face significant downturn?	-	X	X	

(5) Limitations of stress testing

The Board and senior management should be made aware of the limitations of the stress test performed. Examples are:

- Extent of judgement by risk controllers, economists, business managers and traders and the quality of internal dialogue and debate among the relevant experts
- Key underlying assumptions on the design and setting of stress scenarios taking into account of spectrum and severity of events
- Likelihood of a stress event occurring

1.4.2.2 Evaluate the existing portfolio

(1) Stress Testing

Banks are expected to have in place stress-testing programme appropriate to the nature and complexity of their business activities. Stress-testing involves the use of various techniques to assess a bank's potential vulnerability to adverse changes in market conditions.

(2) Purpose

RPs should continually evaluate existing portfolios to ensure early identification of credit quality deteriorating signals, desirable outcomes achieved with implemented mitigation measures, timely remedial actions taken, and, most importantly, the credit risk levels within risk appetites.

(3) Functions

Stress testing is proactive credit risk management serving the following functions:

- Enhance forward-looking assessment of risk exposure under stress conditions
- Enable the development of appropriate risk mitigation strategies
- Enable the development of contingency plans under stressed conditions
- Enhance understanding of the risk profile
- Facilitate monitoring of changes in the above risk profile
- Enable the Board and senior management to review the setting of the risk appetite (e.g., To evaluate whether the statement "The bank is to withstand a mild recession while achieving break-even profitability and maintaining an X% Tier N capital reserve" holds under stressful scenario)
- Enable the management to review whether risk exposures commensurate with the risk appetite
- Enable the management to incorporate assumptions on "volatility and correlation" in stress-testing scenarios
- Enable RPs to quantify "tail risk" (risk of losses under extreme conditions) using statistical risk measures (value at risk, economic capital model)
- Identify vulnerability sectors with bank-wide impact
- Enable the management to evaluate the bank's capacity to withstand stressed situations (profitability, liquidity, capital adequacy)

(4) Outcomes

RP needs to review reports of the stress testing outcomes to prepare for remedial actions for senior management's endorsement:

- Policy or limits amendments
- Hedging
- Exposure reduction by risk transfer (e.g., asset sales, securitization)
- Contingency planning for actions to be taken should a particular scenario happen (e.g., To evaluate whether the statement "The bank is to withstand a mild recession while achieving break-even profitability and maintaining an X% Tier N capital reserve" holds under a stressful scenario)
- Enable the management to review whether risk exposures commensurate with the risk appetite
- Enable management to incorporate assumptions on "volatility and correlation" in stress-testing scenarios
- Enable RPs to quantify "tail risk" (risk of losses under extreme conditions) using statistical risk measures (value at risk, economic capital model)
- Identify vulnerability sectors with bank-wide impact.
- Enable the management to evaluate the bank's capacity to withstand stressed situations (profitability, liquidity, capital adequacy)

(5) Stress testing design

Different scale and complexity

The table below shows examples of the HKMA suggested adaptation regarding stress testing:

Overall Direction	Banks with Small and Simple Operations	Bank with Large and Complex Operations
The HKMA adopts a "proportionate approach" when assessing banks' stress-testing programme, having regard to the nature, scale, and complexity of - their business activities - risk associated with those activities	Banks with small and simple operations with less risk in the activities will **not** have an elaborated and sophisticated stress-testing programme.	Large and complex banks should be able to undertake more extensive and sophisticated stress testing.

<u>Stress events, risk models and potential challenges</u>

Banks frequently conduct stress testing have cumulated more experience to overcome the potential challenges of stress testing. The table below mentions some of these potential challenges:

Category	Potential Challenge	Possible Solutions
Management oversight	Provide inadequate Board and senior management oversight of the stress-testing process	The Board and senior management understand thoroughly the stress test scenarios and approve the stress testing.
Stress event	Under-estimate the potential severity and duration of stress events	Take from lessons learned from the past
Stress event	Take into Inadequate account of system-wide interactions and feedback effects caused by the market reactions to stress conditions	
Non-systematic risk factors	Have insufficient identification and aggregation of risks on a firm-wide basis	Improve continually on internal rating quality
Risk models	Have limitations associated with stress-testing models and methodologies (e.g., inability to change stress scenarios flexibly in response to a rapidly evolving environment, and breakdown of statistic relationships in time of stress.)	Improve continually
Products complexity	Have an inadequate coverage of risks arising from, for example, - Complex structured products - Pipeline/securitization risk - Counterparty credit risk	The Board and senior management understand thoroughly the stress test scenarios and approve the stress testing
Funding liquidity	Manage risk within the markets which are highly interactive and monetary and fiscal policies of big markets have significant impacts on market liquidity	Seek for expert inputs to the stress-testing scenario assumptions

1.4.2.3 Key Factors for Stress Testing

(1) Stress testing design

The analytical framework below summarises the key risk factors to be considered in the stress test:

Factors related to Credit Risk Management	Nature	Measures
Credit risk	Non-systematic	**Default probabilities** - Rise in delinquencies - Rise in charge-offs - Decline in recovery rates - Value of supporting collateral - Rating migration of counterparties - Rating change of Issuers or credit protection providers - Worsening of credit spreads - Internal risk rating
Concentration	Non-systematic	**Concentration** - Individual counterparties - Products/instruments - Industries - Market sectors - Countries or regions
Contagion effects	Non-systematic	**Inter-relationships** - Over time - In time of Stress - Across markets - Across countries - Across regions - Across counterparty types - Across asset class
Macroeconomic conditions	Systematic	**Default probabilities** - Economic downturns - Significant market shocks - GPD growth - Change in property prices - Unemployment rate - Inflation rate/ deflation rate
Interest rate	Systematic	**Yield curve** - Parallel shift - Twist - Basis risk (Increase in basis risk - changes in relationships between key market rates)

Market/price risk	Non-systematic	**Changes in price/fair market values** - Currencies - Equities - Commodity - Other financial instruments/derivative positions
Product specific e.g., complex products	Non-systematic	**Prepayment amount and frequency** Contingent credit (e.g., derivatives) exposure
System-wide interaction and feedback effects	Non-systematic	**Likely behavioural responses of other market** Participants and their counterparties on the broader market in times of stress, and how that impact would feedback to the bank's positions.
Modelling assumptions - Correlation - Volatility - Holding period	Non-systematic	**Value-at-risk model/pricing model**
Political and economic factors - Industries - Regions - Markets	Non-systematic	**Value-at-risk model/pricing model**

At a boarder level, other relevant risk factors might include

- Liquidity risk
- Operational risk
- Strategic risk
- Reputation risk

1.4.2.4 Quantify Sensitivity of the Portfolio with Design Methodology

(1) Testing plan and altering assumptions

Stress Testing Programme Outline	**Content (Banks Remains Flexible to Respond Fast)**	**Remarks**
Main objectives	- Identify risk - Control risk - Improve capital and liquidity planning	Articulate to risk appetite
Governance structure	- Board of Directors (Responsible) - Senior Management (Accountable) - Business Managers - Risk Managers - Traders	Aware of limitation, Actively engaged
Frequency	- Dependent on type and purpose of stress-testing - Fixed interval	
Methodology	- Each component in the stress-testing programme - Method to define relevant scenarios - Method using role of expert judgement	
Assumptions and fundamental elements	- Range of key scenarios - Severity of key scenarios	
Procedures	- Reporting of outcomes - Review of outcomes - Recommended remedial actions - Feasibility of remedial actions under stress conditions	Robust MIS
Review	- Independent review - Update of stress testing programme • Market circumstances • Bank’s developments	
Changes	- Approval by the Board, or - A committee delegate of the Board	
Documentation requirements	- Stress-testing exercises outcomes - How test-results are used - Management decision to take mitigation action - Outcomes of evaluation of stress-testing assumptions	

(2) Testing scenarios from lessons learned

Banks should adopt typical scenarios such as downturns in an industry or the overall economy, liquidity squeezes, and adverse market developments or interest rate trends.

There are multiple dimensions to come out with stress testing scenarios. The analytical framework below shows some examples of the lessons learned:

<table>
<tr><th></th><th>Past</th><th>Trend</th><th>Black Swan</th></tr>
<tr><td>Lessons learned</td><td>2008: USA – Sub-prime
1997: Asian – Financial Crisis
1986: Russia – Chernobyl</td><td>2022: Europe – Russia war with Ukraine
2005: Climate Change – Katrina</td><td>Unknown area</td></tr>
<tr><td>Economic risk scenario</td><td rowspan="2">RPs could source sample information from

Subprime mortgage crisis: 10 years later, market revival

Asia’s long road to recovery after the Asian financial crisis.

Economic scene after Chernobyl’s incident.</td><td rowspan="2">RPs could source sample information from

Ukraine Conflict in May 2022 which knock $1 trillion off global GDP

US’s Katrina’s Unique economic Impact</td><td rowspan="2"></td></tr>
<tr><td>Industry risk scenario</td></tr>
<tr><td>More examples on lessons learned</td><td>1987: Market crash
1998: Russian Crisis
2001: Terrorist attack in the US
2003: SARS outbreak
2008-09: European Sovereign Debt Crisis</td><td></td><td></td></tr>
</table>

1.4.2.5 Alter Assumptions in Different Variables

(1) Stress testing programme

Stress test programme – scenario example (A) domestic economic downturn
Stress Testing estimates the impact on a bank's asset quality, profitability, and capital adequacy of adverse changes in selected macroeconomic variables (e.g., GDP growth, unemployment rate, interest rates, bankruptcy rates, asset price, etc.) that are relevant to the bank's exposures. The economic downturn in significant economies affects the local area.

Stress Testing also estimates the impact on a bank's counterparty exposures (e.g., corporate loans, holdings in securities, interbank exposures, etc.) as a result of the economic downturn in major economies with significant financial/commercial/trading links with Hong Kong.

For example, an RP could measure the impact in terms of a drop in corporate borrowers' business revenues or an increase in default risk of their trading counterparties).

Stress test programme – scenario example (B) decline in the real estate market
This estimates the impact of a decline in property prices on

- Collateral coverage
- Default risk
- Provisioning needs for loans secured by properties

Stress test programme – scenario example (C) decline in the value and market liquidity of financial collateral
This estimates the impact of a decline in the valuation and market liquidity of financial collateral held by banks, which reduces the quality and quantity of the collateral, leading to lower collateral coverage and recovery rates and higher provisioning needs and capital charges.

Stress test programme – scenario example (D) increase in classified loans and provisioning levels
This assesses the resilience of a bank's loan portfolios in terms of the impact of such increases on its profitability and capital adequacy. In designing the scenario, a bank may apply different percentages of increase in classified loans and provisioning levels to its loan portfolios.

Or a bank may conduct a loan migration test by assuming that certain percentages of the loans in each of the first four categories of the HKMA's five-grade loan classification system is downgraded to the next category.

Stress test programme – scenario example (E) rating migration of counterparties

This is performed based on the internal or external credit ratings of a bank's credit exposures, by migrating a certain percentage of the credit exposures of a specific rating grade (by one or more notches) to a lower rating grade (or to a higher rating grade in respect of short credit risk positions taken) and assessing the resultant impact on the bank's profitability and capital adequacy.

Stress test programme – scenario example (F) default of major counterparties

This estimates the impact of default of a bank's major counterparties, including

- Corporate
- Sovereign
- Bank counterparties

On its profitability as well as liquidity and capital adequacy.

Extension of the test covers aggregate exposures to

- Major industries
- Market sectors
- Countries
- Regions

i.e., significant number of defaults occur within such aggregate exposures

Stress testing programme – scenario example (G) decline in the value of taxi licences/ gross operating income of taxi drivers

- This estimates the impact on an AI's taxi loan portfolio in terms of collateral coverage
- Default risk
- Provisioning needs

(2) Hypothetical scenarios

Banks should review lessons from history and tailor the event (develop the hypothetical scenarios) to reflect the risks to which they are most exposed:

- External Environment
- Market Environment

Contagion effects on related markets
Lessons learned from the above event:

- Relationship between different risk factors
- The extent to which the above relationship change would exacerbate a crisis

(3) Quality assurance

Quality of a stress test depends on multiple factors. The table below summarises the key considerations for evaluation:

Category	Considerations
Bank characteristics	- Activities complexity and risk level - Capital and earning capacity to absorb shock - Risk management policies
Bank management	- Level of oversight
Stress test programme	- Scenarios - Parameters - Assumptions - Procedures
Outcomes	- Risk exposures relative to the bank's stated objectives and risk tolerance
Capacity	- The capacity of the bank's capital and earnings to absorb potential losses under stressed situation
Contingent plan	- Adequate actions to take when a particular stress scenario happen
Review and Audit	- Adequate internal revie on stress test programme - Adequate audit

(4) Compliance

After 2007 global financial crisis, regulatory bodies and banks drive for more stress testing. A quality stress test must comply with a certain structure that provides an audit trail. The table below gives an example of adequate documentation for stress-testing:

Documentation	Adequate Document for Stress-Testing Procedures
Credit Risk Management	Integrate stress-testing into daily risk management
Approval Process	Adequate party for the approval process
	All changes to the stress-testing methodology and procedures be approved by senior management.
Scope	Scope of exposures be included in the programme
MIS	High integrity of MIS
Position Data	Accurate and complete
Data Quality	Consistent, timely, reliable data sources used to run stress test
Validation	Validation of the stress-testing results through back-testing historical scenarios (e.g., the 1997 Asian crisis) and their impact on the bank portfolios.

1.4.3 Identify Vulnerable Sectors in the Portfolios

1.4.3.1 Analyse Situations with Scenarios to Identify Vulnerable Sectors

(1) Analyse accounts and portfolios

Note to trainers: trainers may obtain the sample reports from banks to tailor cases for assessment with short questions. Trainers may obtain sample financial statements and cash flow schedules from banks to tailor cases for assessment with long questions.

Stress-testing is conducted more frequently today, with internal demand from banks and regulatory demand from the authorities. Banks also carried out stress testing at account levels.

- For both adaptions suggested above, RPs should ask the questions including but not limited to the existing credit profile of the portfolios/the significant accounts
- Design hypothetical scenarios for stress testing of the portfolio/the significant account
- Analyse the outcomes of stress testing on the following
    - Vulnerable portfolios
    - Change in risk rating
- Recommend mitigation for portfolio/remedial action for the significant accounts

(2) Insight from stress testing

Stress-Testing is conducted more frequently today, with internal demand from banks and regulatory requests from the authorities. The follow-up of the Stress Testing should emphasize:

- Whether the risk level of the loan portfolio under stressed conditions is within banks' appetite
- Whether the contingent plan is still resilient under stressed conditions to ensure that the estimated risk is adequate and that the planned actions are implementable
- Whether the credit guidelines are still resilient under stressed conditions to ensure systematic intake of quality loans
- Whether the communications on the implementation of the credit guidelines are to be enforced with more communication sessions with different functional units

1.4.4 Identify Key Regulations, Report Remedy and Make Recommendations

1.4.4.1 Consolidate Results to develop suitable measures

The trainer's and guest specialists' sharing in seminar during the class:
The trainer will update the latest development on key regulations updates, the relevant credit cases, lessons learned, and experience sharing. Alternatively, the trainer may arrange for veteran RPs as guest specialists to share these topics in the suggested one-hour seminar during the class, or, for in-house training, combine the sharing in the regular credit conferences of the banks. The seminar can take place as the last session of the class.

(1) IFRS9 – provisioning implication on planning

Banks have traditionally generated economic scenarios for financial planning and stress testing purposes. With IFRS9 provisioning, economic scenario forecasting will directly impact accounting. The use of data sources, models, and expert judgment when forecasting scenarios can create undesired biases in financial records. Banks will have to identify, assess and mitigate potential biases of IFRS9 provisions

(2) Mitigation of potential biases of IFRS9 provisioning

IFRS9 is based on the management approach, which focuses on information about the components of the business. However, because of the size of the potential impacts, there are risks of material bias affecting the financial statements. Therefore, mitigation strategies should be in place to reduce the risk of material bias. The table below shows some examples of mitigation strategies:

Bias Type		Bias Description	Mitigation Strategies
1	Variable selection bias	Use of limited set of macro variables	- Comprehensive set of variables across portfolios - Consistent methodology to extend variables - Analysis of interconnections across variable
2	Anchoring bias	Scenario design over-relies on certain values, trends, or data source	- Multiple sources of variables - Through the cycle source data - Workshops with business experts/senior executive
3	Model bias	Use of models based on inaccurate relationships/narrow model driver selection	- Model risk management governance and controls - Model validation, back-testing, and benchmarking
4	Probability bias	Over or under confidence in scenario severity Over or under estimation of probability selection (optimism or conservatism bias)	- Coherence of probability across planning exercises - Probability measurement challenge and assurance - Probability adjustment using business judgement
5	Opinion bias	Influenced by limited set of views or behaviours in group discussions/traditional group behaviours	- Objective workshop facilitation - Formalized governance and process including CFO/CRO approval
6	Results bias	Bias towards specific level of provisions Bias due to influence of senior executives Bias on results outcome early in the process	- Pro-forma impact assessment tools - Prioritization of qualitative and quantitative conclusions - Peer benchmarking

Source: IFRS9 Planning and Stressing Testing, ALVAREZ & MARSAL (Microsoft Word – IFRS9_Amthoughts_v15.docx (clubgestionriesgos.org))

1.4.4.2 Develop Contingency Plan

(1) Following up on the portfolio risk mitigation

Stress testing should facilitate the development of risk mitigation or contingency plans across a range of stressed conditions. The performance of risk mitigating techniques, like hedging, netting, and the use of collateral, should be challenged and assessed systematically under stressed conditions when markets may not be fully functioning. Multiple institutions simultaneously could be pursuing similar risk mitigating strategies[34]. Learners are best to read the bis.org articles on stress testing to be familiar with the principles of stress testing.

[34] Principles for sound stress testing practices and supervision, May 2009 (bis.org)

1.5 Submodule 5: Account Monitoring and Problem Loans

Note to trainers:
Trainers can pick, change, and repackage the content sample below according to learners' needs

1.5.1 Introduction

RPs should understand the process of credit monitoring and evaluate the performance of clients' accounts to compare with credit strategies and portfolio objectives of banks to identify critical areas for further follow-up actions. RPs should be able to evaluate information related to current and projected financial status of applicants, hence, to re-assess the bank/client relationship and carry-on necessary actions promptly.

1.5.2 Monitoring Portfolio – Theory and Practice

1.5.2.1 Knowledge in Borrowing Account Monitoring

(1) Objective of account monitoring

Account monitoring is a credit management process that refers to the day-to-day monitoring of the performance of individual credits and the overall portfolio. In addition, the process helps to identify early warning signals of delinquency resulting from insufficient cash or a lack of willingness to service the debt.

Account monitoring is for ensuring

- Credit servicing in compliance with facility terms, e.g., covenants and collaterals
- Identification of early signals of delinquency
- Timely reporting of irregularities/default/breach/remedial actions and effectiveness
- Credit limits are complied with
- Regulatory limits are complied with
- Provisions are realistic
- Credit Committee/senior management monitors the portfolio quality

(2) Responsibility of account monitoring

Levels	Monitor	Frequency	For Credit Risk Management
The Board / credit committee	Portfolio	Periodic	Set - Large exposure risk parameters - Connected exposure risk parameters
Front office	Accounts	Day-to-day	Recommend - Changes in internal credit rating - Changes in provision
Middle office	Quality	Periodic	Apply - Stress Test - Other Techniques
	Limits	Day-to-day	Report - Exceptions
	Problem account	Day-to-day	Check - Proper grading - Provision
Back office	SOP	Day-to-day	Support - Process Fulfillment
Back office	SOP	Day-to-day	Report - risk exposure

(3) Functional units to perform account monitoring

It's about teamwork. Every party in the credit risk management structure is responsible for the credit quality by performing their different roles and responsibilities. The same collaboration applies to ongoing account monitoring. Therefore, RPs should possess a basic knowledge about the segregation of duties and how appropriate data and information move around in companies to enable timely follow-up actions on the accounts.

Monitoring at Account Level	Monitor at Portfolio Level
Credit monitoring performed by the marketing or account officers in the front office.	Middle or back office involved in the process with more high-level monitoring

(4) Following up problem loan

There are different possibilities to align credit risk management principles with some of the best practices for the problem loan review process. The table below shows an analytical framework to consider relevant options regarding the problem loan review process:

Questions to be Asked	Option 1	Option 2	Option 3
Who follows up?	Account officer	Problem loan unit	Problem loan unit
What's the case nature?	Less serious	More serious	More serious
What's the objective?	Nurse the account	Explore restructuring Explore additional finance	Collateral recovery Enforce guarantees Enforce collection
Who contacts borrower?	Account Officer	Problem loan unit, or Account Officer	Problem loan unit
What's the desirable outcome	Restore account	Nurse the borrower's financial position	Collateral recovery Enforce guarantees Enforce collection

Account quality monitoring

A quality credit monitoring should include documented

- System
- Procedures
- Processes
- Standards

To monitor regularly

- Performance
- Quality e.g., borrowers' capacity to repay
- Conditions

1.5.2.2 Keeping up to Date Industry Performance

(1) Account quality monitoring

Each credit review at the account level it's a combination of three pillars of quality. The table below shows some examples of elements under the three key pillars:

Frequency	Qualitative Factors	Quantitative Factors
- Regular interval under normal circumstances - On demand upon significant market event	- Review fulfillment of T&C - Study the business dynamics - Study the industry dynamics	- Review changes in the indicators - Compare with peer companies to identify irregularities

1.5.2.3 Reviewing, Analysing, Comparing for Tracking Irregularities to Identify Risk Level and Root Causes

(1) Document review

Document review is an essential process to ensure borrowers' compliance with the loan terms and conditions:

Absolute compliance
Document review is critical. There have been cases where delayed fulfilments of financial statements, per the covenants, for one day at the month-end turn the accounts to "special mention" status (refer to the section on loan provisioning), affecting both banks' interest and borrowers' interest in loan renewal or new loan application. Therefore, RPs should sensitize themselves to the importance and rationale regarding the document review and update process.

Throughout loan term – document update
The quality of an account is ascertained before disbursement and monitored throughout the loan life. Hence monitoring of documentation updates is necessary throughout the loan life. The table below shows some examples of the required documentation update to confirm the quality of borrowers' accounts:

Documents	Description	On-Going Monitoring
Background on the borrower	- Name and address	Upon change, need to identify the causes and sources of change e.g., business model change e.g., owner change
	- Organization, history, principal activities	Upon change, need to identify the causes and sources of change for e.g., revenue e.g., assets

	- Certificate of incorporation - Memorandum and articles of association - Borrowers’ authority to borrow - Third party references	Upon change, RPs need to identify the quorum, the approval authority, and the causes and sources of change
	- Experience of expertise in the trade	Upon change of management team, need to update on the core competency change
	- Past three years’ financial performance (including audited accounts and information on facilities obtained from other banks if applicable)	Monitor on timely submission, which may be early warning signals
Purpose of the credit and facilities requested	- Terms of repayment and interest	Need to monitor the drawdowns fits the purpose of the loan. T&C meeting the acceptance criteria of the underwriting.
	- Conditions: • Details of collateral, its current valuation and evidence that the collateral’s existence has been verified • A copy of the certificate for the insurance of the collateral.	The changes in values of collaterals and quality of the guarantees could be an early warning signals to the repayment capability of borrowers.
	- Conditions: Nature and details of any guarantees together with an assessment of the net worth of the guarantor	
Assessment of credit application	- Borrowers’ financial position at time of drawing, prospects, projected cash flows, capital resources, and other commitments	Identify in the financial position, financial strength and understand the causes and sources of change.
	- Details of other exposure to borrowers or other related borrowers (cross-referenced to the central liability record)	Identify early warning signals through industry network on the changes in the repayment capability.
	- Details of verification of information provided by borrowers, e.g., reference taken, valuation required	
	- Result of stress-test	Give relevance information about the what if scenarios
	- Internal credit rating accorded	Update regularly or on demand upon market situation changes.
Approval	- Name(s), rank(s), and signature(s) of approving officer(s) - Facilities approved	

	- Expected rate of return, preferable on a risk-adjusted basis, on the facility - Copy of credit documentation (agreement, facility letter, guarantee, pledge of securities, etc. The original should be kept in a fire-proof sale.)	
Updating records	- Movement of funds or periodic balance of facilities - Movement or periodic balance of collateral - Current financial information on borrowers - Meeting notes	Updated financial analysis based on the latest information provided.
Assessment of internal credit rating and provisions	- Details of assessment and justifications - Movement of internal credit rating - Movement of provision made - Current interest accrual status	Regular update and identify causes and sources of any changes.
Review	- Incidental intelligence concerning borrowers - Copies of exception reports arising from regular monitoring - Copies of the reports produced for the periodic review	Regular update and identify causes and sources of any changes.

Throughout loan term - document review to identify risk factors for risk mitigation/remedy

Monitoring of Borrowing Account	Stage	Risk Factors and Risk Mitigation
Approval on credit application	Approval	Credit and Operations compliance
Facility limits in system	Initiation	Credit compliance
Loan agreement	Initiation	Customer's T&C compliance
Guarantees	Initiation	Legal risk
Transfers of title to collateral	Initiation	Legal risk
Legal document safe custody	Initiation	Operation risk
Customers' authority to borrow	Initiation	Legal risk
Valuation of collateral	Initiation	Market risk
Liens on deposit	Initiation	Credit risk
Custody of key documents - The disbursement of funds - The entering of limit into database	Initiation	Operations
Draw-down approval	Approval	Operations compliance
Funding of loan with Treasury	Initiation	Liquidity risk
Interest rate fixing with Treasury	Initiation	Interest rate risk
Customer's compliance with T&C record	Post-credit	Customer's terms and condition compliance
Customer repayment records	Post-credit	Default risk
Customer's current financial information	Post-credit	Changes in risk characteristics
Whole credit file complete and up to date	Post-credit	Customer's T&C compliance
Management information on the credit portfolio	Post-credit	Aggregation to obtain portfolio risk profile
Independent audit on credit administration department	Post-credit	Credit and Operations compliance

(2) Consolidate information to analyse changes

Unless it is a one-off operational issue causing the delay in payment, there are early warning signals if the delay comes from the deterioration of the repayment capability. Therefore, the fundamental decline of repayment capability should have been reflected in the internal rating during the regular account monitoring. Internal rating is an excellent process to consolidate all relevant updated information from the company. What's more, the internal rating will be referred to for other credit risk management decisions.

1.5.2.4 Identifying Early Signs of Delinquency for Problem Loan Management and Prompt Remedial Actions

(1) Early delinquency signals

During the ongoing account monitoring process, the credit risk management team reviews the changes in risk factors in the entity, the industry, and the macroeconomic environment. In addition, the financial analysis of updated financial statements will also provide early warning signals on potential delinquency.

(2) Causes of delay in payment

A loan turns into a "problem" when the payment is delayed. First, however, credit risk management needs to consider if the cause of the delay is fundamental or technical. The actual reason is more related to the change of the entity's inherent risk or the economy's systematic risk. The technical cause is more associated with the internal operational risk of borrowers.

1.5.2.5 Theories and Knowledge of Lending

<u>(1) Comprehensive external factor reviews to arrive at recommended account actions</u>

The table below shows some examples of due diligence on account reviews and monitoring:

<table>
<tr><td>Due diligence

e.g.,
document review
e.g.,
on site visit</td><td colspan="3">- A bank has a system to ensure periodic credit reviews of individual accounts or accounts managed or a portfolio basis are carried out independently by the middle office.
- Generally, all facilities should be individually reviewed at least yearly. However, more frequent reviews would be necessary when facilities are irregular, larger, or riskier.
- Regarding the parties conducting the review and approval process, it depends on the various credit risk management structure for different banks according to their natures.</td></tr>
<tr><td rowspan="2">Update and outlook

e.g.,
economy
e.g.,
industry
e.g.,
borrowers</td><td>Entity Review</td><td>Industry Review</td><td>Macro-Economics</td></tr>
<tr><td>- Know Your Customers
- Borrowers’ business model
• Five Force Model
• SWOT
• Canvas business model
- Borrowers’ accounting policies
• Alignment with financial figures booked/reviewed
• Missing information on the financial statements
- Early warning signals (submodule 1), including signals from
• Collaterals
• Guarantees
- How borrowers and guarantors are doing in other banks
- Account analysis
• Stress test
• Sensitivity analysis</td><td>- At what stage is the industry cycle now
- The historic performance of borrowers in the past at similar stage
- Whether the growth plan matches with the industry cycle and whether agreed milestones are met</td><td>- Changes in GDP growth, CIP, Unemployment, and others</td></tr>
<tr><td>Analyse client credit risk</td><td colspan="3"><table>
<tr><td>Changes in credit indicators and adequacy</td><td rowspan="5">- Identify sources and causes of changes in risk level
- Identify changes in customers/counterparties needs
- Confirm adequate credit risk strategy and policy
- Formulation of revisions in response to changes/trends
- Trigger remedial actions to protect banks in case of credit quality deterioration</td></tr>
<tr><td>Changes in loan classification and adequacy</td></tr>
<tr><td>Changes in provision and adequacy</td></tr>
<tr><td>Changes in opportunities and threats</td></tr>
<tr><td>Changes in the quality of the portfolio</td></tr>
</table></td></tr>
<tr><td>Outlook</td><td colspan="3">Participating Industry, Client’s business outlook, predicted activities, financial and business forecast</td></tr>
</table>

(2) Management attention

Credit risk management should manage problem loans with a lot of management attention to ensure

- Timely remedial actions taken
- Timely risk mitigation measures implemented
- Timely lessons learned be embedded in the credit manual, process, procedures

Senior management is engaged in the review of the problem loans. A regular monthly reporting to the Credit Committee or Senior Management put in place to

- Oversee debt recovery process
- The work of the problem credit management
- Information on the problem credits

(3) Problem loan impact

- Depress profitability because there are provisions, write-offs, or carrying cost
- Make an impact on banks' liquidity due to the reduction in cash receipt
- Time consuming for different levels in the credit risk management

(4) Principles of problem loan management and examples of some best practices.

Most of the problem loans are unique in their combined nature. Therefore, checking and balancing the relationship with borrowers is delicate. Nevertheless, there are principles and suggested practices to follow to enable RPs to exercise unbiased judgment with problem loans. The tables below show some examples:

Principle	Best Practices	Remarks
Independence	Credit officers with expertise in corporate workouts and business restructuring are responsible for following up on problem loans.	Applies to the more severe case, the following officers are **not** considered independent - Market/Account Officer/Relationship manager likely to be too close to the borrowers - The credit officer who approved the problem credit

Principle	Best Practices	Remarks
Swift	Reduce exposure promptly in the interest of banks	Where the case can be justified, it is usually preferable for a borrower in difficulty to be helped towards recovery rather than put immediately into liquidity or bankruptcy.
	Reclassification of the loan, if applicable	Loan classification affects both loan provisioning which has specific guideline and the available risk capital.

Principle	Best Practices	Remarks
Secure the security	Consult with professional (e.g., legal advisor) with experience in the matter	The legal title needs to be perfect for security to be effective.

1.5.3 Identify Delinquent Payment's Root Causes

1.5.3.1 Identifying Critical Area and Changes for Follow up

(1) Information generated from credit indicators

Ongoing account monitoring with credit indicators generates valuable information relevant for credit risk management actions. The table below shows some examples of the changes in the credit indicators that trigger pertinent actions of credit risk management:

Changes in credit indicators and adequacy	- Identify changes in customers/counterparties needs - Confirm the credit risk strategy, policy is adequate - Formulation of revisions in response to changes/trends - Trigger remedial actions to protect the bank in case of credit quality deterioration
Changes in loan classification and adequacy	
Changes in provision and adequacy	
Changes in opportunities and threats	
Changes in the quality of the portfolio	

Stress testing applied at the account level can reveal account performance under stressful scenarios; the account performance could be indicated by, for instance, the return on risked weighted assets expressed in the following concept:

Revenue / (Probability of default X Loss of Default)

(2) Principle of portfolio credit risk management and monitoring

Banks' credit risk monitoring approach depends on its nature, size, and complexity. Therefore, banks should develop policies, methodologies, and procedures for measuring credit risk. The approach adopted should cover on-balance and off-balance sheet products, aligned with the nature, size, and complexity of a bank's activities.

(3) Portfolio level credit indicators

The table below lists out some examples of the focus areas for on-going monitoring at portfolio level:

Dependencies of Ongoing Portfolio Performance	Examples Of the Dependencies	Indicators to Monitor
Type of facilities	- On-balance sheet clean loan	- Counterparty Risk
	- Off-balance sheet	- Current Exposure - Potential Future Exposure - Pre-settlement Risk - Settlement Risk
Repayment schedule	- Fixed Pre-payment	- Credit risk in notional amount
Outstanding against limit	- Uncertain utilization	- Statistical estimation of utilization rate & corresponding default rate
Portfolio maturity profile	- Long duration with distant maturity date	- Net present values varied embedding interest rate
Security	- Collateralized Loan	- Difference between notional default value and collateral value
	- Product with master netting agreement	- Netted amount
Credit quality	- Changes in internal credit rating over the life of individual loans in the portfolio	- Internal credit ratings and expected default rates aligned to the rating to produce risk-adjusted return
	- The same counterparty groups	- Aggregated limit
	- The same industry	- Aggregated limit
	- The same country	- Aggregated limit

1.5.3.2 Evaluating Current and Projected Financial Status

(1) The migration of individual credits through the various grades with an automatic/judgmental credit rating system

Automatic versus judgmental credit risk rating

Banks are encouraged to adopt a system that can map with but is more sophisticated than the 5-grade loan classification system currently employed for regulatory reporting.

There are practical purposes to enable banks to perform credit risk management with more insights on:

- Credits that are not yet irregular

The judgmental rating will facilitate the early identification of deteriorating credits and remedial actions to minimize credit losses. The table below shows comparison of rating systems:

Automatic-Rating System	Judgmental Rating System
Based on - a pre-determined set of objective rating criteria e.g., past account performance.	Based on - underlying creditworthiness of borrowers - financial strength of the guarantor(s) - financial strength of the collateral pledged - risk of specific transactions

Potential outcomes of loan account monitoring

The outcomes of individual account monitoring are to arrive at the recommendation of the subsequent credit actions, such as:

- Loan renewal
- Loan amount increase
- Loan extension
- Curtail loan amount
- Cancel loan
- Restructure loan

1.5.4 Identify the Relationship of Risk Level Changes with Loan Provision

<u>The trainer's and guest specialists' sharing in seminar during the class:</u>
The trainer will update the latest development on loan classifications, providing rules and regulations, the relevant credit cases, lessons learned, and experience sharing. Alternatively, the trainer may arrange for veteran RPs as guest specialists to share these topics in the suggested one-hour seminar during the class, or, for in-house training, combine the sharing in the regular credit conferences of the banks. The seminar can take place as the last session of the class.

1.5.4.1 Monitoring Accounts for Advising Alternative Services

As the credit quality of a loan account deteriorates, the cost of bearing the credit risk increases, with credit provisioning as one of the costs. RPs might help borrowers to identify a more appropriate alternative service where risk is commensurate with returns.

<u>(1) Loan provisioning purpose</u>

A loan classification system enables banks to prudently value loans and to act as a guide to the appropriate provisions.

<u>(2) Motivation for improvement</u>

Banks spend much effort to improve the loan classification for both regulatory requirements and optimization of loan provisions to have greater consistency and accuracy in bank reporting.

(3) Loan provisioning

General and specific

The analytical framework below helps RPs to sensitize with the credit pricing and follow up with borrowers on timely fulfillment of the T&C of the loan:

<table>
<tr><th></th><th>Specific Provisioning</th><th>General Provisioning</th></tr>
<tr><td>About the provision</td><td><u>Condition</u>
Where losses are certain and likely
<u>Provision</u>
The percentage to be provided will depend on the particular circumstances</td><td><u>Condition</u>
Over and above specific provision
<u>Provision</u>
Based on the historical loss experience
Based also on the assessment of future economic trends in the market in which they operate</td></tr>
<tr><td>Room for credit risk management judgment</td><td colspan="2"><u>Judgement on credit history and future economic trend</u>
Here the management exercise judgement based on the past and the vision on the future about the accounts/portfolio yet to become “problem.”</td></tr>
<tr><td rowspan="2">RPs’ sensitivity to the credit pricing</td><td colspan="2"><u>Individual accounts</u>
Credit risk RPs should be sensitized with the credit history of borrowers at time of credit price setting, as there is a cost on the general loan provisioning.</td></tr>
<tr><td colspan="2"><u>Loan portfolio</u>
RPs should sensitize themselves to timely follow-up of milestones agreed upon loan inception. A systematic non-disciplinary follow-up approach might lead to systematic deterioration of the portfolio credit history and increase the loan’s cost with general loan provisioning.</td></tr>
</table>

By loan and portfolio basis

Provisions On Loan-By-Loan Basis	Provision On Portfolio Basis
Condition If provision could be assessed on a loan-by-loan basis **Provision** Full provision being made for the likely loss **Expert opinion** The level of provisions is normally a matter for a bank to determine in consultation with its external auditors. **HKMA intervention** The HKMA reservices the discretion to intervene where in its opinion the bank is being - Insufficiently prudent in its approach or - Seriously out of line with the provisioning policy of its peers	**Condition** If it is not possible to estimate the loss reliably **Provision** Sub-standard: 20 – 25% of unsecured portion Doubtful: 50% - 75% of unsecured portion Loss: 100% of unsecured portion

<u>Per loan classification</u>

Loan classification is an essential indicator of collectability for an account whose interest and principal payments are overdue. The table below shows examples of classifications of loans with payments past due:

<table>
<tr><th>Delinquency/ Payment in Arrears Indicator</th><th>Other Deficiencies/Early Warning Signals on Unsecured or Partially Secured Loans</th><th>Loan Classification</th><th>Conditions for Exceptions I.E., Allowed for Better Classification</th></tr>
<tr><td>NIL</td><td></td><td>Pass
- Loans are current in meeting commitment and full payment of interest. Principal is not in doubt</td><td></td></tr>
<tr><td>Less than 3 months</td><td>- Credit history or performance record is not satisfactory
- Significant deficiencies are present which threaten borrowers' business, cash flow and payment capability
- Labor disputes or unresolved management problems which may affect the business, production, or profitability of borrowers' business
- Borrowers experiencing difficulties in repaying obligations to other creditors
- Construction delays or other unplanned adverse events resulting in cost overruns that may require loan restricting</td><td>Substandard
- Loans where borrowers are displaying a definable weakness that is likely to jeopardize repayment.
- Loans where some loss of principal or interest is possible after taking account of the "net realizable value" of security
- Rescheduled loans where concessions have been made to customers on interest or principal such as to render the loan "non-commercial" to the bank</td><td></td></tr>
<tr><td>More than 3 months</td><td></td><td>Substandard</td><td rowspan="2">If there are good reasons for a better classification e.g., the loan is fully secured by good quality collateral</td></tr>
<tr><td>Less than 6 months</td><td>- Default,
- Death,
- Bankruptcy,
- Liquidation of borrowers
- Unknown whereabout of borrowers</td><td>Doubtful</td></tr>
</table>

More than 6 months	- The net realizable value of security is insufficient to cover the payment of principal and accrued interest;	**Doubtful** - Loans where collection in full is improbable and the institution expects to sustain a loss of principal and/or interest after taking account of the net realizable value of security	
More than 12 months	- Even where principal and accrued interest are fully secured but delinquency more than 12 months	**Substandard** - Loans where borrowers are displaying a definable weakness that is likely to jeopardize repayment. - Loans where some loss of principal or interest is possible after taking account of the "net realizable value" of security - Rescheduled loans where concessions have been made to customers on interest or principal such as to render the loan "non-commercial" to the bank	
Experiencing difficulties	- Borrowers are experiencing difficulties which may threaten the bank's position; and - Ultimate loss is not expected at this stage but could occur if adverse condition persists - Where the loans exhibit one or more of the following characteristics: • Early signs of liquidity problems such as delay in servicing loans • Inadequate loan information such as annual audited financial	**Special Mention**	

	statements not obtained or available • The condition of and control over collateral is questionable • Failure to obtain proper documentation or non-cooperation by borrowers or difficulty in keeping contact with him • Slowdown in business or adverse trend in borrowers' operations that signals a potential weakness in the financial strength of borrowers, but which has not reached a point where servicing of the loan is jeopardized • Volatility in economic or market conditions which may in the future affect the borrower negatively • Poor performance in the industry in which borrowers operates • Borrowers or in the case of corporate borrowers, a key executive is in ill-health		

Default		**Loss** - Loans which are considered uncollectible after exhausting all collection efforts such as realization of collateral, institution of legal proceedings, etc.	

1.5.4.2 Determining Provision Amount

Quality of loan provisioning and credit operations accuracy
The quality of loan provisioning depends on the credit operations' accuracy in classifying loans according to their delinquency status. There is a strong linkage between credit operations risk and credit risk management quality.

When identifying the operational risk, RPs should consider both internal and external factors that could adversely affect the achievement of banks' objectives, such as

- the Bank's management structure, risk culture, human resource management practices, organizational changes, and employee turnover
- the nature of the Bank's customers, products, and activities, including sources of business, distribution mechanisms, and the complexity and volumes of transactions
- the design, implementation, and operation of the processes and systems used in the operational cycle of the Bank's products and activities
- the external operating environment, the industry trends, the political, legal, technological, and economic factors
- The competitive environment and the market structure

1.5.5 Identify Key Regulations, Report Remedy and Make Recommendation

<u>The trainer's and guest specialists' sharing in seminar during the class:</u> **The trainer will update the latest development on key regulations updates, the relevant credit cases, lessons learned, and experience sharing. Alternatively, the trainer may arrange for veteran RPs as guest specialists to share these topics in the suggested one-hour seminar during the class, or, for in-house training, combine the sharing in the regular credit conferences of the banks. The seminar can take place as the last session of the class.**

1.5.5.1 Debt Restructuring

(1) Credit risk management process in compliance with operational risk management

Operational Risk Management should ensure that the Credit Risk Management Process deploys the tools commonly used for identifying and assessing related operational risks:

- Self or risk assessment – a bank assesses its operations and activities against a menu of potential risk vulnerabilities. This process identifies the strength and weaknesses and controls gaps in the operational risk environment by incorporating checklists and workshops.
- Risk Mapping – In this mapping process, a bank identifies its credit risk management organizational functions or process flows by risk types. This process identifies the strength and weaknesses of the operational environment. This exercise can reveal areas of weakness and help prioritize the risk after mapping.
- Risk Indicators – These indicators provide insight into a bank's risk position. They alert a bank about the changes that may indicate risk concerns.
  e.g., the number of failed trades
  e.g., staff turnover rate.
  e.g., frequency of errors
  e.g., frequency of omissions
  e.g., the severity of errors and omissions

(2) IFRS 9 management application in pricing and product design

According to the research by Alvarez & Marsal, the management application of IFRS9 mainly focused on two areas. The table below gives a summary of the key drivers of the provisioning:

IFRS9-Provisioning Affected by Credit Driver: Maturity	IFRS9-Provisioning Affected by Credit Driver: Riskiness
Lifetime calculation of expected losses will specially affect long-term-maturity portoflios such as commercial mortgage	Riskier portfolios such as unsecured loans will contain higher portion of stage 2 and thus higher provision levels.

The table below gives a brief summary of the implications:

Implication (1)	Implication (2)
IFRS9 provision levels and impacts will substantially vary among banks per portfolio composition and business model structure.	As provisions increases due to IFRS9 implementation, adjustments on certain products or clients should be analysed to ensure the cost of credit is correctly captured, and profitability (ROE) remains above expected thresholds Adjustments to new organization to be analysed include - Change in pricing models - To either increase price, or - To shorten the maturity - Early redemption incentive A more material adjustment A partial or full swift in portfolio mix by running-off loan categories that are high risk and covered by other less regulated competitors

1.5.5.2 Classifying Unpaid Debt Customers for Making Claims

Judgment on loan classification

The decision to classify loans should be primarily judgmental based on assessing borrowers' capacity to repay and the degree of doubt about the collectability of the principal or interest of a loan.

2 Module 2 - Content Notes

2.1 Submodule 1: Financial Analysis

<u>Note to trainers:</u>
Trainers can pick, change, and repackage the content sample below according to learners' needs

2.1.1 Introduction

"Would you lend your money to this customer?"

A bank collects deposits and lends to the borrowers. As a depositor of the bank, you lend money to a borrower via the bank which acts as an intermediary. A bank has the responsibility for lending depositors' money to a borrower with high level of analytical commitment.

A bank should have Credit risk assessment based on, including but not limited to, thorough analysis on the business performance (ability to generate profits) and financial strength (ability to withstand adversity) as well as the loan applicant's willingness to timely repay.

2.1.2 Accounting Concepts

Note to trainers: accounting is a subject by itself leading to a professional degree. For learners who have worked in job positions for one year should be familiar with financial analysis. The Training Package should include a few points essential to facilitate RPs' investigation on the credit worthiness of the credit applicants. RPs need to accumulate experience reading all industries' financial statements because these company documents provide essential information about a particular borrower's business key drivers. RPs could compare similar key drivers in other companies in the same industry.

<table>
<tr><th>Concept</th><th>Brief Description</th></tr>
<tr><td>1.
Accounting is a science</td><td>Accounting is an information science that plays a vital role in collecting, organizing, recording, analyzing, and reporting a business because it tracks incomes and expenditure and ensures statutory compliance. It also provides management, investors, government, and other stakeholders (e.g., a lender) with historical figures on financial information for decision-making in the future.</td></tr>
<tr><td>2.
Dual transaction basics</td><td>A company must register each financial transaction in pairs, and this nature of accounting enables the identification of irregularities in a company. For instance, one of the fastest-growing coffee chain start-ups has extraordinary steep growth in sales revenue, and that sales growth has not resulted in a similar increase in cash balance. This company was subsequently delisted from the stock exchange.</td></tr>
<tr><td>3.
Values of financial statements</td><td>In compliance with accounting standards, a company registers every financial transaction onto the financial statements: income statement, balance sheet and cash flow statement. Therefore, the financial statements give many hints to satisfy the investigative requirements of credit risk assessment.</td></tr>
<tr><td>4.
Financial statements tailored for stakeholders</td><td>
<table>
<tr><th>"Books" targeted for different stakeholders</th><th>Adaptation for the Specified Stakeholders</th><th>Types of Statement</th></tr>
<tr><td>Financial Statements for Lenders and shareholders</td><td>The listed companies usually provide only published financial statements to their lenders. Therefore, even when RPs identify early warning signals from some sources about the listed companies, they would not be able to obtain any non-published interim financial statement update.</td><td>Balance sheet
Income statement
Cash flow statement</td></tr>
<tr><td>Management Book for the Board</td><td>Other than the published financial statements, companies maintain several books compiled from the same raw data but with different insights for external stakeholders and internal stakeholders. For example, book-keeping records,</td><td>Balance sheet
Income statement
Cash flow statement
Pro-forma statements</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><td></td><td><table>
<tr><td></td><td>financial statements, management books, tax books.</td><td></td></tr>
<tr><td>Tax Book for Tax Authority</td><td>Companies in general applies accrual base of accounting. Accrued income does not mean payment is made by the customers. Accrued expense does not mean payment is made to the suppliers. When financial statements are provided for tax reporting purposes, there are special rules that apply.</td><td>Income statement in compliance with tax computation rules</td></tr>
</table></td></tr>
<tr><td>5.
Quality of financial statements</td><td>Financial statements must fulfill a common set of accounting standards if they are to be audited. Therefore, audited financial statements are comparable. This means that, audited financial statements have higher creditability than non-audited financial statements for credit risk assessments.</td></tr>
<tr><td>6.
Financial accounting standards</td><td>Depending on the origin of the companies, they consolidate financial statements according to different accounting standards. Examples are GAAP, relatively more rule-based, and IFRS, more principles-based. Usually, a company adopts standards consistently year on year. Therefore, the RPs sensitize to switching account standards from one to another and must be satisfied with the causes and sources of the change.</td></tr>
<tr><td>7.
Accounting standards for listed companies in Hong Kong[35]</td><td>According to the Hong Kong exchange listing rules, the financial history of results and the statement of financial position included in the accountants' report must conform with
• Hong Kong Financial Reporting Standards (HKFRS); or
• International Financial Reporting Standards (IFRS); or
• China Accounting Standards for Business Enterprises (CASBE) in the case of a PRC issuer that has adopted the CASBE for the preparation of its annual financial statements
Any significant departure from such accounting standards must be disclosed to the extent practicable, the quantified financial effects must be explained.

The relevant standards will generally be those current about the last financial year reported on and, wherever possible, with appropriate adjustments to show profits for all periods by such standards.</td></tr>
</table>

[35] Chapter 4, Listing Rule, Hong Kong Stock Exchange, untitled (hkex.com.hk)

<table>
<tr>
<td>8.
Accounting policy</td>
<td>
Significant changes in the income statement and balance sheet items are usually explained by the accounting policy changes. Reading accounting policies could be one of the most effective methods to dig out missing pieces of information.

Important accounting policies are:
<table>
<tr><th>Income</th><th>Expenditure</th><th>Assets</th><th>Liabilities</th><th>Currency</th></tr>
<tr>
<td>Recognition of profits on long-term contracts</td>
<td>Cost incurred for research and development

Historical cost/ Current Cost Accounting</td>
<td>Depreciation and inventory policies (e.g., LIFO, FIFO, COGS)

Valuation of investments

Treatment of goodwill</td>
<td>Treatment of leases

Treatment of contingent liabilities</td>
<td>Translation of foreign currency items</td>
</tr>
</table>
In-depth understanding about the borrowers' accounting policies to boost profit or reduce losses or to show a better financial position is important in financial analysis. The accounting analysis includes understanding on critical accounting activities (e.g., inventory management), accounting choices (e.g., inventory cost registration), accounting estimates (e.g., inventory count, amortization years of intangible assets), judgement (e.g., whether an aged trade receivables would eventually be collected).
</td>
</tr>
<tr>
<td>9.
Information to look for in financial statement</td>
<td>
<table>
<tr><th>Financial Statement</th><th>Key Components</th><th>What to Look For?</th></tr>
<tr><td>Income statement</td><td>Revenue</td><td>Consistency of revenue, with or without growth</td></tr>
<tr><td>Income statement</td><td>Direct cost</td><td>Cost control capability</td></tr>
<tr><td>Income Statement</td><td>Selling and marketing expenses</td><td>Cost efficiency to generate revenue</td></tr>
<tr><td>Income Statement</td><td>Rental expense</td><td>Risk of lease renewal/early termination</td></tr>
<tr><td>Income Statement</td><td>Trade receivable write-off</td><td>Risk of non-payment by customers</td></tr>
<tr><td>Income Statement</td><td>Amortization</td><td>Under valuation of intangible assets over-states, the borrower's net profits</td></tr>
<tr><td>Income Statement</td><td>Interest payment</td><td>How the interest payment affects the shareholder's sharing of the company's profit</td></tr>
</table>
</td>
</tr>
</table>

10. Relation between income statement and balance sheet	Data and information extracted from the balance sheet, income statement, and cash flow statement, whether from a publicly listed company or a private company, are valuable information for cross-referencing the validity of one another. - For instance, sales revenue on the income statement links closely with the accounts receivable on the balance sheet. When sales revenue increases, accounts receivable are likely to increase. However, whether the reported receivable balances are growing faster than the sales revenue and whether the accounts receivable ageing differs from the previous years all provide hints to the quality of the income. From the cross-reference of related information and data above, RPs would be able to suggest that the company has missed out on information for the financial strength assessment. - For instance, the Cost of goods sold links closely with the inventory value on the balance sheet. Therefore, the value of the stock might be one of the key drivers leading to changes in the Cost of goods sold. On the other hand, suppose the Cost of goods sold goes down while the inventory value keeps building up. In that case, which might suggest overvaluation of the inventory, change of inventory policy, policy to stock up list or its liquidity. From the cross-reference of related information and data above, RPs would be able to suggest that the company provides additional/missing information for financial strength assessment.

		Related to Income Statement Items							
	Balance Sheet Items	Sales revenue	Cost of goods sold	Depreciation expense	Amortization expense	Operating expense	Interest income	Income tax expense	Net income
	ASSETS								
1	Cash	X							
2	Accounts receivable	X							
3	Inventory		X						
4	Prepaid expenses					X			
5	Fixed assets			X					
6	Accumulated depreciation			X					
7	Intangible assets				X				
	LIABILITIES AND EQUITIES								
8	Accounts payable		X			X			
9	Accrued expense payable					X		X	
10	Accounts payable						X		
11	Shareholders equity – capital								
12	Shareholders equity – Retained earning								X

	Income Statement	Related to Balance Sheet Items: Cash	Accounts receivable	Inventory	Prepaid expense	Fixed assets	Accumulated depreciation	Intangible assets	Accounts payable	Accrued expense payable	Accounts payable	Capital	Equity
	Income												
a	Sales revenue	X	X										
	Expense												
b	Cost of goods sold			X					X				
c	Depreciation expense					X	X						
d	Amortization expense							X					
e	Operating expenses				X				X	X			
f	Interest income										X		
g	Income tax expense									X			
h	Net income												X

11. Investigative approach of credit risk management: financial statement analysis and examples of questionable transactions

The critical questions in ascertaining the financial statements quality are: Are there over-statement, understatement, missing statement, or mis-interpretative statement? The analytical framework below enables the determination of best methodologies for analysis of financial position and financial strength:

	Publicly Listed	**Privately Owned**
With track record	Financial Analysis	Transaction Analysis
Without track record e.g. , Start up	IPO Business Model	Collateral analysis Guarantor analysis

-Basic Awareness of potential financial statement gimmicks

Making financial statements comparable is essential for meaningful financial analysis. Understanding the limitations on the quality of financial statements, RP is to ascertain a company's financial performance over time against peers in the same industry. The list below indicates the four critical financial statement analyses:

- Income statement analysis
- Balance sheet analysis
- Cash flow statement analysis
- Rate of return analysis

-Basic steps to identify prime areas for further investigation:

- Vertical study: to compare the dollar amount of an item to a specific anchor item; examples are:
    - Income statement analysis: cost of goods sold as a percentage of the total revenue in the income statement
    - Balance sheet analysis: current liabilities as a percentage of existing assets
- Horizontal analysis: compare the year-on-year dollar amount of an item; examples are:
    - Income statement analysis: changes in the cost of goods sold as a percentage of total revenue over time
    - Balance sheet analysis: changes of current liabilities as a percentage of existing assets over time
- Cash flow statement analysis: changes in cash from operations over time

-Basic skills to reconstruct financial statements: spreading of financial data with a bank's standard spreadsheet
With the help of the standard spreadsheet provided by a Bank, RPs would apply the financial data. During the process, the RPs will perform according to the bank's definition embedded in the spreadsheet, or there is a possible judgment regarding aggregation, segregation, and reclassification of financial data

-Basic skills to reconstruct financial statements: squalitative analysis
Other than quantitative analysis, a more qualitative analytical perspective needs to take place (e.g., an interview with key management to identify motivation and incentives) to verify whether the financial analysis has any omission and deformation which might mislead the outcomes of the financial statement analysis.

Example of questionable capitalization of expenses
AOL financial system in 1995 and 1996, the company capitalized, rather than expensing, the acquisition cost of the subscribers to delay the pre-tax loss recognition. In 1995, the pre-tax loss was reduced from USD98 million to only USD21 million. In 1996, the pre-tax loss was reduced from USD175 million to USD62 million in 1996[36].

Example of questionable over- and under-estimation of reserve at discretion
The S.E.C. investigated into the Microsoft's reserve practices[37] during the fiscal year 1994 to 1998. The company set higher reserves for returned software or bad debt accounts during well performing quarter and in the opposite manner during an underperforming quarter.

Example of questionable cash flow from acquisitions
From 1996 to 2002, Tyco International Ltd[38] acquired hundreds of companies. At least USD500 million of the company's inflated operating income came from the acquisition. Since these transactions are treated as insignificant, the company has been able to account for the acquisition in the financial cash flow while putting the income of the acquired company as additional operating income.

[36] The accounting fraud's[1] the best part of the AOL CD lore. For fiscal years 199... | Hacker News (ycombinator.com)
[37] Microsoft: Accounting Scandal Avoided? | (cuny.edu)
[38] SEC Complaint: Tyco International Ltd.

(1) Sample statements to compile key ratios

Note to trainers: trainers may obtain disguised client's financial statements from the bank to be base-material for assessment with short questions, long questions, or case-based questions. The table below shows a sample of income statement and balance sheet:

F Co. Ltd.	2021 HK$'000
Revenue	
Sales of food and beverages	2,641,319
Property rental	5,150
less: Cost of sales	(2,318,873)
Gross profit	327,596
Other revenue:	
Interest income	4,437
Government subsidies	89,348
Electric and gas rebate	5,166
Profit on sale of redemption gifts	766
Write-back of other payables	1,702
Other expenses:	
Loss on disposal of other property, plant and equipment	(9,779)
Foreign exchange loss	2,038
Other net loss	6,243
Selling expenses	(34,511)
Administrative expenses	(115,526)
Impairment loss on: - other property plant and equipment	(34,310)
- right-of-use assets	(59,377)
Valuation losses on investment properties	(8,570)
Profit/(Loss) from operation	175,223
Interest expense on bank loan	
Interest expense on lease liabilities	(36,824)
Profit/(Loss) before taxation	138,399
Income tax	15,218
Profit/(Loss) after taxation	153,617

Other comprehensive income	
Items that may be reclassified subsequently to profit or loss:	
Exchange differences on translation of PRC subsidiaries	4,737
Total comprehensive income for the year	158,354
Profit/(Loss) attributable to:	
Equity shareholders of F Co. Ltd.	153,617
Total comprehensive income/(loss) attributable to:	
Equity shareholders of F Co. Ltd.	158,354

F Co. Ltd.	2021 **HK$'000**	2020 **HK$'000**	2019 **HK$'000**
Non-current assets			
Investment properties	29,830	38,400	44,150
Other property, plant and equipment	424,866	474,711	468,503
Interests in leasehold land held for use under leases	-	-	5,980
Right-of-use assets	1,110,609	1,433,611	-
Lease receivables	2,768	-	-
Goodwill	1,001	1,001	1,001
Rental deposits paid	72,737	76,732	68,517
Debt securities at amortised cost	-	15,821	19,825
Deferred tax assets	3,935	22	44
	1,645,746	2,040,298	608,020
Current assets			
Inventories	46,008	50,828	33,560
Trade receivables	6,064	4,261	10,500
Accounts receivables	22,111	19,367	11,353
Prepaid rental and utility deposits	50,770	50,085	47,042
Lease receivables	2,239	-	-
Prepayments	18,580	16,468	33,529
Debt securities at amortised cost	16,745	3,141	11,950
Current tax recoverable	17,633	13,423	-
Cash and cash equivalents	622,143	511,047	519,854
Total assets	2,448,039	2,708,918	1,275,808
Equity and liabilities			
Capital and reserves	2021	2020	2019
Share capital	129,533	129,533	128,650
Reserves	648,303	591,273	649,028
Total equity	777,836	720,806	777,678

Non-current liabilities			
Lease liabilities	785,222	981,512	-
Deferred tax liabilities	1,795	14,036	19,599
Rental deposits received	1,768	1,173	2,286
Provisions	69,516	75,739	56,718
	858,301	1,072,460	78,603
Current liabilities			
Trade payables	326,634	386,957	354,951
Contract liabilities	10,587	9,354	3,061
Accounts payables and deferred income	22,353	20,992	27,164
Rental deposit received	204	1,142	27
Bank loan	-	-	143
Lease liabilities	433,320	479,851	-
Current tax payable	20	-	10,494
Provisions	18,784	17,356	23,687
Total equity and liabilities	2,448,039	2,708,918	1,275,808

	2021	2020	2019
Liquidity Ratios			
1. Current ratio = Current assets/Current liabilities	0.99	0.73	1.59
2. Quick ratio = (Current assets – inventory)/Current liabilities	0.48	0.23	0.87
Profitability Ratios			
1. Gross profit margin = (Sales – COGS)/Sales *100%	12.38%	9.15%	12.93%
2. Operating profit margin = (Operating profit/Revenue) *100%	6.62%	3.63%	7.24%
3. Net profit margin = (Profit after tax/Revenue) *100%	5.80%	2.01%	6.06%
4. Asset turnover ratio = Sales/Total assets	1.08	1.12	2.33
Working Capital Ratios			
1. Inventory turnover ratio = COGS/Average inventory	47.89	65.24	69.84
2. Receivable turnover ratio = Sales/Average receivables	512.63	410.57	328.13
3. Payable turnover ratio = COGS/Average payables	6.50	7.42	6.86
4. Cash ratio = (Cash and Cash Equivalents)/Current liabilities	0.77	0.56	1.24
Solvency Ratios			
1. Return on Equity (ROE) = (Net income-foreign exchange gain/(loss))/Shareholders' equity	0.20	0.08	0.23
2. Return on Assets (ROA) = Net income/Total assets	0.06	0.02	0.14
Financial Leverage Ratios			

1.	Debt ratio = Total debt/Total assets	0.68	0.73	0.39

2.1.3 Financial Ratios and Key Business Drivers

Note to trainers: banks have developed standard templates to capture relevant financial data. For learners who have worked in job positions for one year should be familiar with financial analysis. The Training Package should include a few points essential to facilitate RPs assessment on the credit worthiness of credit applicants. Trainers may embed essential knowledge and skill test in the assessment with short questions and long questions, rather than going through the details in the class session. The class session would be better used with learners' sharing on financial analysis "traps".

Financial ratios are practical tools to identify financial irregularities and information gaps. It is a comprehensive and highly articulated process to compare information from different sources and along time horizon until one is satisfied with the confirmed sources and causes of significant inconsistency, irregularities, or trends of income and financial positions revealed from the financial ratios. However, the analysis must be done within the relevant economic and industry context to achieve high quality. RPs should feel comfortable asking credit applicants all kinds of clarifying questions to arrive at a reasonable degree of confidence about the financials reflecting on the financial positions and strength of borrowers.

<u>(2) Steps to prepare for financial analysis</u>

The table below shows examples of financial analysis:

Steps in Financial Analysis	Description
Preparation for financial analysis	- A loan officer would do some prelim questioning • To assess the application validity before conducting an in-depth analysis • To analyse the strategic direction • To assess the major initiatives • To identify future potential challenges and opportunities for borrowers - For loans involving more than one bank, individual banks will conduct their in-depth financial analysis and credit judgment - For a project with the standard alone capability to repay debt obligations, the lender will conduct a quantitative analysis with the project profit and loss projection. - Otherwise, the lender will conduct a quantitative analysis of the conglomerate profit and loss of borrowers.
Identify industry cycle	Stage of Industry cycle

<table>
<tr><td>Refer to industry information</td><td>Industry consultant engaged by the bank
Veteran RPs specialized in the industry analysis
Industry report</td></tr>
<tr><td>Identify business cycle</td><td>Startup/Fast Growth/Cash Generation/Stagnation</td></tr>
<tr><td>Identify business model</td><td>5-C Model/the Five Force Model</td></tr>
<tr><td>Obtain basics about Key business drivers</td><td>Business drivers are the key inputs and activities that drive the operational and financial results. Therefore, one should ensure that business drivers are solid and sustainable.

From industry report e.g., shipping industry, aviation industry

The analytical framework below lists out some examples of key business drivers that RPs can ask more questions about to generate valuable insights into the critical business drivers:

<table>
<tr><td>Key Business Drivers</td><td>Business Risk
Sales volumes
Sales price</td><td>Operations Risk
Material cot
Labor cost
Utilities cost</td></tr>
<tr><td>Reference</td><td colspan="2">- Existing borrowers in similar sector
- Major competitors in similar sector</td></tr>
<tr><td>Management choice</td><td>- Value Proposition</td><td>- Fixed Cost leverage</td></tr>
<tr><td>Technology platform</td><td></td><td>- Unit transaction cost
- Marginal transaction cost</td></tr>
<tr><td>Number of stores</td><td>- Sales/Store</td><td>- Number of inactive shops</td></tr>
<tr><td>Web site traffic</td><td>- Click through</td><td></td></tr>
<tr><td>Suppliers</td><td></td><td>- Terms of contract</td></tr>
<tr><td>Products</td><td>- Cross-sell ratio</td><td>- Unit production cost
- Marginal production cost</td></tr>
</table>
</td></tr>
<tr><td>List the external factors with impact on</td><td></td></tr>
</table>

<table>
<tr>
<td>the business drivers</td>
<td>
<table>
<tr><th>Useful Information from Financial Statements</th><th>Revenue</th><th>Expenditure</th><th>Foreign Currency</th></tr>
<tr><td>Risk factors – macro-economics</td><td>Economic risk
- GDP
- Consumer expectations
- Unemployment rate
- Interest rate
Geography
- International firm
- Local firm</td><td>Market force
- Labor cost
- Energy cost
Economic force
- Inflation rate</td><td>Exchange Rate</td></tr>
<tr><td>Risk factors – industry risk</td><td>Cycle stage
- Start up
- Growth
- Rapid Growth
- Stagnation
- Decline
Cyclical sector
- High
- Airline
- Retail
- Moderate
- Technology
- Telecom
- Low
- Health care
- Electricity network
Business cycle
- Seasonal
- Sports
- Travel</td><td>Government acts
- Government regulations
- Green policies
- Electricity rationing</td><td></td></tr>
<tr><td>Risk factors – internal risk</td><td>Product diversity
- Product range
- Product innovation</td><td>Operational scale
- Large scale lowers the cost
- Small scale less price negotiation power</td><td></td></tr>
<tr><td>Relevant strategy model – the five forces</td><td>Pricing power
Hurdles to entrance
- Technology Patent
- Capital intense
Customers
- Channel
- Segment</td><td>Supplier power
- Monopoly
- Technology patent</td><td></td></tr>
<tr><td>Relevant strategy model – SWOT</td><td>Competitive edge
- Market share
- Technology distance</td><td>Supply chain vulnerability
e.g., during COVID19</td><td></td></tr>
</table>
</td>
</tr>
<tr>
<td>Rank the significance</td>
<td>The analytical framework below illustrates the estimation of the impact of the risk factors identified via the financial analysis process:</td>
</tr>
</table>

<table>
<tr>
<td>of impact from the external factors.</td>
<td>
<table>
<tr><th></th><th>Risk Characteristics</th><th>Impact High</th><th>Impact Medium</th><th>Impact Low</th><th>Probability</th></tr>
<tr><td rowspan="16">Risk factors to be considered for a loan applicant:

- External factor
- Internal factor
- Cash flow for repayment matching with loan terms</td><td>Geography</td><td>H</td><td></td><td></td><td>Low</td></tr>
<tr><td>Denomination</td><td>H</td><td></td><td></td><td>Low</td></tr>
<tr><td>Currency</td><td>H</td><td></td><td></td><td>High</td></tr>
<tr><td>Economic</td><td>H</td><td></td><td></td><td>High</td></tr>
<tr><td>Sector</td><td>H</td><td></td><td></td><td>High</td></tr>
<tr><td>Industry</td><td></td><td>M</td><td></td><td>High</td></tr>
<tr><td>Business</td><td></td><td>M</td><td></td><td>Medium</td></tr>
<tr><td>Purpose</td><td></td><td>M</td><td></td><td>Medium</td></tr>
<tr><td>Loan Amount</td><td></td><td>M</td><td></td><td>High</td></tr>
<tr><td>Loan Tenor</td><td></td><td>M</td><td></td><td>Low</td></tr>
<tr><td>Company Type</td><td></td><td>M</td><td></td><td>Medium</td></tr>
<tr><td>Year in Business</td><td></td><td>M</td><td></td><td>Low</td></tr>
<tr><td>Collateral LTV</td><td>H</td><td></td><td></td><td>High</td></tr>
<tr><td>Product Type</td><td></td><td>M</td><td></td><td>Low</td></tr>
<tr><td>Financial Risk</td><td>H</td><td></td><td></td><td>Low</td></tr>
<tr><td>Financial Strength</td><td>H</td><td></td><td></td><td>Medium</td></tr>
</table>
</td>
</tr>
<tr>
<td>Reconfirm objectives of financial analysis</td>
<td>To assess the income generation capability of borrowers
To assess the financial strength of borrowers amid adverse economic condition
To understand the impact of external risk factors to the income stream
To confirm/validate borrowers’ financing needs/product needs which matches its repayment capability or specific requests (Note 1)
To identify further business opportunity with borrowers</td>
</tr>
<tr>
<td>Improve quality of financial ratio analysis by comparison</td>
<td>In-depth financial analysis could be obtained from comparisons of the financial ratios across entities within the same industries and against borrowers’ historic performance
<table>
<tr><th></th><th></th><th colspan="2">Means to Enhance In-Depth Understanding of the Business</th></tr>
<tr><td>Accounting analysis tool</td><td>Descriptions</td><td>Compare over time
- Economic cycle
- business cycle</td><td>Compare with industry
- Existing borrower
-Competitor</td></tr>
<tr><td>Common sizing analysis</td><td>This involves the technique of converting all items in the financial statements into a percentage of total so that each number is expressed in relation to total assets or revenue. This is an efficient</td><td>✓</td><td>✓</td></tr>
</table>
</td>
</tr>
</table>

		analytical tool as it facilitates a meaningful comparison between two variables which change during the same period of time (e.g., year-on-year balance sheet and income statement comparison).		
	Indexed trend analysis	This involves anchoring a certain year (examples are a year during or just after the global financial crisis) and convert the absolute numbers of each year into an index with the base year to facilitate better comparison and comprehension of the trend. This method has the advantages of showing business performance during the business cycles, demonstrate the financial outcomes of management decisions. It shows if the business is growing or shrinking relative to the significant base year.	✓	✓
	Ratio analysis	Ratio analysis is a principal tool of financial analysis. Through cross-referencing the items on the balance sheet and income statement, the hidden accounting changes or impact of policies are revealed. Key ratios for different stakeholders could be computed from the same balance sheet and income statement enabling each stakeholder to focus on the key areas.	✓	✓

Further improve quality of financial ratio analysis after site	Site visit is an effective tool to verify the authenticity of documentation submitted and obtain additional information for assessment. (e.g., inventory conditions, collateral custody)

Improve Quality of Information	**Verbatim**	**Quotations**	**Contract Transaction Proof**	**Site Shop Visit**

<table>
<tr><td>visit and others</td><td>
<table>
<tr><th></th><th></th><th></th><th>Bank Statements</th><th>Web Site Traffic</th></tr>
<tr><td>Sales</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Bank Account Balance</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Production Materials</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Payment to Suppliers</td><td></td><td></td><td></td><td></td></tr>
</table>
 doubtful quality  better quality
…
</td></tr>
<tr><td>Compile financial ratio</td><td>
The tables below show the key financial ratios and their categorization:
<table>
<tr><th>Income</th><th>Profit Ratio</th></tr>
<tr><td>Income from core business is higher quality than extraordinary income</td><td>Return Type Ratio
Margin Type Ratio
Cost Efficiency Type Ratio</td></tr>
</table>
<table>
<tr><th>Return Ratio</th><th>Margin Ratio</th><th>Cost Efficiency Ratio</th></tr>
<tr><td>Return on assets</td><td>Net interest margin</td><td>Cost-income ratio</td></tr>
<tr><td>Net income/total assets</td><td>Net interest income/earning assets</td><td>Non-interest expense/ pre-provision income</td></tr>
<tr><td>Return on equity</td><td></td><td>Cost-assets ratio</td></tr>
<tr><td>Net income/ shareholders’ equity</td><td></td><td>Non-interest expense/ total assets</td></tr>
</table>
</td></tr>
<tr><td>Interpret financial ratio</td><td>
Interpretation is as important as the computation of financial ratios. The analytical frame below illustrates purposeful interpretation of the financial ratio to trigger more relevant information to assess the credit risk of the borrower.
<table>
<tr><th>Topic</th><th>Working Capital</th><th>Further Analysis and Follow Up on Missing Information/Additional Information</th></tr>
<tr><td>Calculation</td><td>Relationship between current assets and current liabilities</td><td>- Changes over past years/seasons</td></tr>
<tr><td>Components</td><td>Current assets:
- Accounts receivables
- Inventory</td><td>For significant figures
- Ageing on the accounts receivables
- Inventory policy
- Major supplier contracts</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><td></td><td>
<table>
<tr><td>Measure</td><td>The business capability of a company to pay its short-term debt obligations with the current assets</td></tr>
<tr><td>Lower than industry average</td><td>May indicate a risk of distress or default</td></tr>
<tr><td>Higher than industry average</td><td>May indicate that the management is not using assets efficiently</td></tr>
<tr><td>Review on accounting policy</td><td>Review the policy to classify inventory as current/obsolete</td></tr>
</table>
</td></tr>
<tr><td>Identify sources and causes of the outcomes of analysis</td><td>
<table>
<tr><th></th><th>Working capital ratio</th><th>Quick ratio/Acid-test ratio</th></tr>
<tr><td>Calculation</td><td>Relationship between current assets and current liabilities</td><td>Relationship between easily liquidated assets and current liabilities</td></tr>
<tr><td>Components</td><td>Current assets:
- Accounts receivables
- Inventory
- Other current assets e.g., prepaid, short-term investments i.e., assets that could be turned into cash in less than one year

Accounts payable:
- Wages payable
- Tax payable
- Short-term trade payables
- Current position of long-term debt</td><td>Easily liquidated assets:
- Cash
- Accounts receivable
- Short-term investments

Accounts payable:
- Wages payable
- Tax payable
- Short-term trade payables
- Current position of long-term debt</td></tr>
<tr><td>Measure</td><td>The business capability of a company to pay its short-term debt obligations with the current assets</td><td>A more reserve approach to measure the business capability of a company to pay its short-term debt obligations with the quick assets</td></tr>
<tr><td>Lower than industry average</td><td colspan="2">May indicate a risk of distress or default (However, there is a limitation because the components could be very different from company to company)</td></tr>
<tr><td>Higher than industry average</td><td colspan="2">May indicate that management is not using assets efficiently</td></tr>
</table>
</td></tr>
</table>

	Review on accounting policy	Review the policy to classify inventory as current or obsolete Review the policy of payment terms to customers Review the policy on payment days to suppliers
	Risk	Very aged inventory still included as current assets.
	Example	Trainers may request RPs to compare the performance in fiscal year end 2021 of well-known brand names in same industries and discuss the causes and sources of differences.
Estimate business outlook	Form a judgment on the outlook	

(3)Bank product types affects the selection of critical financial ratios

Product	Product Brief
Project finance	One or two banks provide the finance based on the income of designated project. In case of project finance, the bank finances the project as an individual entity.
Syndication loan	Two or more banks combine to make huge syndication loans to corporations. One lead financier may play a lead role in coordinating with other banks and making the funds available to the corporation.
Corporate finance	Commits the finance based on the overall corporate income instead of relying on designated projects' income.
Trade finance	Finance the trading activities of borrowers
Commodity finance	Finance the commodities
Lease financing	This is off-balance sheet financing method. The arrangement provides control of the said asset without leveraging the balance sheet of the given corporation.
Borrowing-base facilities	A type of financing structure for producers of commodities, by which a company can pledge some of its assets to a lender. The value of this pool of assets, the "borrowing base" will constitute the amount of money loans.
Pre-export and prepayment finance	A PXF facility provides finance to producers of goods and commodities based on proven orders from buyers. In a classic PXF transaction, the borrower (and seller) uses funds to meet its working capital needs to cover the purchase of raw materials for production and costs in relation to storage and transport of goods.

Tolling finance	An agreement between two companies in which one agrees to supply a certain amount of a raw material ever so often. For instance, an oil refinery and a drilling company may agree that the drilling company will sell the refinery a certain number of barrels of crude oil every month so that the refinery has something to refine. Because of the tolling agreement, the refinery may be more confident that it can sell refined oil to other companies along the supply chain. Tolling agreements can therefore be mutually advantageous to the sustainability of the supply chain.

2.1.4 Limitation of Financial Statements

2.1.4.1 Identify information useful for account planning purposes

(1) Scenarios on initial overall impression of the financial statements

After the financial statements of analysis, there is a good idea about the financial strength and profit generation power of a borrower. The analytical framework below shows different scenarios of credit worthiness:

Examples of Scenarios	Balance Sheet	Income Statement	Credit Worthiness
Scenario 1	Highly Liquid assets	Large cash generation	High
Scenario 2	Highly Liquid assets	Low cash generation	Medium
Scenario 3	Illiquid assets	Low cash generation	Low

(2) Limitation of financial statements

The first impression from the initial financial analysis needed to be validated. However, despite advanced financial analysis skills and technology, the financial statement analysis has limitations. The table below shows examples of limitations:

Principles/Practices	Consequences	Prudent Actions
Accrual accounting For most enterprises, the accounting is done on accrual basis	**Uncertainty** Long outstanding accounts receivables still classified as current	**Ask for** Major customer list Receivable ageing list
Snapshot financial position Income, expenditure, assets, and liabilities are all captured as of a particular date	**Window dressing** The underlying dynamics remain unknown to lenders	**Ask for** Study bank statements
Asymmetry information Hidden information on bad business situation	**Missing information** Inventory stocked at the manufacturers rather than reflected in the financial statements	**Ask for** Major supplier list Summary of orders to major suppliers

Opaque information One party can observe the information and the other party cannot	**Credit quality change over time without being identified** Ageing customer portfolio without sufficient incoming new customers.	**Ask for** Customer portfolio analysis Product portfolio analysis

(3) Consequence of ignoring the limitations

Directors of companies are agents of a company. They should carry out their fiduciary duties in the best interest of the shareholders. With the limitation of the balance sheet, however, the directors might face temptation to breach the fiduciary duties. The analytical framework below shows examples to identify the upward and downward earnings management:

Upward Earnings Management	Downward Earnings Management
Upward manage the revenue to narrow down the earning differences across different periods Upward manage the revenue to distribute more bonus to the directors Influence the stock price which is one of the forms of compensation for the directors	Downward manage the revenue to narrow down the earning differences across different periods
Means to Upward Earnings Management	**Means to Downward Earnings Management**
Change from LIFO to FIFO to create a lower cost of goods sold, hence jetting up the earnings Change of project revenue recognition policy to create a higher income recognition Reevaluate the value of an asset (land) and have a gain captured as income	Change from FIFO to LIFO to create a higher cost of goods sold, hence suppressing the earnings Increase loan provision with a more prudent estimate Early cut off of sales order at year end to downward manage the revenue

Identification of Earnings Management[39]
The company claims increase in revenue on the income statement but there is no corresponding increase in the cash accounts on the balance sheet.
The company reports an increase in revenue when year-end is approaching, when year-end may not be a strong sales season.
The company's account changes be put onto the radar screen for follow up.

[39] Earnings Management, CFI, CFI earnings management - Google Search

2.1.5 Key Business Drivers

2.1.5.1 Define key business drivers

<table>
<tr><td>1.
Key business drivers</td><td>Business drivers are the key inputs and activities that drive the operational and financial results. Therefore, one should ensure that the business drivers are solid and sustainable.

<u>Example</u>
From industry report (e.g., shipping industry, aviation industry)

The analytical framework below shows examples of key business drivers with an impact on borrowers’ business and operations risk:

<table>
<tr><th>Key Business Drivers</th><th>Business Risk
Sales volumes
Sales price</th><th>Operations Risk
Material cot
Labor cost
Utilities cost</th></tr>
<tr><td>Reference</td><td colspan="2">- Existing borrowers in similar sector
- Major competitors in similar sector</td></tr>
<tr><td>Management Choice on</td><td>- Value Proposition</td><td>- Fixed Cost leverage</td></tr>
<tr><td>Technology Platform</td><td></td><td>- Unit transaction cost
- Marginal transaction cost</td></tr>
<tr><td>Number of Stores</td><td>- Sales/Store</td><td></td></tr>
<tr><td>Web Site traffic</td><td>- Click through</td><td></td></tr>
<tr><td>Suppliers</td><td></td><td>- Terms of contract</td></tr>
<tr><td>Products</td><td>- Cross-sell ratio</td><td>- Unit production cost
- Marginal production cost</td></tr>
</table>
</td></tr>
<tr><td>2.
Analyzing strategic direction</td><td>Sizable and structured company has mission and vision statement to communicate the strategic direction with shareholders, executive and teams.

The perfect implementation of the strategic direction requires a lot of management attention to carefully design the products and supporting marketing and operations strategies.

The outcomes of the implementation are aggregated transactions which are reflected on the financial statements.

Therefore, the outcome of financial analysis confirms whether the strategic direction is implemented accurately; or more importantly, the strategy direction aligns with the external environment changes over time.</td></tr>
<tr><td>3.</td><td>Both qualitative analysis and quantitative analysis must be done to evaluate the business model. Apart from the quantitative financial ratios, there are also qualitative means to express business models.</td></tr>
</table>

Expression of the business model	- 5Cs - SWOT - CANVAS
4. Evaluation of the business model	Comparison of borrower's business model against the industry norm and its major competitors is a straightforward means to evaluate the validity of the business model amid market competition. However, the comparison will more effectively generate insights for risk assessment if done with competitors of similar size. For comparing business of different scales, RPs might consider translating the financial statements to common base (e.g., all income statement items expressed as % of sales)
5. Assessing risk of potential financial loss on doing business with the borrower	RPs must solicit gather Information on the financial strength of the borrower - For listed companies, there may be press release and news reporting - For non-listed companies, site visits and faces interview with the management might help to form an impression on the management capability - Information from peers in other banks might be helpful but non-independent, which requires RPs to collect other information for validation (e.g., social media post by employees) RPs needs to consider both willingness and capability to service the debt
6. Identifying the key forces shaping the industry of the clients' business	The financial ratio analysis provides some insight regarding the major forces of the industry Examples - Negotiation power of borrowers in the supply chain could be indirectly proved by the cost control of the raw material for production - Pricing power of borrowers in the market could be indirectly proved by the price increase of the new product launch - Technology impact on borrower could be indirectly proved by its transactions done online versus in the physical shop
7. Analyzing value chain of the business to adopt a holistic consideration to assess risk and opportunities	The key considerations of the value chain include: - Supply chain - Talents in the company - Corporate culture e.g., innovation, productivity - Product branding - Customer loyalty (e.g., life-time value from repeated customer transactions)

2.2 Submodule 2: Financial Strength Assessment

<u>Note to trainers:</u>
Trainers can pick, change, and repackage the content sample below according to learners' needs

2.2.1 Introduction

Credit Analysis is not rocket science. Instead, it is a comprehensive and highly articulated framework that asks for a systematic and thorough assessment of a borrower's willingness and capability to pay the obligations timely and in the manner demanded by the T&C stated in the loan covenants.

Because of the investigative approach to protecting the bank's interest, the characteristics of accounting, and the nature of financial statements, one must conduct a critical analysis and interpretation of all the essential data presented on the table.

2.2.2 Critical Analysis of Financial Statements (Internal Factors)

2.2.2.1 Understand Characteristics of different credit products offered by the bank

<table>
<tr><td>1. Knowing bank products</td><td>RPs should be familiar with the characteristics of different credit products. With the knowledge, RPs will sensitize to the missing information in the client's financial statements, or vice versa, whether there is any information in the financial statements which indicates that the client is likely to fit the credit criteria regarding its financial needs.</td></tr>
<tr><td>2. Examples of bank products</td><td>RPs should be comfortable conducting an initial introduction regarding the bank's product range, which elevates the client's willingness to collaborate with RPs in providing company information. The table below shows some examples for class discussions:
<table>
<tr><th colspan="2">Examples on Loan Type</th></tr>
<tr><td colspan="2"><u>Syndication Loan (Two and more banks sponsor syndication loan)</u>
Customers can raise funds through a syndicated loan to meet their huge capital needs. After agreeing with a bank as an arranger (a bank, for instance), customers can only approach the arranger to reach different banks via the network of the arranger. The arranger organizes information from various parties, including lawyers and participating banks, saving customers time handling loan documents, legal terms, pricing issues, completing the syndication, and meeting the financing needs for large real estate projects, business development, and mergers and acquisitions in a limited time frame.</td></tr>
<tr><th>Aircraft Financing</th><th>Ship Financing</th></tr>
<tr><td>Customers can raise funds through aircraft financing to enhance their competitive edge. For example, a bank that has established close relationships with airlines, aircraft leasing companies, insurance companies, valuers, and maintenance companies might provide aircraft financing solutions to airlines and leasing companies.</td><td>Shipping financing was once prevalent in Hong Kong. A bank with an extensive network worldwide, relevant experience, and a complete understanding of customer needs would offer credit offers to customers. The customers could ride the advantages of cross-border banking services and expand their business in different places. The offers include
- ship repayment financing
- ship financing
- bilateral loans
- asset-backed financing
- merger and acquisition loans
- structure finance
- financing with export insurance policy pledged
- others subject to the customer's needs and the bank's risk appetite

Banks may define a scope for applicable ships such as dry bulk carriers, oil tankers (crude tankers, product tankers, chemical tankers), general cargo and multi-purpose vessels, container ships, liquefied natural gas, and liquefied petroleum gas tankers, offshore support vessels, drilling platform, drilling vessels, oil storage vessels and floating production, storage tanks and others.</td></tr>
</table>
</td></tr>
<tr><td>3. Loans with competitors</td><td>Ask follow-up questions regarding the bank loans already booked on the financial statements. Information about the loans offered by competitors (e.g., loan type, amount, tenor, original booking date, and purpose) provides insights into the market competition and the client's credit worthiness.</td></tr>
</table>

2.2.2.2 Understand the credit management

1. Prudent procedure for approving credit	*Note to Trainers: the material below is an example of how the HKMA SPM could be applied directly in the development of the training materials. However, in the assessment questions, the focus should be on the application of these principles.* CR-G-1 which specifies the prudent procedures for approving credit: - Bank should have a written statement (credit manual) setting out the criteria and procedures for granting new credits, for approving extensions of existing credits and exceptions, for conducting periodic and independent reviews of credits granted and for maintaining the records for credit granted - The statement should lay down sound, well-defined criteria for granting credit, including a thorough understanding of the borrower or counterparty, the purpose and structure of the credit and its source of repayment. The same criteria should be applied to both advised and unadvised facilities. - Bank should adhere closely to the "Know your customer" principle and should not lend purely on name and relationship without a firm understanding of the borrower. - Credit decisions should be supported by adequate evaluation of the borrower's repayment ability based on reliable information. Sufficient and up-to-date information should continue to be available to enable effective monitoring of the account. - All credits should be granted on an arm's length basis. Credits to related borrowers should be monitored carefully and steps taken to control or reduce the risks of connected lending. - Banks should not over-rely on collateral or guarantees. While these can provide secondary protection to the lender if the borrower defaults, the primary consideration should be the borrower's debt-servicing capacity. - Banks should be wary of rapid expansion of particular types of lending. This may indicate a relaxation of credit standards and increased focus on more marginal borrowers. - Banks should ensure through periodic independent audits that the credit approval functions is being properly managed and that credit exposures comply with prudential standards and internal limits. The results of such audits should be reported directly to the Board, the Credit Committee or senior management as appropriate.
2. Credit approval, review and records	Refer to CR-G-2 for details.

2.2.2.3 Knowledge in Theories and Concepts of Corporate Finance

<table>
<tr><td>1.
Generally accepted accounting principles</td><td>To a certain extent, the financial statements reflect the intentions and actions of the management (e.g., extended settlement of accounts payable and push, or give incentive, for timely payment of accounts receivable might mean the company has other better alternative uses of the company’s liquidity)

However, there are occasions when the management’s intentions and actions are not visible from the analysis of the financial statements. Critical corporate finance theories will give RPs a broader perspective on a company’s credit worthiness.</td></tr>
<tr><td>2.
Corporate theories</td><td>RPs should sensitize to the discretions taken by the management, which might be within statutory and accounting framework but deteriorates its credit worthiness. Reasons for de-railed management decisions might be explained by corporate finance theory.

The table below shows examples of corporate theories which might explain the management’s decision behaviours:

<table>
<tr><th>Year</th><th>Corporate Finance Theory</th><th>Description</th><th>Underlying Notion</th><th>Alerts</th></tr>
<tr><td>1960s</td><td>Trade-off Theory</td><td>Analysis of benefits and costs deriving from leverage which studies the way in which the firm manage to balance the bankruptcy costs with the benefits of tax shields, derived from taking on debt</td><td>The company sets a target debt ratio which they aim to achieve. i.e., static capital structure.</td><td>A company having a higher debt/equity ratio is risky when the macro-economic environment has a bad turn.</td></tr>
<tr><td>1970s</td><td>Agency Theory</td><td>Study on the conflicting interest between managers and shareholders and between creditors and shareholders</td><td>The shareholders make decisions through agencies, while shareholders are agents for creditors. But creditors have a say in the management.</td><td>A company might not allocate financial resources to riskier investment for higher return, where creditors have no say in the decision.</td></tr>
</table>
</td></tr>
</table>

1980s	Pecking Order Theory	Study on information asymmetries among investors and firms.	Less informed investors need an incentive to invest in risky securities. Internally generated funds represent the best financing option, whereas the use of own external capital would be the last financing alternative	Shareholders may be reluctant to risk its own capital but not so reluctant with creditors' fund.
1980s 2nd half	SWOT PEST	Study of corporate finance structure based on the factors associated with industrial strategy and corporate organization.	The management band strength, quality of management and industrial strategy has impact on a company's decision on debt-equity mix.	The financial figures might reveal gaps against the representation made by the management
1990s	Trade-off Theory Pecking Order Theory	Continuous research on the prevailing corporate finance theory for more new knowledge		
2000s		Study on capital structure being a consequence of the necessity of marketing timing	Reorientation in research to the empirical analysis of the structure of corporate finance	When corporation has more direct fund-raising channels, there should be careful check and balance on the pricing of the bank's credit offers

3. Corporate finance theories	*Note to trainers: instead of teaching learners one-by-one the theories, trainers might consider having the learners to identify applicable corporate finance theories in the assessment short questions or long questions. Trainers may consider retrieving applicable theories from the "Best Case Handled" presentations shared by learners in class.* Examples of corporate finance theory applicable to the listed company or private companies are:

	Corporate finance theory includes: - Net present value, - Capital Asset Pricing Theory, - Efficient Market Theory - Portfolio Theory - Option Pricing Theory - Agency Theory - Meta-financial theory - Rational Man/Rational Market - Risk and Return - Utility Theory - General Equilibrium - Irrational Man Private market finance theory includes: - Private return expectations, - motives and authority - Value world theory - PPCML - Private options, - inefficient markets - meta-financial theory
4. Examples of applications of corporate finance theories in credit risk management	**Application of Present Value (PV) and Net Present Value (NPV) in Project Financing Analysis** CR-G-12 (credit risk transfer activities) stipulates that “risk measurement methodologies that apply to CRT activities may include internal credit risk rating system, VaR, stress loss. It may also include other sensitivity measures (e.g., the sensitivity of present value to a basis point movement in credit spreads), critical operational risk indicators, and scorecards. Risks not well reflected by standard risk measures should be subject to additional controls, including pre-approval of transactions and specific risk limits”. **Application of Capital Asset Pricing Model (CAPM) in Corporate Financing Rate of Return Analysis** The capital asset pricing model describes system risk and expected return for assets. Systemic risk is market risk, the general risk from developments impacting the entire economy and investment assets. For example, interest rates, inflation, recessions, and geopolitical events like war affects system risk. The systemic risk applies to the market, impacting all assets. Non-systemic is also a specific risk unique to each portfolio, which can be reduced by diversification or investing in a basket of different investments. An adequate credit risk management policy should be in place to diversify the risk of the total loan portfolio. **Application of Portfolio Theory in portfolio diversification scenario analysis** Portfolio theory is applicable in credit risk management. For instance, HKMA research covers concentration risk management by applying the concept.

<table>
<tr>
<td>5.
Cases</td>
<td>When a company’s management deviates from these theories, the outcomes would be detrimental to company management. Here are some related lessons learned from the past.

<table>
<tr><th>Management Decision</th><th>Case</th><th>Outcomes</th></tr>
<tr><td>Trade-off Theory
Credit Obligations exceeds equity</td><td>Barings Bank</td><td>Company round-up</td></tr>
<tr><td>Agency Theory
Management misrepresentation on financial situation</td><td>Enron</td><td>Company round-up</td></tr>
</table>
For credit assessment of SMEs, the bank might resort to financial analysis and qualitative evaluation based on the discussion with the company management.</td>
</tr>
</table>

2.2.2.4 Understand and evaluate liquidity, profitability and credit histories of borrowers

The table below summarizes the necessary deep dives to arrive at a critical analysis of financial statements:

<table>
<tr><td>1.
Critical analysis on financial ratios</td><td>The following are examples of core categories of all financial Analysis:

<table>
<tr><th>Income</th><th>Profit Ratio</th></tr>
<tr><td>Income from core business is higher quality than extraordinary income</td><td>- Return type ratio
- Margin type ratio
- Cost efficiency type ratio</td></tr>
</table>

<table>
<tr><th>Return Ratio</th><th>Margin Ratio</th><th>Cost Efficiency Ratio</th></tr>
<tr><td>Return on assets</td><td>Net interest margin</td><td>Cost-income ratio</td></tr>
<tr><td>Net income/total assets</td><td>Net interest income/earning assets</td><td>Non-interest expense/ pre-provision income</td></tr>
<tr><td>Return on equity</td><td></td><td>Cost-assets ratio</td></tr>
<tr><td>Net income/ shareholders' equity</td><td></td><td>Non-interest expense /total assets</td></tr>
</table>

Critical ratio regarding willingness of borrowers to service the debt
- Net Income/Shareholder's equity

Critical ratio regarding capability of borrowers to service the debt
- Debt/Equity
- Net profit ratio</td></tr>
<tr><td>2.
Critical analysis on financial ratios deviated from industry norms</td><td>- Financial ratio analysis reveals inconsistency between income recognition and trade receivable liquidation. The inconsistency could be due to missing information.
- Financial ratio analysis reveals substantial dividend payments which far exceed the industry average. The inconsistency could be due to missing information about the shareholder agreement.</td></tr>
<tr><td>3.
Critical analysis with authentication of documents</td><td>Is the financed merchandise existing in reality and well secured in the warehouse? The existence of inventory needs to be authenticated.</td></tr>
<tr><td>4.
Critical analysis on the borrower's</td><td>The borrower's cash flow should be able to fulfill the debt repayment requirements. The table below shows examples:</td></tr>
</table>

<table>
<tr>
<td>cash flows and credit repayments</td>
<td>
<table>
<tr><th>Product Nature</th><th>Borrower’s Cash Generation Pattern</th></tr>
<tr><td>- No definite maturity Date (e.g., overdraft)</td><td>- Contingent cash requirements</td></tr>
<tr><td>- Definite maturity date</td><td>- Matched with project income stream</td></tr>
</table>
</td>
</tr>
<tr>
<td>5.
Critical analysis on the borrower’s operational risk</td>
<td>
Operations risk – fixed cost/variable cost leverage
Operations risk has a significant impact on the borrower’s income stream stability. Many companies default because their cost structure cannot catch up with necessary changes in the face of competitors and market changes. Competition might prevent companies from transferring costs onto their customers. While price is pushed lower due to competitive forces and cost structure remains inflexible, the profit market squeezes.
<table>
<tr><td>Vulnerable operations model (industry at stabilized stage) under high inflation environment
P&G 2019 reported quarterly revenue and adjusted profit on July 20, 2019, with a USD8 billion Gillette write-down. Business challenge to Gillette razors, gels and foam worldwide are driven by (1) stronger currency; (2) market competition, and (3) change of habit to shaving less in developed markets. P&G, like other consumer goods companies, has been raising prices on many of its products to tackle soaring freight and raw materials costs that have dented margins. (More information from <u>P&G posts strong sales, takes $8 billion Gillette writedown | Reuters</u>)</td></tr>
</table>
</td>
</tr>
<tr>
<td>6.
Critical analysis on the borrower’s financial leveraging</td>
<td>
Financial risk – debt/equity leverage
<table>
<tr><td>Financial risk has a significant impact on the willingness of the borrowers to service their debts continuously. High-cost structures also involve the company’s financial system. High leverage poses a problem because the cost of servicing debt remains unchanged while the profit margin squeezes. Companies that rely heavily on refinancing existing debts might have taken for granted the readiness of the banks to renew matured loans. Companies with significant debt-capital ratios should have spread the loan maturity over time so that no single large amount needs refinancing at any point in time.

Vulnerable financial model (economic condition in declining stage and business at fast growth stage) under economic downturn environment

(January 9, 2019) HNA Group has USD50 billion acquisition spree that peaked with the company stakes in banks, fund managers, hotels, property and airlines, among other assets. But</td></tr>
</table>
</td>
</tr>
</table>

	faced with soaring debt and government scrutiny of aggressive dealmaking, HNA Group has pushed ahead with asset sales that have included real estate and stakes in hotel groups. (More information in HNA sells majority stake in Manhattan building in $422 million deal | Reuters). (June 5, 2021) Creditors seek USD187 billion from bankrupt HNA Group. The Group said some 67,400 creditors are seeking a total of 1.2 trillion yan (USD187 billion). The company has confirmed 405.7 billion yuan in claims as valid and has rejected 353.5 billion yuan in claims. Another 156.5 billion yuan in claims are being assessed as part of a preliminary review while some claims have yet to be reviewed. (More information in Creditors seeking $187 bln from China’s bankrupt HNA Group – executive quoted | Reuters)

(7) Implications from cash flow analysis

There are several implications from the outcomes of cash flow analysis.

- To understand, directly from the analysis, whether the borrower can meet the cash repayment requirements in the relevant period
- To understand, indirectly from the analysis, whether the shareholders have sufficient incentive to service the debt payment on time according to the loan covenants

(8) Default scenarios other than cash flow issues

The table below introduces some situations where default occurs before bringing out the cash budget and cash flow analysis:

Debt Service Default	Technical Default	Sovereign Default	Strategic Default
When a borrower is unable to pay a loan and will not keep it from going into default status	When a borrower does not meet a condition of the loan, which is not related to non-payment	When a country could not make payment according to the loan covenants	A borrower has the ability to pay but purposely refuses to make payment

The cash budget and cash flow analysis deal with assessing the ability to pay rather than the willingness to pay or the technical non-fulfillment of loan covenants.

(9) Constraints on cash flow analysis

Methods to establish cash flow stream

The direct method is more precise but requires more effort to gather the necessary information. On the other hand, the indirect approach requires relatively less effort to gather the essential information as the figures for listed companies are readily available in the annual report.

Direct Method	Indirect Method
The direct method uses actual cash inflows and company operations outcomes.	The indirect method modifies the operating section from accrual accounting to cash. It always begins with income.

Historic data

This section should articulate the cash flow statement analysis's limitation with the financial statements' limitation. Regarding the application of the indirect method, all the data on the financial statements are historical data which might not imply that the same will happen in the future. Besides, the financial statements periodically capture necessary data and information while the underlying transactions happen daily.

F Holdings Limited

Consolidated Statement of Profit or Loss and Other Comprehensive Income

	2021	2020	2019
	HK$'000	HK$'000	HK$'000
Cash flows from operating activities			
Profit before tax	138,399	72,080	215,172
Adjustments for:			
Depreciation for other property, plant and equipment	100,865	103,915	105,263
Depreciation for right-of-use assets	443,234	430,247	-
Amortisation of interests in leasehold land held for own use under operating lease	-	-	212
Impairment losses on other property, plant and equipment	34,310	8,340	10,221
Impairment losses on right-of-use assets	59,377	17,498	-
Finance costs	36,824	37,995	32
Interest income	(4,437)	(10,862)	(10,227)
(Reversal of)/Provision for long service payments made	(1,668)	8,308	7,307
Net loss on disposal of other property, plant and equipment	9,779	6,440	3,300
Valuation losses on investment properties	8,570	5,750	1,880
Equity-settled share-based payment expenses	2,303	1,577	2,512
Others	(1,597)	(1,128)	-
Operating profit before working capital change	825,959	680,160	335,672
Changes in working capital:			
Decrease/(Increase) in inventories	4,819	(17,268)	6,940
Decrease/(Increase) in rental deposits paid	2,494	(6,427)	(4,725)
Increase in trade and other receivables	(7,116)	(12,028)	(7,261)
Increase/(Decrease) in trade and other payables	(39,640)	31,110	(7,044)
Increase/(Decrease) in rental deposits received	(342)	2	99
Provision for long service payments utilised	(1,251)	(1,755)	(1,141)
Provision for reinstatement costs utilised	(3,709)	(221)	(1,230)
Cash generated from operation	781,214	673,573	321,310
Interest received	4,701	11,216	10,110
Interest paid	-	-	(32)
Tax paid	(5,126)	(40,671)	(40,107)
Net cash from operating activities	780,789	644,118	291,281
Cash flows from investing activities			
Purchase of other financial assets	-	-	(22,839)
Purchase of other property, plant and equipment	(109,878)	(128,015)	(114,964)

Net proceeds from disposal of other property, plant and equipment	299	97	31
Proceeds from maturity of other financial assets	3,100	11,366	14,635
Decrease/(Increase) in bank deposits with more than three months to maturity	(6,511)	-	51,484
Capital element of lease rentals receipt	1,524	-	-
Interest element of lease rentals receipt	116	-	-
Net cash used in investing activities	(111,350)	(116,552)	(71,653)
Cash flows from financing activities			
Proceeds from issue of shares	-	18,268	20,780
Expenses incurred in connection with the issue of shares	-	(24)	(48)
Payment for share repurchase	-	-	(3,858)
Dividend paid	(103,627)	(134,715)	(182,805)
Repayment of bank loan	-	(143)	(1,720)
Capital element of lease rentals paid	(424,974)	(380,792)	-
Interest element of lease rentals paid	(36,824)	(37,995)	-
Net cash used in financing activities	(565,425)	(535,401)	(167,651)
Net increase/(decrease) in cash and cash equivalents	104,014	(7,835)	51,977
Cash and cash equivalent at start of the period	511,047	519,854	469,113
Effect of exchange difference	571	(972)	(1,236)
Cash and cash equivalent at end of the period	615,632	511,047	519,854

*** Use of indirect method**

2.2.2.5 Evaluate Financial Statements and Identify Incomplete Information

(1) Knowledge on industry cycles

Note to trainers: RPs should have an overall understanding of the industries to lead to a profound knowledge of the business models. In addition, they should be able to interpret research report findings and articulate the external risk factors, to deepen the understanding of the financial analysis. For example, trainers may provide an industry research report link in the assessment with an extended question as background information to supplement the depth of the financial analysis on borrowers from a specific industry.

Additional resources for trainers:

Examples of reliable economy and industry information
- Research commissioned by Government and other reliable organizational sources
- Research commissioned by Industries
- Specialist research by Global Organizations
- Inhouse economist and industry research by the bank
- Industry network through the frontline marketing officers
- Customer network through the frontline marketing officers

Industry cycle

A company's forecast/budget should be prepared within the company's context and the industry cycle. A company's forecast could be easily detected if contrasted with the industry cycle development. There are five life stages described in the table below:

Industry Cycle		Degree of Profit uncertainty	Market Growth Potential	Customer Group	Growth Pace	
					Market Share Growth	Tech Start-up
1	Exploratory stage	High	High	Opinion Leader	Slow	Fast
2	Rapid growth	High	High	Early Adaptor	Rapid	
3	Maturity growth	Low	Low	All Customers	Slow	Slow
4	Stabilized stage	Low	Low	Customers starts to leave	Stagnant	Stagnant
5	Decline Stage	Low	NIL	Customers leaving fast	NIL	NIL

Industry KPIs

Note to Trainers: trainers may consider comparing the disclosure of the KPIs of listed companies and contrast these KPIs with the industry norm to provoke discussions among the learners.

Analysis of a company's forecast/budget KPI should show that the KPIs align with the industry KPI. A borrower should thoroughly explain the significant deviation from the industry norm. RPs could compare a borrower's KPIs with the industry benchmark to identify variation requiring attention.

2.2.2.6 Site visits and critical financial analysis

(1) Values of site visits

There are multiple values of site visits. The table below give examples of circumstances when a site visit provides valuable inputs:

	Timing of Site Visits The shorter and the more regular the better to avoid surprises		
Purpose	Before credit proposal submission	During loan life after the loan was approved	Under special circumstances when ad hoc visit is demanded
1	**Cross-verify financial information** To ascertain that the information provided on the financial statements are usable for financial strength and cash flow analysis	**Cross-verify financial information** To ascertain that the information provided on the financial statements are usable for financial strength and cash flow analysis	**Cross-verify financial information** To ascertain that the information provided on the financial statements are usable for financial strength and cash flow analysis
2		**Early warning Signals** To identify any early warning signals reflecting changes in credit quality.	
3		**Deepen relation with friendly reminders** To establish a friendly relationship with the borrower by following up for missing and incomplete information, the act of which improves the quality of information on the financial statements for the coming loan renewal.	
4			**To verify situation changes not yet reflected on the financial statements** To ascertain that the information not yet provided on the financial statements is usable for financial strength and cash flow analysis

(2) Checklist for site visits

Prepare the checklist and have it handy for starting conversations with the business owners or the business managers. Update the visit checklist before each visit. Check off the items on the list and take digital photos for future reference.

Complete the site visit report and highlight striking findings supported by the explanation given by the business owners or business executives. The two tables below show examples checklist for site visits:

Take Digital Photos	Lease Location	List of Original Collateral
- Exterior of the building - Interior of the building - Adjacent properties - Specific collaterals	- Landlord's contact information - Status of lease arrangement - Condition of the lease premises	- Physical condition of storage - Warehouse controlled conditions

List Collaterals on The Site	Real Estate is the Collaterals	Retail Business
- Compare to original collateral - Obtain explanation of differences - Note the collateral labels - Eliminate current liquidation value of collaterals - Confirm identification number of valuable items - Obtain inventory list	- Note property condition - Note the potential environment issues - Exterior signage - Signs of deferred maintenance - Condition of the neighborhood	- Stocked shelves - Customer purchases - Competitor in immediate vicinity

(3) Powerful site visits to authenticate documents

The table below shows two examples where site visits reveal company scandals on "funning" the annual reports or financial statements:

Company	Investigative Outcomes of Site Visits	End Game
Accessories retail chain stores	Phantom shops	*Note to trainers: trainers may discuss these cases as icebreaking in the Newsroom learning activities.*
Coffee chain stores	Video recording of foot traffic outside shop revealed phantom traffic	

2.2.3 Critical Analysis of Financial Statements (External Factors)

2.2.3.1 Knowledge of the bank's portfolio, economic research, and industry research

(1) External risk factors

Note to trainers: trainers should sensitize learners regarding the dynamics of the external factors critical to industries' performance. The table below show the multi-dimension of the external factors:

Economic Conditions	Inflation and Deflation	Balance of Payment and Foreign Exchange
Private consumption	Higher level of inflation	Devaluation of currency
Government spending	Lower level of inflation	Appreciation of Currency
Investment		
Imports and exports		

Political Situation	Fiscal Policy	Monetary Policy
Government changes and subsequent changes in policies which may cause serious troubles for the long-term plans of businesses	Different products of fiscal policy, such as taxation, surcharges, disinvestments, levies, duties, tariffs, borrowings and a host of other tools to raise government revenue	Government controls the money supply in the economy to achieve various goals such as stability in price levels and foreign exchange rates and an economic atmosphere conducive to growth
Political events caused by other vested interests e.g., violence, terrorism, riots, and so on		

Demographic Factors	Regulatory Framework	Technology
Characteristics of the population has immense significance for business Examples are: - Age - Birth rate - Gender	Another source of operating risk is the number of regulations imposed on business and penalties for non-compliance	The cost of production under the current production technology might later become non-competitive because of the new technology employed by competitors.

(2) Articulation of external risk factors

Note to trainers: trainers may cite examples regarding the degree of impact of the external factors on different industries.

Credit risk analysis is a comprehensive and highly articulated approach to line up dots scattered with a borrower to become a big picture to reflect its risk level. The analytical framework below lists out the risk factors mentioned in previous sections. It facilitates the aggregation of all risk factors to the corporate risk of a borrower. The table below shows examples of various risk factors:

External Risk Factors			
Systematic Risk	**Industry Risk**	**Market Risk**	**Technology Risk**
Risk factors Economic factors Demographic factors	**Risk factors** Government regulations Industry cycle	**Risk factors** Business models to survive/beat the market	**Risk factors** Substitution technology
Lessons learned COVID19 outbreak consequences in company wind-ups	**Lessons learned** Market share of conventional energy sources taken up by green energy and nuclear energy	**Lessons learned** Shared economy has lowered the entrance cost to the retail market competition	**Lessons learned** Conventional internet with cables replaced by satellite wireless network

Entity Risk Factors			
Operational Risk	**Legal Risk**	**Reputation Risk**	**Liquidity Risk**
Risk factors Economic factors Demographic factors	**Risk factors** Government regulations Industry cycle	**Risk factors** Business models to survive/beat the market	**Risk factors** Substitution technology
Lessons learned Barings bank bankruptcy due to one single traders' transaction	**Lessons learned**	**Lessons learned**	**Lessons learned**

Industries significant impacted by change of external factors	**Industries** moderately impacted by the change of external factors	**Industries** slightly impacted by the change of external factors
Examples Civil Aviation Retail	Telecommunication Information Technology	Utilities Healthcare

(3) Interpret research findings

Research on significant past credit cases

Note to trainers: trainers may share significant credit cases to indicate the potential impact of external risk factors.

Example

The Walt Disney Project in Paris, France, is a well-known case with lessons learned about the impact of external factors. The "Euro Disneyland project" was a star project syndicated by hundreds of banks. According to the project plan, the repayment sources are 50% from the real estate property development and the other 50% from the theme park. However, the European economic downturn had caused the project never to realize the specific planned income. Together with other external factors, the project cost was almost four times the planned debt. It ended up structuring the shareholdings of the project to take in a new major shareholder for further funds to continue the project. The HKSAR government had financial meetings to go through lessons learned[40] from this case before it decided on the participation and construction of the Disney Hong Kong project.

RPs should be able to link external risk factor changes to project, entity, and sector performance as they are highly related. The external risks could impact the repayment sources of the borrowers, hence their repayment capability, to a very significant extent. Looking for substantial credit cases of the past within the banks is one of the relevant means to identify external factors with a considerable impact on the credit performance of an account/an industry.

[40] Information Note, Disneyland Paris: Some Basic Facts, Liu and Wong, 10 November 1999, Legislative Council Secretariat, 990in01.pdf (legco.gov.hk)

2.2.4 Critical Analysis of Financial Statement (Business Model)

2.2.4.1 Interpret financial statements to determine financial standing of borrower

(1) Limitation of financial statement analysis

Financial analysis is an effective tool to determine borrowers' financial standing. However, RPs need to answer one more important question, "How sustainable is the financial standing?"

(2) Analysis of business models to supplement financial analysis

RPs should perceive the borrowers' business models based on the financial analysis and validate that against the business models presented by the borrowers during interviews.

There are a variety of business model analysis tool which might be embedded in the Module assessment.

- SWOT
- 5C
- Business Canvas

Business models can involve overly optimistic assumptions about the demand for a product or the ability of the company to cross-sell across its product line. However, just take an example in the service industry, changes in consumer habits to online shopping at the expense of the physical shop model have caused bankruptcy or simply closure.

Additional Resources for Trainers:

Example of business model (Industry decline stage) vulnerability with changes in customer behaviours:
UK Department Store Group Debenhams set to close all its UK shops after 242 years in business, as the second major corporate failure since the outbreak of COVID19. However, even before the pandemic, brick-and-mortar retailers in Britain faced a significant structural challenge, with the economics of operating stores on traditional leases proving increasingly difficult as more trade migrates online.

2.2.4.2 Apply suitable method to calculate the value of business

Quantitative analysis to supplement business model analysis

Financial statements and business model analysis are primarily based on historical information. RPs should follow up with the borrowers on the initiatives that impact the future cash flow and perform independent verification (e.g., public domain news about the borrowers).

Identification of the borrower's business outlook helps the credit risk assessment. Examples of quantitative analysis include

- Cash Flow Analysis for understanding the net cash position with a future period
- Discount of the cash flow with adequate opportunity investment return to understand the break-even
- Stress testing the cash flow to identify vulnerable situations when a borrower's debt servicing capability decreases significantly
- Sensitivity analysis validates the verbatim provided by the borrowers regarding the future potential of the income stream.

2.3 Submodule 3: Structure Credit Facility

Note to trainers:
Trainers can pick, change, and repackage the content sample below according to learners' needs

2.3.1 Introduction

In the IPO press release of L-Coffee Inc on May 17, 2019

"L-Coffee Inc (NASDAQ: L-) has pioneered a technology-driven new retail model to provide coffee and other products of high quality, high affordability, and high convenience to the customers. Empowered by big data analytics and proprietary technologies, the company pursues its mission to be part of everyone's everyday life, starting with coffee. The company was founded in 2017 and based in China."

When researching information of the company, RPs should have questions that pop up to trigger investigations on the big picture:

- What strategies are adopted to enable the growth from zero to scale qualified for IPO within two years?
- What are the differentiating factors in the strategies that beat all other competitors, including Starbucks?
- What are the underlying proofs of the claimed differentiating factors?
- How would you know if the company will be able to maintain its leading market share?
- What investment would be required to sustain the growth pattern?
- Assuming the company can maintain a leading market share, what return on investment can be expected under the market situation?

The ultimate question is: Will you lend your money to this company?

2.3.2 Budget and Pro-Forma Analysis

2.3.2.1 Understand the characteristics of different credit products

Note to trainers: RPs going through Submodule 3 already possess the pre-requisite knowledge and skills from Submodule 1 and 2.

2.3.2.2 Evaluate method to compute client's ability to repay loan

Non-listed companies are not subject to disclosure of cash flow status and requesting one to identify associated risk on the cash status in the relevant coming period is necessary. Listed companies include cash flow statements in the annual report but are less flexible in providing monthly, quarterly, or semi-annual cash budgets. However, RPs who invest time in analysing financial statements of various industries will groom a forward-looking view with the articulation of historical information and the latest industry updates.

(1) Analysis to help clients to identify client's purpose and objectives for loan demands

A borrower's precise needs might differ from the fundamental financing needs. Critical financial analysis helps deep dive into the business's strengths and vulnerability. This information allows RPs to judge whether the loan is adequate to support the essential business drivers for sustaining/growing the income stream.

Also, a borrower's business performance includes both inherent risk specific to the company and the systematic risk general to all the companies within the same industry/sector/geography/economy. Multiple correlations are causes of cyclical movements and contagion effects.

Cashflow projection and analysis help RPs to contain the business complexity in different scenarios to explore possible alternatives in the loan arrangement.

(2) Suitable methods for budget and pro-forma analysis

The application of analytical information is continuously evolving. Therefore, RPs should identify the most suitable tools for financial statements and cash flow analysis, dependent on the sophistication of the borrower's business and the bank's business.

However, disregarding the tool used, RPs should adopt the investigative approach to follow up on missing information, disguised information, and data authentication.

	1900s	**1940s**	**1970s**	**2000s**
New analytical tools	Balance sheet analysis	Income statement analysis	Funds Flow Statement	State of art analysis
Analytical outcomes relevant for credit risk analysis	To reveal financial strength	To reveal income generation capability	To reveal the cash generation capability	Risk Modelling

<u>(3) Monitoring of cash generation/preservation capability</u>

<u>Highly demanding on RPs' articulation skills</u>

Credit risk assessment requires an articulated analytical process regarding various levels and aspects of borrowers' risks. For example, companies that default on payments have a flaw in their business models (business risk), cost structure (operation risk), or financial structure (financial risk). Because of accounting information asymmetry, the credit risk assessment should adopt an investigative approach to identify the existing and potential future flaws in the above areas.

<u>Familiar with the borrower's industry</u>

One of the viable bank strategies is to specialize in loans to designated sectors/industries. Specialization enables a bank to cumulate experience on relevant risk assessment and may lower the credit risk in the long run. The problem, however, is the lack of expertise to perform a risk assessment on other loans when the customers' needs evolve.

<u>Monitor the cash flow</u>

Even though critical financial analysis reveals a company's financial strength, a borrower's cash flow is crucial to repay the obligations. Therefore, credit analysis tools assess the borrower's ability to generate cash flow for debt servicing. The following analytical framework gives an example overview of evaluating a borrower's cash generation/conversion capability during the credit risk assessment process.

Analysis	Credit Risk Assessment Stage	Analytical Tools	Function of the Analytical Tool
Financial ratio analysis	New loan application Renew loan application Regular review	**Interest cash coverage** i.e., "net cash from operations" to "interest paid" ratio	Shows how much cash is generated from the operations to cover the interest obligations
		Short term debt coverage i.e., "Net cash from operations – interest – tax" to "overdraft + Short Term Loan" ratio	Shows how much "excess" cash from operations remains in case all short-term debts (overdraft plus short-term loan) are repaid
		Dividend cash coverage i.e., "Cash from Operations – Interest – tax" to "Dividend Paid +Dividend Declared"	Shows that the dividend is paid from the cash generated from operations, rather than from bank borrowing
Working capital analysis	New loan application Renew loan application	**Changes in working capital** i.e., Changes in the level of -stock -debts	An increase in the working capital level means cash is taken up to fund it

	Regular review	-current assets -accounts receivables -other current receivables	A decrease in the working capital level means cash is released from it
Changes in profit margin	New loan application Renew loan application Regular review	**Changes in payment terms** Favorable payment terms to a borrower reduces the cash requirements. Unfavorable payment terms to a borrower increases the cash requirements.	Market competition may pressure the company to change to unfavorable payment terms to retain the business from the customers Supplier's power may pressure the company to change to unfavorable payment terms to keep constant supply from the suppliers
Changes in profitability	New loan application Renew loan application Regular review	**Changes in profitability** e.g., profit before income and tax, net profit	Increase in profit releases additional cash
Loan covenants	Loan administration	**Loan covenants may cover requirements on** Return on capital	To ensure that borrowers' shareholders have incentive to put in new capital for business expansion etc.
		Loan covenants may cover requirements on Interest cash cover	To ensure that borrowers have ability to service debt
		Loan covenants may cover requirements on Fixed charge coverage by operational cash (e.g., leasehold agreement, interest)	To ensure that borrowers have incentive to continue the business operations
		Loan covenants may cover requirements on Dividend cash cover dividend pay-out	To ensure that borrowers' payment of dividend is not paid out of debt To ensure that the borrowers' shareholders have

			incentive to continue business operations
		Loan covenants may cover requirements on Directors' dues/loans, intercompany dues/loans	To ensure that the loan is disbursed for the purpose intended at application
		Loan covenants may cover requirements on Management fee	To ensure that the management fee is paid out only after the debt obligations are met

(4) Cash budget and SMEs

For SMEs, cash budgeting is a practical tool for communication between borrowers and banks. In addition, cash budgeting on a pre-set time frame continuously helps monitor the cash position to ensure that the debt servicing capability is well ahead. Moreover, the borrower provides the cash budget for the credit risk assessment.

(5) Purpose of a cash budget

Understanding	Monitoring	Improvement	Coordination
For understanding the cash positions within the required time frame	For ascertaining whether company operations and other activities will provide cash flow to meet the debt servicing or other cash requirements	For simulating re-allocation of cash receipt pattern and disbursement pattern to reserve cash for debt servicing or other cash requirements	For monitoring the excess cash balance in the financing budget and a shortage of cash balance is remarked in the financing budget to identify the amount of debt needed to offset these shortages

(6) Sample format of a cash budget

A cash budget is a financial planning tool prepared by borrowers to predict when itemized cash will come and leave the business. The table below shows an example:

Cash Budget

Cash budget **Month 1 to month 4, 202X**	**Month 1**	**Month 2**	**Month 3**	**Month 4**
Cash receipt				
Cash Sales				
Cash collected from credit sales				
Cash collected from sales of non-current assets				
Cash receipt from loans				
Cash receipt (others)				
Total receipts				
Cash payment				
Cash payment				
Credit purchase (not using cash)				
Cash payment for expenses (e.g., rent)				
Cash withdrawal				
Cash purchase of non-current assets				
Cash repayment of loans or debentures				
Cash repayment (dividend)				
Cash repayment (interest)				
Cash payment (others)				
Total payments				
Net cash increase/decrease				
Bank balance – beginning of period				
Bank balance – end of period				

(7) Non-cash items

The table below shows examples of non-cash items to be excluded in the cash budgeting:

Tax	Acquisition	Compensation	Operations	Provision
Deferred income tax	Write-down values of acquired companies	Employee stock-based compensation	Depreciation Amortization	Bad debt

(8) Preparing cash budget

Borrowers may track a small number of or small cash items with excel spreadsheets in simple steps. However, if the number of items is enormous, the borrowers must apply information technology. The table below shows an example of the cash budgeting process:

Step 1	Step 2	Step 3	Step 4
Prepare key ingredients for input -Time frame -Target cash position -Sales and Expenditure	Itemize relevant amount and post as -Cash inflow -Cash outflow	Compare the cash budget with -Real cash position -Target cash position	Make management decisions -Renew cash -Reduce cash outflow -Increase cash inflow

(9) Advanced budget and pro-forma analysis

Preparing advanced budget and Pro-forma analysis

Pro-forma financial statements have different definitions according to various contexts. The table below shows some examples:

Perspective	Explanation	Usage
Stakeholder engagement	Pro-forma financial statements leverage on hypothetical data or assumptions about future values to project performance over a period that hasn't yet occurred[41]	Presenting a view to engaging stakeholders to better understand a company's performance over a specified period -Projecting investment return -Show expected results before the end of the reporting period
Corporate finance	Pro-forma financial statements are financial reports issued by an entity, using assumptions or hypothetical conditions about events that may have occurred in the past or the future [42].	Presenting a view of corporate results to outsiders as part of an investment or lending proposal

[41] What Are Pro-Forma Financial Statements? | HBS Online
[42] Pro-forma financial statements definition — AccountingTools

(10) Quality budget and pro-forma analysis for key stakeholders

Understanding the types of pro-forma statements helps RPs to ask good questions to ascertain the quality of budget and pro-forma analysis and identify key business drivers, missing information, information gaps, and future business outlooks. The table below describes the budget and pro-forma analysis:

Types	Description	Purpose	Stakeholders
Budget	- A budget is a variation of pro-forma financial statement with a one-to-three-year time frame to present the projected results of corporations during a future period. - The resulting statement will usually be one set of documents for collaboration within the organization.	- For borrowers to make management decisions on the timing and the pacing of changes if allowed within the accounting rules	- Internal management - Investors - Creditors
Investment projection	- Investment pro-forma projection over a relevant future time frame shows how the company results will change with the investment of a certain amount. - The resulting statement might have several scenarios of the market situation or investment level or variations with both.	- For borrowers to engage the investors about the outcomes for different levels of investment	- Investors - Creditors
Acquisition	- Borrowers' pro-forma statements show the events that happened in the past over a meaningful past time frame. - For instance, pro-forma statements should include the net profit of a planned acquisition that happened in the past over the relevant past time frame - The resulting statements might project backward with different time horizons with meaning to the acquired targets and the acquiring investor.	- For borrowers to engage for potential funding	- Investors - Creditors

Risk analysis	- Borrowers prepare pro-forma statements with a relevant time frame with the base case, best case, and worst case. - The resulting statements will vary according to the management decisions and the scenarios presented by the risk factors.	- For borrowers to engage the creditors for elevation of confidence	- Creditors
Accounting adjustment	- Borrowers should prepare pro-forma statements over time with compulsory reinstatement of figures to review the impact of accounting standard changes.	- For borrowers to make management decisions on the timing and the pacing of changes, if allowed within the accounting rules	- Internal management

(11) Limitation with the pro-forma financial statement analysis

RPs should review the assumptions of pro-format statements with prudence principle because the general borrowers submitting the pro-format statements intend to show a brighter future. The table below compares the features of financial statements and the pro-forma statements to alert the RPs about the high required standards of the latter:

Features	Financial Statements	Pro-Forma Financial Statements
Accounting standards	Applicable	Applicable
Reporting standards	Applicable	Applicable e.g., Listing rules applies for listed companies
Transaction captured	Transactions of the past	Including e.g., reinstated transactions of the past e.g., projected transactions into the future
Assumptions	Mostly capturing the actual transactions Some of the figures are estimation e.g., loan provision Some of the figures may be affected by arbitrary cut-off date e.g., a significant bank loan matured on Dec 31, 2021, will be shown on Dec 31, 2021, but not on Jan 1, 2022 (The above might lead to a significant swing of debt/equity ratio).	Mostly assumption-based e.g., economic conditions e.g., sales momentum e.g., cost of materials e.g., staff turnover rate
Calculations	Most items are direct captures from historic information. Some items are estimates: e.g., month end e.g., average	Most items are calculated: e.g., formula-based at month end (e.g., commercial mortgage outstanding amount is calculated based on re-payment schedule) e.g., average sales figures

Compliance for listed companies in Hong Kong[43]

RPs should sensitize to the requirements on pro-forma statements imposed on certain corporations. The following is an example of one of the rules:
"Where an issuer includes a pro-forma financial statement in any document, whether or not the Exchange listing rules require such disclosure of pro-forma financial information, that information must comply with laws, and a report prepared per regulations should show up in the relevant document."

[43] Where an issuer includes pro-forma financial information in any document (whether or not such disclosure of pro-forma financial information is required under the Exchange Listing Rules), that information must comply with rules 4.29(1) to (6) and a report in the terms of rule 4.29(7) must be included in the relevant document.

2.3.2.3 Assessment on specific projects

(1) Verifying the quality of the cashflow

Practically all pro-forma statements show growth in the business. However, RPs should perform a few things to verify the growth outlook and sustainability.

- Authenticate the contracts of the borrower's significant clients
- Analyse the sources and causes of growth (e.g., from business operations or financial operations)
- Articulate the sources and causes of development with the government regulation changes, macro-economic and industry outlook
- Compare to pro-forma (and actual achievement) of similar projects/assets already financed by the bank.
- Engage the bank's industry consultant to assess the quality of the project/asset-generated cash flow

(2) Estimating cash flow gaps without the loan

RPs are discouraged from lending more than the borrowers' needs. When borrowers apply the whole of the loans to assessed credit purposes, the additional credit risk mitigates. The cash flow schedule helps identify the amount and timing of gaps that require financing. It also reveals the borrower's affordability of the loan repayment. The assessed credit risk level is higher if the cash flow gaps extend further into the timeline.

(3) Quantifying the time uncertainty of repayments

The discounted cash flow method considers the money's time value in arriving at the breakeven estimation. With this method, RPs mitigate the uncertainty caused by the time factor to provide a clear business outlook for credit risk assessment. The assessed credit risk is higher if the analysis shows that the borrower does not achieve breakeven within the relevant time frame.

RPs refer to credit guidelines or approving parties for the discount rates applied for cash flow analysis. The rates may depend on various factors, such as the sources of repayment. The table below shows some examples of the discount rates:

Sources of Repayment	Discount Rate
Project income	Borrowing cost of alterative financial instruments
Company's overall income	Weight rate of equity and debt financing

(4) Estimating the achievability of the cash flow drivers

Cash flow analysis must include explicit assumptions on cash flow drivers, subject to validation and confirmation. Highly cyclical industries are particularly vulnerable in an economic downturn. Therefore, RPs should consider the impact of the economic cycle on the cash flows in the construction of the cash flows. The table below shows some examples of factors with impact on cash flow projections:

Variables of External Environment	Variables of Business Environment
- GDP Growth - Inflation Rate - Labor Cost - Commodity Price	- Market Share - Market Potential - Channels - Customers - Transactions - Price - Productivity

2.3.3 Quantitative Analysis and Risk Assessment

2.3.3.1 Assessment by evaluating the business risk, financial risk, and total corporate risk

(1) Risk assessment on qualitative risk factors and quantifiable risk factors

Credit Assessment includes qualitative risk factors, which are still quantifiable (e.g., with scores on impact to risk quality), and quantitative risk factors. The table below shows some examples:

Qualitative Analysis	Quantitative Analysis
- Analysis of the legal title of the collaterals - Analysis of the quality of the management - Analysis of the market competition **Remark** Eventually, the qualitative analysis outcomes would be assigned a value for applying the quantitative analysis method. e.g., internal credit rating includes both outcomes from qualitative analysis and quantitative analysis, with a value assigned to the credit quality, such as one as the best and five as the worst credit quality	- Financial ratio analysis - Cash budget analysis - Cash flow analysis **Remark** The outcome of the analysis is values or statistics

Estimate the degree of risk involved in the loan

To arrive at a preliminary credit risk assessment, RPs carefully construct the cash flow schedule with distinct cash flow from core business income, core business leverage, core financial income, core financial leverage, and overall borrower’s management quality to sustain the business income.

2.3.3.2 Calculate the cost of offering the loan

Cost factors of loan offering

Note to trainers: banks have different dynamics in the cost factors. Trainers might consider obtaining the cost factor summary from the bank and embed that as an information sheet provided in the assessment with short or long questions.

The table below lists out some examples of the cost factors related to loan offering:

Provided by	Funding Cost	Overhead Expenses	Administration Cost
Treasury	The base rate before adding the risk premium		
Financial control		The overhead allocation is related to all other functional units' hardware (e.g., premises rental, maintenance, data storage, and others) and software support (e.g., external customer and internal customer servicing) to the available Credit units.	
Credit administration			The administration cost varies depending on the loan type, the transaction frequency, the T&C, the collateral valuation cost, and other factors.

2.3.3.3 Calculate the amount to be allocated to loan loss reserve

Note to trainers: there is a statutory requirement on the loan loss reserve and capital charge allocation. However, banks have various fine details regarding the fulfilment. Therefore, trainers might consider obtaining an allocation summary and embedding that as an information sheet provided in the assessment with short or long questions for learners' reference. The following is a summary of the factors to be considered.

The table below shows the sources of information relevant for calculating the amount to be allocated to the loan loss reserve of a credit application:

Loan loss reserve and capital charge allocation

The table below briefs the loan allocation and capital charge allocation provided by the appropriate department:

Provided by	Loan Provision Allocation	Capital Charge Allocation
Financial control units	Specific loan provision depends on the internal credit risk rating, which is, in turn, a result of Default risk and recovery expectation.	Capital charge allocation of the specific loans may arrive with the weighted exposure at the default of the loans.

2.3.3.4 Provide recommendations regarding the affordability of the client

Client's affordability – factors for consideration

Note to trainers: trainers may obtain cash flow analysis (projection before project starts and actuals after project starts) from the bank and provide that as background materials in Assessment with short or long questions to sensitize the learners that cash flow projection assumptions before the project starts and the reality after the project starts could have a significant disparity.

Critical financial and cash flow analysis provides essential insight into the borrowers' affordability of repayments. The table below shows some examples of consideration when evaluating affordability:

Sources of Information	Primary Source of Repayment	Financial, Operations, Business Strength	Other Considerations
- Outcomes of critical financial analysis - Cash flow analysis	- Repayment depends on the revenue of a single project/ product/geography, - Repayment depends on the total business revenue	- The quality and liquidity of the balance sheet items - The operations leverage and the financial leverage of the business	- The collaterals and guarantees - The total business relationship with the borrower and its group company

2.3.3.5 Pricing and Risk of Repayment

(1) Credit risk express in figures

The table below shows the commonly used credit risk indicators reviewed by banks with adequate resources on data collection and information tools:

Exposure	Default Probability	Probability of Recovery
EAD Exposure at risk	**PD** Probability of Default/ Default Probability	**(1-LGD)** Recovery probability with the Loss Given Default

(2) Internal credit risk rating reflects the credit risk

Note to trainers: trainers may use this section to mention the goals of the Basel Accords, which promote safety and soundness while considering the competitive environment for banks of different degrees of sophistication. Trainers may use this opportunity to include the relevant corporate finance theories related to risk-free rates and risk premium in the Assessment with short or long questions. Banks have adopted risk-pricing models with various assumptions. Trainers may request the Bank to provide relevant indications in the credit risk policies or other sources of information for learners' reference in the related Assessment.

2.3.4 Structure Credit Facilities

2.3.4.1 Professional Knowledge in Corporate Credit Management

Note to trainers: trainers may use this topic to design an assessment with short and long questions. The assessment will help learners be aware of the importance of reviewing the credit applications with keen reference to the bank's credit policies while keeping a broader perspective of the corporate credit management principles.

Applicable corporate finance theories and concepts at this stage of the credit analysis process would be cash flow project, present values, net present values, and the capital asset pricing model.

2.3.4.2 Professional Knowledge in Corporate Loan Financing

Note to trainers: trainers may refer to submodule 2 and embed assessment with short or long questions with scenarios with different products.

RPs should possess practical corporate loan knowledge for the credit analysis process regarding project finance and syndicated loans from credit applicants of various industries such as

- the shipping industry
- the petroleum and oil refinery industry
- other industries

which demand substantial loan amounts and a long pay-back period.

2.3.4.3 Estimate the degree of risk involved in extending credit

After financial ratio analysis, critical financial analysis, and business model analysis to understand the key business drivers, RPs have good ideas about the preliminary risk level of the concerned loan application. Throughout the analysis, RPs should have integrated the corporate finance knowledge into the loan risk evaluation.

(1) Analytical framework to validate if current assessment method satisfies the lending criteria

The analytical steps listed below are relevant for the preliminary risk assessment with an evaluation of business risk, financial risk, and total risk:

Step (1) Assess the specific risk of the borrower[44]

The risk assumed by a bank should be commensurate with the return. Therefore, the risk level assessment must include a critical analysis of the **willingness** of the borrowers to pay and the **capability** to comply with the obligations.

Banks have templates to guide RPs in analysing borrowers' business risk, financial risk, operational risk, and financial strength. RPs make use of all the financial analysis tools to understand the specific risk assumed by the borrower. The table below shows some examples of using financial analysis to estimate the type of risk and level of risk banks take up if concerned loans are approved:

[44] *For more financial ratios, online resources are available. Here is one online link: Financial Ratios – Complete List and Guide to All Financial Ratios (corporatefinanceinstitute.com)*

Financial Ratios	Internal Credit Rating				
	Total Corporate Risk				Financial Strength
	Business Risk	Financial Risk	Operational Risk	Liquidity Risk	
Profitability ratio – gross profit margin			X		
Profitability ratio – operating margin			X		
Profitability ratio – other income ratio			X		
Profitability ratio – net profit margin			X		X
Liquidity ratio – current ratio				X	
Liquidity ratio – quick ratio				X	
Liquidity ratio – cash ratio				X	
Solvency ratio – debt/equity ratio					X
Solvency ratio – interest bearing debt to assets				X	
Finance ratio – interest coverage ratio				X	
Finance ratio – debt service coverage ratio				X	
Dividend – payment ratio				X	
Dividend – retention ratio				X	
Dividend – sustainable growth rate				X	
Cash Flow – interest cash cover ratio		X			
Cash flow – short term debt cover		X			
Performance ratio – sales growth	X				
Return on investment – return on assets		X			
Return on investment – return on equity		X			
Activity/turnover Ratio – Debtor days				X	
Activity/turnover ratio – creditor days			X		

Activity/turnover ratio – Working capital to sales	X				
Leverage ratio – fixed cost/variable cost			X		

Step (2) Analyse and interpret the outcomes of critical financial analysis
A borrower's business performance, or capability to repay the obligation, is related to its entire business, financial, liquidity risk, and total corporate risk. A borrower with better financial strength might be able to tolerate somehow higher risk in the above areas. The table below illustrates an example of relating borrowers' outcomes of critical financial analysis to borrowers' business risk, operation risk, and financial risk:

Outcomes of Critical Financial Analysis	**Risk Level Evaluation Based on Borrowers' Financial Strength**		
	Business Risk at Relatively High Level	**Operation Risk at Relatively High Level**	**Financial Risk at Relatively High Level**
High risk in business performance e.g., operating income e.g., interest payment e.g., net profit	↑	↑	↑

Step (3) Evaluate credit risks

The critical analysis of "exposure at risk," "default risk," "recovery rate," and "tenor" includes an examination of the borrower's track record, business performance, and collateral valuation. The table below illustrates an example of relating the outcomes of critical financial analysis on borrowers to the credit risks:

Outcomes of Critical Financial Analysis	Exposure at Risk	Default Risk	Recovery Rate	Tenor
Factors for consideration				
Relatively dissatisfactory track record e.g., repayment record		↑		
Relatively dissatisfactory business performance e.g., inconsistent business performance over years		↑		
Relatively dissatisfactory collateral valuations e.g., borrowers do not possess marketable assets as collaterals	↑		↓	

Step (4) Estimate the degree of risk involved in the loan

Loan costs are closely related to a series of factors that depends on the borrower's credit risk level. Therefore, RPs must carefully consider the loan pricing for quality negotiation with borrowers.

RPs also need to analyse whether the credit risk is proportional to the loan pricing given three different scenarios:

- Base Case
- Stress Case
- Default Case

The table below shows examples of relating credit risk to the costs of loan offers:

	Potential Impact on Cost of loan offer				
Credit Risk Type	**Funding Cost**	**Overhead Expenses**	**Admin Cost**	**Loan Loss Reserve**	**Capital Charges**
Relatively higher risk in exposure	↑			↑	↑
Relatively higher risk in default		↑		↑	
Relatively higher risk in recovery			↑		
Relatively higher risk with tenor	↑			↑	

(2) Estimate the degree of risk involved in base, stress and default scenarios

Stress testing and sensitivity analysis are practical analytical tools to embed estimation of business risk, financial risk, and total risks with an impact on future cash flow.

Other than base-case cash flow analysis, stress testing, sensitivity, and default analysis on cash flow help identify vulnerabilities of the cash flow.

Base case for cash flow analysis
To perform a cash-flow analysis of a base-case scenario, one may apply the NPV and IRR analysis to the cash flow forecast within the relevant time horizon. The table below shows some examples of the application of NPV and IRR analysis:

Relevant Time Horizon	NPV Analysis	IRR Analysis
Time horizon (1) Time horizon matches with the loan tenor/exposure **Time horizon (2)** The time horizon might be two to three years for a business with very high stability, such as a utility business. **Remark** Either (1) or (2), the cash flow projection on an ongoing basis is necessary	**Application** For a project with initial cash outflow **Objective** To ascertain if the present value of all the cash flow forecasts is more than the initial cash outflow. In other words, the project provides more than sufficient cash to meet the obligations	**Application** For a project with initial cash outflow **Objective** To ascertain whether the return on investment (initial cash outflow, plus the subsequent cash outflow if applicable) is satisfactory relative to the minimum requested by the bank

Stress case for cash flow analysis

The party submitting the pro-forma statements, in general, wishes to present a better than now business picture to engage better the investors/creditors. Therefore, adopt the prudence principle to build a stress scenario.

Macro-Economic Situations	Industry Situations	Specific Company Situations
Starting point The worst situations actually happened in the past serve as the base case. **Stress conditions** RPs should apply the bank's stress scenario for the cash flow assumptions. **Remark** Stress scenarios based on the past worst situation will be less controversial between the borrowers and the creditors.	**Starting point** The worst situations actually happened in the past serve as the base case. **Stress conditions** The creditor should consult an industry consultant for the stress conditions for cash flow forecast analysis. **Remark** Frontline marketing officers and Approvers need to continually scan the economic and industry environments to understand the cash flow generation capability better.	**Starting point** The worst situations actually happened in the past serve as the base case. **Stress conditions** The creditor should request from the management on the worst performance year to set up the stress conditions within the specific business. **Remark** The frontline marketing officer should review the worst year performance to confirm its validity for the stress testing.

Default case for cash flow analysis

There are no fixed rules on the default case conditions. However, RPs may refer to the historic default cases that happened to borrowers in the same sector/industry, suggesting the default point. The following table shows examples of possible default scenarios:

	Business Risk	Operations Risk	Financing Risk
Scenario (1)	RPs may evaluate business risk as acceptable with the following situations: - Industry cycle at stability - Macro-economic environment at stability	RPs may evaluate the operations risk as bad with the following situations: - Hyper inflation - Supply Chain interruption	RPs may evaluate the financing risk as bad with the following situations: - All debt facilities fully drawn - Debt service cost/ interest rate surges
Scenario (2)	RPs may evaluate business risk as bad with the following scenarios: - Industry cycle at decline - Macro-economic environment at downturn	RPs may evaluate the operation risk as acceptable with the following situations: - Inflation steady - Supply steady	RPs may evaluate the financial risk as bad with the following situations: - All debt facilities fully drawn - Debt service cost/ interest rate surges
Scenario (3)	RPs may evaluate business risk as bad with the following scenarios: - Industry cycle at decline - Macro-economic environment at downturn	RPs may evaluate business risk as bad with the following scenarios: - Hyper inflation - Supply Chain interruption	RPs may evaluate the financial risk as acceptable with the following situations: - Utilization of debt stable because shareholders inject new capital - Debt service cost/interest rate steady

Sensitivity scenarios

The analysis may also include a unique sensitivity analysis. The following list shows some of the potential sensitivity required.

- The critical patent could no longer protect the business from new entrants because of upcoming technology
- Essential senior staff retirement with extension

2.3.4.4 Recommendations on Whether the Current Assessment Methods Satisfy the Changing Lending Criteria of the Banks

(1) Regular situation to structure credit proposal with sound credit granting process

A bank operates under a sound credit granting process and prepares comprehensive documentation on the justifications for consideration:

- The recommendation on the loan application should include whether the current assessment methods satisfy the changing lending criteria of the banks.
- The recommendation should contain justification on the revised assessment criteria and approaches for determination of the approval or rejection of the loan application and approved loan size.
- Where applicable, the recommendation should specify revised principles for justification of approval on the application which violates credit risk policies or general lending criteria.
- The recommendation, where applicable, should justify approval of an application violating credit risk policy or lending criteria.

(2) Sample credit structure proposal with T&C suggestions for approval

Each bank has its version of the qualified credit report. After a thorough qualitative and quantitative risk factors analysis, RPs could fulfill the following content list in a credit report.

- Background of the company
- Loan purpose and specifics (e.g., amount, tenor, duration)
- Capital structure
- General information section (e.g., management experience, senior teams, business models)
- Competitors Comparison (e.g., qualitative, and quantitative risk factors)
- Debt servicing history
- Financial statement summary
- Financial ration analysis (e.g., operations, financials)
- Critical financial analysis (e.g., income generation capability, financial strength, key business drivers)
- Cash budget analysis
- Budget and pro-forma analysis
- Cash flow analysis
- Stress test analysis
- Sensitivity analysis
- Explicit assumption list (e.g., economic outlook, industry, and business outlook)
- Other qualitative considerations (e.g., business relations)
- Risk assessment recommendation
- Risk rating recommendation
- Risk mitigant availability
- Product type alternatives and recommendation
- T&C recommendations
- Security and guarantees availability
- Recommendation on current assessment methods
- Recommendations on exceptions

(3) Credit structure with current assessment methods under changing lending criteria

Note to trainers: trainers may consider embedding in assessment questions the three scenarios:
-Example of credit proposal with approval and reason
-Example of a credit proposal with a rejection decision and justification
-Example of a credit proposal with a rejection decision and subsequent appeal for approval

RPs should sensitize with all sizeable items with potential risks, which might result in an increased credit risk level of the loan. The RPs should also sensitize how the borrowers aggregate or breakdowns the reported items in the financial statements to minimize the visibility of specific items.

RPs should be aware of the changing lending criteria of the bank due to changes in the regulatory environment or the market competition. However, strict compliance with the credit guideline and asking for higher-level approval would always cover any uncertainty about the changing lending criteria.

RPs in the approval job functions carry out similar critical financial analyses to assess the borrowers' business risk, operations risk, and financial risk, as well as evaluate the capability of debt servicing and willingness to pay. However, because of cumulated experience on credit lessons learned and success cases are taken, it's more likely to exercise a better-quality judgment on the credit risk assessment.

(4)Credit structure with recommended revised assessment criteria and approaches for determination of approval

Note to trainers: trainers may consider embedding in assessment questions the three scenarios:
-Example of credit proposal with approval and reason
-Example of a credit proposal with a rejection decision and justification
-Example of a credit proposal with a rejection decision and subsequent appeal for approval

(5)Justification for approval on application violating credit risk policy or lending criteria

CR-G-2 specified that “Requirements for all new credits or renewal of existing credits to undergo thorough credit appraisals before approval and for justification of any decisions violating credit risk policy criteria and identifying the persons authorized to approve such decisions.

2.3.4.5 Identify the client's purpose and objectives, develop repayment plan and financial options

<u>Justification for approval on application violating credit risk policy or lending criteria</u>

Note to trainers: trainers have various options for guiding the learners to think about different situations regarding proposal approval:

Option (1) asking the Bank to provide relevant cases of the following examples:

- *credit proposal with approval and reason*
- *credit proposal with rejection decision and justification*
- *credit proposal with rejection decision and subsequent appeal for approval*

Option (2) extract from the learners' sharing of credit proposals in the "Best Case Handled" presentation session and have the learners share different circumstances and handling methods when the following situations happen:

- *with approval and reason*
- *with rejection decision and justification*
- *with rejection decision and subsequent appeal for approval*

3 Support Materials – Learner's Self-Study and Extended Learning

3.1 List of Suggested Self-Study Reading Materials

Trainers may modify the reading list as per learners' needs.

Useful Web Site
Hong Kong Monetary Authority - Supervisory Policy Manual (hkma.gov.hk)

Internet links on the Units of competency (Module 1):
- 109271L4 Monitor the risk level of the loan portfolio to identify early risk signal
  Qualifications Framework Secretariat (hkqf.gov.hk)
- 109266L5 Develop risk mitigation strategies for the credit portfolio
  Qualifications Framework Secretariat (hkqf.gov.hk)
- 109268L5 Manage and control the risks of the credit assets for enterprise banking
  Qualifications Framework Secretariat (hkqf.gov.hk)
- 109267L5 Conduct stress testing and analyze the results
  Qualifications Framework Secretariat (hkqf.gov.hk)
- 109270L5 Conduct ongoing monitoring of borrowing accounts
  Qualifications Framework Secretariat (hkqf.gov.hk)
- 109273L5 Conduct post approval and credit monitoring and review on problem loan
  Qualifications Framework Secretariat (hkqf.gov.hk)
- 109319L5 Develop internal policies, guidelines, and standards for different operations to comply with regulatory requirements
  Qualifications Framework Secretariat (hkqf.gov.hk)

Internet link on the Units of Competency (Module 2):
- 109256L5 Review risk assessment on credit application
  Qualifications Framework Secretariat (hkqf.gov.hk)
- 109257L5 Structure the Credit Facilities
  Qualifications Framework Secretariat (hkqf.gov.hk)
- 109260L5 Assess credit and financial strength of borrowers and prepare credit proposal
  Qualifications Framework Secretariat (hkqf.gov.hk)
- 109502L5 Conduct company analysis to identify client's needs
  Qualifications Framework Secretariat (hkqf.gov.hk)

Internet link on BASEL Committee Publication:
- **Basel Committee Publications - Principles for the Management of Credit Risk - Oct** 2000 (bis.org)

IFRS8 Loan Provisioning

- Origin IFRS8 Loan Provisioning – Impact on bank profit volatility

The HKMA SPM:

- CR-G-1 General Principles of Credit Risk Management
  CPY Document Title (hkma.gov.hk)
- CR-G-2 Credit Approval, Review and Records
  CPY Document Title (hkma.gov.hk)
- CR-G-3 Credit Administration, Measurement and Monitoring
  CPY Document Title (hkma.gov.hk)
- CR-G-5 Country Risk Management
  General Principles of Credit Risk Management (hkma.gov.hk)
- CR-G-6 Interest Recognition
  General Principles of Credit Risk Management (hkma.gov.hk)
- CR-G-7 Collateral and Guarantees
  General Principles of Credit Risk Management (hkma.gov.hk)
- CR-G-8 Large exposures and risk concentrations
  CR-G-8 (hkma.gov.hk)
- CR-G-9 Exposures to Connected Parties
  CR-G-9 (hkma.gov.hk)
- CR-G-10 Problem Credit Management
  General Principles of Credit Risk Management (hkma.gov.hk)
- CR-G-12 Credit Risk Transfer Activities
  Supervisory Policy Manual (SPM): CR-G-12 Credit Risk Transfer Activities (hkma.gov.hk)
- CR-G-13 Counterparty Credit Risk Management
  CR-G-13 Counterparty Credit Risk Management (hkma.gov.hk)
- CR-G_14 Non-centrally Cleared OTC Derivatives Transactions – Margin and Other Risk Mitigation Standards
  Non-centrally Cleared OTC Derivatives Transactions – Margin and Other Risk Mitigation Standards (hkma.gov.hk)

H. APPENDIX

Appendix One – UoC Performance Requirements

On the following pages, the performance requirements/ILO of the selected UoC are listed.

Module 1 - UoC 109271L4 - Monitor the risk level of the loan portfolio to identify early risk signal (Level 4 with 3 credits)

Performance Requirements/ILO		
1	Knowledge	Be able to - Demonstrate proficient knowledge in credit risk management in order to identify the most appropriate method in risk monitoring - Understand the credit strategies and portfolio objectives of the bank in order to identify crucial areas for monitoring
2	Application	Be able to - Monitor and ensure credit administration is in compliance with contractual requirements and facility terms - Track risk indicators or credit quality (e.g., delinquency, risk rating trends) and detect changes in risk characteristics of loan portfolios. - Identify early signals of delinquency or system risk and escalate to appropriate parties for prompt remedial actions
3	Professional Behaviour and attitude	Be able to - Identify the sources and causes of the changes in risk level, e.g., underwriting standards, economic conditions, personnel issue and recommend appropriate corrective actions - Demonstrate professionalism by applying impartial and unbiased judgment throughout the loan portfolio assessment process - Regularly review the advantages and weaknesses of forecasting and reviewing approaches and adopt the most reliable measure - Report to senior management about the results of analysis on risk profile of overall loan portfolio

Module 1 - UoC 109266L5 - Develop risk mitigation strategies for the credit portfolio (Level 5 with 4 credits)

Performance Requirements/ILO		
1	Knowledge	Be able to - Demonstrate professional knowledge in credit risk management in order to maintain an optimal risk level for credit portfolio. - Demonstrate professional knowledge in credit management by utilizing different tools (e.g., setting exposure limits, credit derivative) in managing credit risk and their performance in different economic scenarios. - Understand the impacts on business environment caused by the changing external factors and apply the knowledge to evaluate current and future economic outlook and regulatory development for the purpose of developing suitable strategies in risk mitigation.
2	Application	Be able to - Evaluate the credit strategies and existing risk exposure of the bank in order to construct a suitable risk management approach. - Conduct analysis on the trends on risk level of the credit portfolio in order to identify critical factors which can affect the risk level. - Construct strategies in diversifying concentration risk, e.g., reducing exposures to particular type of loan, broaden customer base, altering product mix, industry etc. - Formulate measures to protect the bank from undue risk exposure by employing suitable techniques, e.g., asset sales, securitization, credit derivatives, etc. - Develop policies and procedures for applying different types of credit mitigation techniques. - Develop guidelines and standards on reporting to management when the aggregate exposure is approaching or exceeding portfolio limits.
3	Professional Behaviour and Attitude	Be able to - Manage the activities of credit risk mitigation strategies to ensure they are applied at the right time and used for their purported purposes. - Conduct regular review on the results of the mitigation instructions and provide suggestions on necessary changes.

Module 1 - UoC 109267L5 - Conduct Stress Testing and analyse the results (Level 5 with 4 credits)

Performance Requirements/ILO		
1	Knowledge	Be able to - Possess specialized knowledge in stress testing and apply it to evaluate different methods of execution in order to develop a suitable approach for the bank. - Understand the credit strategies and portfolio objectives of the bank and based on that evaluate the existing portfolio of credit assets. - Understand the Current macroeconomic environment and trends and consider these as key factors of stress testing.
2	Application	Be able to - Identify factors (e.g., financial data, economic variables) that can impose effects on risk level of loan portfolio and develop financial models to quantify the sensitivity of loan performance to different scenarios. - Analyse existing performance/potential risks of the portfolio in order to determine the objectives for stress testing - Design methodology, analysis framework and tools on stress testing which are aligned with the objectives of the testing - Develop testing plan and conduct the test by altering assumptions in different variables and record the effect on portfolio credit quality - Analyse the performance of different assets and liabilities under the various hypothetical scenarios - Analyse the results of stress testing and identify the vulnerability of different segments of loan portfolio
3	Professional Behavior and attitude	Be able to - Consolidate the results of stress testing into the risk management process and develop suitable measures - Develop contingency plans for vulnerable segments. E.g., strengthening the supervision process, imposing limits, devising existing strategies

Module 1 - UoC 109268L5 - Manage and control the risk of the credit assets for enterprise banking (Level 5 with 4 credits)

Performance Requirements /ILO		
1	Knowledge	Be able to - Demonstrate professional knowledge in managing risk of credit assets by applying it to evaluate different risk management strategies for the purpose of designing a most suitable approach to the bank - Understand the credit strategies and portfolio objectives of the bank in order to build an alignment between the selected risk management approach and the bank's strategy
2	Application	Be able to - Assess the situation in order to identify the most suitable approach in risk management and develop the execution plan - Design risk management measures to diversify risks into different uncorrelated or less correlated business - Mitigate credit risk by acquiring security, insurance, third party guarantee - Identify factors affecting the value of the credit assets for assessing the purchase or selling price in order to quantify the risks
3	Professional Behavior and Attitude	Be able to - Evaluate effectiveness of different approaches of risk management for the purpose of transferring or mitigating credit risk - Review current risk management measures and provide suggestions on improvement based on results of evaluation of different approaches for transferring or mitigating credit risks

Module 1 - UoC 109270L5 - Conduct ongoing monitoring of borrowing accounts (Level 5 with 4 credits)

Performance Requirements /ILO		
1	Knowledge	Be able to - Demonstrate proficient knowledge in risk management in order to identify the most appropriate method in borrowing account risk monitoring - Understand the process of credit monitoring and evaluate the performance of client's accounts to compare with the credit strategies and portfolio objectives of the bank to identify critical areas for further follow-up actions - Keep up to date on the future development and current performance of clients' business/participating industry
2	Application	Be able to - Analyse client's historical information, account profile, account activities/pattern, business outlook, predicted future activity, financial and business data, etc. for identifying risk levels. - Monitor indicators of credit quality (e.g., delinquency, risk rating trends) and identify changes in risk characteristics of loan portfolio - Perform on-site inspection and regular due diligence review to identify early signals or delinquency. - Analyse the customers, products activity, and financial transactions profile of bank clients to track if any irregularities occur. - Monitor client's borrowing accounts and advise them of new or alternative services to meet their changing needs.
3	Professional Behavior and Attitude	Be able to - Identify causes and sources of risks and report to appropriate parties for prompt remedial actions. - Restructure debts of clients to improve clients' financial stability and solvency, when it is necessary.

Module 1 - UoC 109273L5 - Conduct post approval credit monitoring and review on problem loans (Level 5 with 4 credits)

Performance Requirements /ILO		
1	Knowledge	Be able to - Understand theories and knowledge in banking lending in order to analyse the situation in different cases of problem loans - Demonstrate professional knowledge in problem loans management (e.g., common causes for problem loan, early warning signals) by applying it to identify the root causes of different problem loans
2	Application	Be able to - Evaluate the repayment record and transaction records of different accounts of the clients in order to identify possible causes for delay in payment - Review the accuracy of past documentation (e.g., collateral valuable report, risk assessment, tracking report) and timeliness of problem identification in order to identify possible root causes for problem loans - Consolidate information from different sources in order to analyse the changes in financial situations of the clients when compared to the time of loan origination - Compare the loan with lending guidelines to identify any deviation from the agreed principles - Determine the account of provision for problem accounts and assess the impact on the bank's credit portfolio
3	Professional Behavior and Attitude	Be able to - Evaluate information related to current and projected financial status of applicants, hence, to re-assess the bank/client relationship and carry-on necessary follow-up actions promptly. - Classify the unpaid debt customers to make claims and provide necessary information to relevant parties, if warranted

Module 1 - UoC 109319L5 - Develop internal policies, guidelines, and standards for different operations to comply with regulatory requirements. (Level 5 with 4 credits)

Performance Requirements /ILO		
1	Knowledge	Be able to - Demonstrate professional knowledge in banking law in order to identify the requirements of different regulations - Prosses knowledge in rules and regulations related to banking operations (e.g., framework issued by Basel Committee on Banking Supervision and requirements of HKMA Supervisory Policy Manual, etc.) and apply it to evaluate the relevant regulations and identify the effects on the bank's policies, procedures, and operation as appropriate
2	Applications	Be able to - Evaluate the business/operations of the bank in order to assess whether they can fulfill the regulatory requirements - Review the existing level of compliance risks and identify possible scenarios of breaches of law in order to formulate control measures - Review the probability and possible consequences of non-compliance when designing the control measures - Develop the scope and objective of internal standards based on the review findings - Specify the handling methods of dealing with different scenarios of non-compliance based on the estimated consequences and impacts to the bank - Design effective internal reporting systems to provide management with updated information on compliance
3	Professional Behavior and Attitude	Be able to - Formulate internal standards by stating practices acceptable/required by the bank and ensure the standards set are in proportionate with the level of risk exposure - Propose internal compliance policies, guidelines and standards which can maintain a proper balance between compliance with statutory requirements and operational efficiency - Take actions to ensure existing framework is adequate to safeguard the bank from regulatory risks

Module 2 - UoC 109256L5 - Review risk assessment on credit application (Level 5 with 4 credits)

Performance Requirements /ILO		
1	Knowledge	Be able to - Demonstrate expert knowledge in theories and concepts across different areas of corporate finance in order to assess the risks of loan application - Understand the characteristics of different credit products offered by the bank and apply the knowledge to compare and contrast features of them in order to judge the suitability of loan applicants. - Possess knowledge on the bank's business portfolio and conduct research on factors affecting default risks and assess the probability and impacts of default
2	Applications	Be able to - Interpret research findings or other information on macroeconomic environment and industry analysis in order to assess business outlook and possible risks of the applicants' business - Evaluate financial statements and identify incomplete information in order to have an accurate and comprehensive analysis on the financial standing of borrower (need for securities) - Evaluate liquidity, profitability, and credit histories of establishments being evaluated with those of similar establishments in the same industries and geographical locations in order to identify discrepancies or suspicious statements/reports. - Evaluate and select the most suitable methods (e.g., net present value based on present market values, discounted cash flow valuation, etc.) to calculate the value of the businesses or projects - Conduct site visit to verify the authenticity of information submitted and obtain additional information for assessment - Conduct credit risk assessment by evaluating the business risk, financial risk, and total corporate risk of the businesses/projects in consideration - Estimate the degree of risk involved in extending credit or lending money by consolidating
3	Professional Behavior and Attitude	Be able to - Make recommendations on whether the current assessment methods satisfy the changing lending criteria of the banks - Recommend revised assessment criteria and approaches for determination of approval (with or without condition(s))/rejection on loan application and approved loan size with justification provided - Specify revised principles for justification of approval on application which are violating credit risk policies or general lending criteria

Module 2 - UoC 109257L5 - Structure the credit facility (Level 5 with 4 credits)

Performance Requirements /ILO		
1	Knowledge	Be able to - Comprehend the theories and concepts related to corporate credit management in order to assess the risks of loan application - Demonstrate professional knowledge in corporate loan financing by applying it to evaluate factors affecting default risks ad assess the impact on loan applications - Possess knowledge in different enterprise banking loan products of the bank and apply it to evaluate and compare the features of them in order to judge the suitability of loan applicants
2	Applications	Be able to - Identify clients' purposes and objectives for the loan by evaluating relevant information - Interpret and analyse financial information submitted (e.g., financial statements) to determine financial standing of applicants - Conduct financial analysis on the business such as income growth, quality competence of management and market share to determine expected profitability of the business thus the repayment abilities of applicants - Perform assessment on the specific projects or assets which require financing, analyse cash flow to be generated and valuation of assets in order to have a more accurate assessment on the risks involved - Develop tailor-made financial package options for applicants and structure the T&C (e.g., loan amount, repayment timeline, rates, etc.) based on earnings, repayment history, prospective risk level, etc. - Develop loan repayment plan (e.g., when how and provide supporting information to substantiate the plan (e.g. projected cash flow, projected revenue) - Develop proposals to specify financing options available to applicants and present the terms and explanation in a clear manner
3	Professional Behavior and Attitude	Be able o - Determine pricing of individual credits to ensure the returns are commensurate with the risk level - Analyse the risks of repayment and select suitable collateral or guarantee to protect the bank in case of inability to pay

Module 2 - UoC 109260L5 - Assess credit and financial strength of borrowers and prepare credit proposal (Level 5 with 4 credits)

Performance Requirements /ILO		
1	Knowledge	Be able to - Familiarize with special knowledge related to corporate finance in order to assess the risks of loan application - Have in-depth understanding of credit management in order to identify factors which might affect default risks and assess the impact on loan applications - Understand liquidity, profitability, and credit histories of establishments being evaluated with those of similar establishments in the same industries and geographical locations
2	Application	Be able to - Interprets research findings on macroeconomic environment and industry analysis in order to understand the business outlook of the applicants' businesses - Interpret financial statements to determine financial standing of borrower - Apply suitable methods (e.g., net present value based on present market values, discounted cash flow valuation, etc.) to calculate the value of businesses or projects - Conduct site visit to verify the authenticity of documentation submitted and obtain additional information for assessment - Conduct preliminary credit risk assessment by evaluating the business risk, financial risk, and total corporate risk of the businesses/projects in consideration - Provide recommendations regarding the degree of risk involved in extending credit or lending money by consolidating information from different analysis e.g., track record, business performance, collateral valuation) - Calculate the cost of offering the loan e.g., funding costs, overhead expenses, administrative costs - Calculate amount to be allocated to loan loss reserve and capital charges based on default probability, loss levels, etc. - Provide recommendations regarding the affordability to enterprise clients and propose long-term, mid-term and short-term financing solutions - Compute clients' ability to repay loan, estimate time for debt repayment given amount of debt, interest rates, and available funds
3	Professional Behavior and Attitude	3. Behavior and Attitude - Recommend approval (with or without conditions(s))/rejection on loan application and approved loan size with justification provided - Provide justification for approval on application violating credit risk policy or lending criteria

Module 2 - UoC 109502L5 - Conduct company financial analysis to identify clients' needs (Level 5 with 4 credits)

Performance Requirements /ILO		
1	Knowledge	Be able to - Demonstrate in-depth knowledge on company's financial analysis by applying it to evaluate different common methodologies within the bank's framework in analyzing company performance and to develop a suitable approach for assessing the current banking facility application - Demonstrate professional knowledge in the client's industry, e.g. key terms and terminology, performance indicators for analysis, business cycle, competitive landscape, latest development, etc. in order to identify focus and scope of company analysis
2	Applications	Be able to - Identify information useful for understanding the business and employ different approaches to obtain the relevant information for account planning purposes (e.g., send request to clients, industry practitioners, etc.) - Consolidate relevant financial data and evaluate financial position of client by analyzing financial statements, business contracts, ageing reports, etc. - Analyse the strategic direction and major business initiatives to identify the future potential, challenges, and opportunities of the company - Evaluate the business models and identify factors that may impose significant effect on their earnings and cost structures hence to predict the prospect of the business - Assess the risk of potential financial loss that doing business with the client, ultimately determining whether to offer the credit facilities
3	Professional Behavior and Attitude	Be able to - Identify key forces shaping the industry of the clients' businesses and learn from the accuracy of historical forecasts to make adjustments to the assessment methods - Analyse the value chain of the business and adopt a holistic consideration to assess opportunities and risks associated with the client's operations - Compare the performance, business model and operations of the clients with companies of similar size in the same industry hence to produce a fair judgement

Appendix Two – List of Suggested Self-Study Books

Edward Bodmer, Corporate and Project Finance Modeling: Theory and Practice, Wiley Finance) 1st Edition, 2015

Bouteille Sylvain, Coogan Diana, The Handbook of Credit Risk Management: Originating, Assessing, and Managing Credit Exposures (Wiley Finance), 2nd Edition, 2022

Joseph Ciby, Advanced Credit Risk Analysis and Management (Wiley Finance), 1st Edition, 2013

Golin Jonathan, Delhaise Philippe, The Bank Credit Analysis Handbook: Guide for Analysts, Bankers and Investors (Wiley Finance), 2013

Ganguin Blaise, Bilardello John, Standard & Poor's Fundamentals of Corporate Credit Analysis (McGraw-Hill), 2005

Baesens Bart, Scheule Harald, Rosch Daniel, Credit Risk Analytics: Measurement Techniques, and Examples in SAS (Wiley and SAS Business Series), 1st Edition, 2016

Jorion Philippe, Financial Risk Manager Handbook: FRM Part I/Part II (GARP), 2011

Howard Schilit, Jeremy Perler, Yoni Engelhart, Financial Shenanigans: How to detect accounting gimmicks and fraud in financial reports (McGrawhill Education), 4th edition, 2018 (search also for video on CFAinstitute.org)

Appendix Three – List of Suggested Optional Reading Materials

Module 1

CA-G-4 Validating Risk Rating Systems under the IRB Approach, Supervisory Policy Manual, HKMA, CA-G-4 (hkma.gov.hk)

Alternative Credit Scoring of MSMEs, HKMA, November 2020, Alternative Credit Scoring of Micro-, Small and Medium-sized Enterprises (hkma.gov.hk)

Stress Testing Loan Portfolio in Terms of Crisis, Stress testing loan portfolios in times of crisis (assets.kpmg)

The role of stress testing in credit risk management, Roger M. Stein, Moody's Research Labs NY, Jun 15, 2011, 11-15-06-The-role-of-stress-testing-in-credit-risk-management.pdf (moodysanalytics.com)

Stress Testing the Commercial Loan Portfolio: Why and How (rmau.org)
Banking Crisis (worldbank.org)

A framework for macro stress testing the credit risk of banks in Hong Kong, Jim Wong, Ka-Fai Choi, and Tom Fong , HKIMR, Hong Kong Monetary Authority Quarterly Bulletin, December 2006 (6N095E_F_25_38-p65 (hkma.gov.hk))

Portfolio Stress Testing, MPI Research, September 29, 2018,
Portfolio Stress Testing | Markov Processes International

The 1997-98 Korean Financial Crisis: Causes, Policy Response, and Lessons; Presentation by Kim Kihwan at the IMF-Singapore Government High level seminar, Singapore; July 10, 2006

A framework to monitor vulnerabilities and resilience of EMEAP economies, HKMA, May 24, 2022, A framework to monitor vulnerabilities and resilience of EMEAP economies (hkma.gov.hk)

Implications of Loan Portfolio Concentration for Credit Risk of Banks in Hong Kong (hkma.gov.hk)

An overview of the issues and a synopsis of the results from the Research Task Force project, Studies on credit risk concentration: an overview of the issues and a synopsis of the results from the Research Task Force project - November 2006 (bis.org)

Hong Kong Monetary Authority - Exposure Limits (hkma.gov.hk)

Jonathan Golin, Philippe Delhaise, The Bank Credit Analysis Handbook, A guide for Analysts, Bankers and Investors (Wiley), 2nd Edition, 2013

Module 2

Qualitative and quantitative analysis of creditworthiness of the companies, Anita Gorgijevska, Olivea Gjorgieva – Trajkovska, 340055331.pdf (core.ac.uk)

Corporate Credit Risk Premia, Review of Finance, Volume 22, Issue 2, Berndt, Douglas,

Duffie and Ferguson, 27 January 2018, Price of bearing credit risk about expected loss https://academic.oup.com/rof/article/22/2/419/4828075

Small & Medium Enterprise (SME) Financing: Measuring Private Firm Credit Quality, Moody's Analytics: (2013-03-09-sme-financing-measuring-private-firm-credit-quality.pdf (moodysanalytics.com))

Appendix Four – Sample simulation case

Case Sample

Early Warning Signals

It was history: Lehman Brothers' (L Co) stock price vaporized by 93% **on September 12, 2008**. The same day, it declared bankruptcy which ended a legend since 1844. In the next chaotic months, Governments injected trillions of dollars to prevent the world bank system from collapsing.

Only one year before, in 2007, L Co continued to underwrite mortgage securities ambitiously, as in the previous five years, to reach an $85 billion portfolio or four times its shareholders' equity. It topped the market with that aggressive portfolio cumulation. On the other side of the same stage, there were insurers with relatively new insurance products to insure trillions of dollars of mortgage securities.

Before that, in 2003 and 2004, the markets knew that the U.S. housing bubble was well underway. However, sub-prime mortgage schemes kept attracting more buyers into the property market. So, in those days, L Co acquired five mortgage lenders specialized in Alt-A class mortgages with risk profiles between prime and subprime.

Situation

Your direct supervisor asked you to construct an executive report which serves as a pre-text to review your bank's practices, methods, and disciplines regarding timely identification and response to early warning signals. It helps if you refer to the above Company's failure for issues, root causes, insight, and lessons learned. In addition, the executive report should contain a summary of facts, discussions, and recommendations to the bank.

Note to learners: Refer to Case Appendix 6 for the template of the executive report. You are to demonstrate competency in knowledge, skills, and behaviours by articulating past lessons learned to the current situation and coming up with recommendations commensurate with the bank's size and scale.

Case Appendix 1

Explanation Of the Case

Case Objective

With this post-class learning activity, the learners will create self-revealing moments in the areas requiring more in-depth exploration of knowledge and skills.

Case

The information given in this document provides the basis of the real situation, such as the business or the product, the internal and external market environment. However, they are meant to serve as food for thought, rather than serving as a complete set of contextual information, for the learners to start preparing the executive report. The learners are to conduct supplementary research to balance and to complete their discussions in the executive report.

Case Appendix 2

Food for Thought

Note to the Trainer: This section provides food for thought to warm a learner before writing the executive report. It also provides directions for the learner to research further the L Co''s issues, which will help to gather relevant information for the discussions in the executive report to lead to a recommendation to the Bank.

(1) According to the interview report, Madelyn Antoncic was the chief risk officer at L Co between 2002 and 2007. She joined L Co in 1999 and found herself "in an institution that didn't have much appetite for risk management." [45] Antoncic created a risk framework with a risk model and people on board to perform live risk management.

Food for thought

Think through the issues and insights generated regarding the immediate causes of L Co's failure, and the associated risk factors that it should have addressed as early as possible.

(2) According to the Congress document "The Causes and Effects of the Lehman Brothers Bankruptcy," which recorded the hearing before the U.S. Committee on Oversight and Government Reform on October 6, 2008, L Co saw warning signs but did not move early/fast enough and lacked discipline about capital allocation.

Food for thought

Reflect and discuss on the root causes of L Co's procrastination in response despite the obvious risk level changes and the warning signals generated from the credit risk management system.

(3) External risks require close monitoring to identify early warning signals. According to the Congress document above, there are three main contributors to the 2008 financial meltdown:

- An easy credit environment
- Mortgage-backed securities sold to institutional investors
- An increase in leverage

The problem came when the U.S. housing sector reached saturation, compounded by other economic situation changes.

Food for thought

Understand the external environment during the financial crisis in 2008 to think about the best practices for identifying early warning signals of the external environment and making recommendations to the Bank, within context, on best practices, monitoring methods, and disciplines to ensure unbiased judgment.

[45] Not Too Big To Fail: Why Lehman Had to Go Bankrupt - Knowledge at Wharton (upenn.edu)

Case Appendix 3

Timeline

Note to the Trainer: This section contains some information and data about the case situation. The learners may include additional information and data from further research, where applicable, for the discussions in the executive report.

The list below indicates the timelines of the market and L Co in the months of the meltdown.

Timeline: March 9 – 15, 2008

It was chaotic. Banks deep in crisis updated about the tens of billions of dollars lost. Fund companies encountered liquidity crisis and could not repay their debts. Global banks paid out billions to bail out hedge funds in trouble. Many Walls Street's reputable names are involved.

Timeline: September 14 – 20, 2008

Stock price of the world's biggest insurance company plunged. It was the major player in the new credit default swap market to ensure leverage debt when the concerned portfolios melted down. Nobody could have imagined: the world's biggest insurance company failed.

Timeline: October 5 – 11, 2008

L Co went bankrupt; giant financial institutions failed or bailed out. The financiers and the politicians learned their life lessons, with many stories to tell until decades later. Indeed, some of them are still handling the shock waves rippling today.

Case Appendix 4

About your Bank

Note to the Trainer: RP learners will apply their bank's context to construct the executive report. However, for non-RP learners, the information below helps build a context for the executive report writing.

Background

The time is now. Your Bank is a medium-sized leading Hong Kong-based financial conglomerate with assets of HKD1,000 billion as of the end of the financial year.

Branch network

The Bank has branches in Hong Kong, China, the UK, and the USA. Unfortunately, the asset quality in China has deteriorated, and the management team has significantly prioritized asset quality improvement.

Financial performance

Profit before tax growth in the financial years comes mainly from fee and commission income and one-time gains. NIM stabilized in the financial year, but not the net interest, which continued to decrease. The economic growth in the local, China, and overseas markets varies from contraction, deteriorating, and pessimistic. As a result, some corporate clients continue to face revenue turmoil. However, corporate banking's performance has improved over past years.

Business strategy

The Bank continually looks for opportunities in geographic areas with more robust economic recovery. Also, it constantly focuses on the improvement of asset qualities.

Risk management

The Bank's overall risk appetite guides its business plan. As a result, the return on assets from businesses aligns with the planned risk level, strategic goals, business outlooks, and risk management policies.

Digital transformation

The Bank continually implements its digital transformation plan in the last decade. For example, it has embedded various interactive digital devices at branches to enable real-time remote service support.

Organizational culture program

The Bank has launched a corporate digital transformational program for a decade to increase all employees' awareness and receptiveness to digital transformation. A positive attitude toward technology deployment and mainframe system enhancement facilitates the efficient handling of critical processes.

The Bank has launched parallelly a corporate credit risk culture educational program to increase all employees' awareness of credit risk management being the responsibility of everyone.

Financial positions

Portfolio growth versus prior year	
Customer Loans	+8%
Customer Deposit	+9%
Customer Deposit & CD	+8%

Key ratios as of year end	
Loan to deposit	80%
Total capital ratio	22%
Tier I capital ratio	20%
Common Equity	18%
Liquidity Coverage	175%

Case Appendix 5

Reference

Note to the Trainers: Major information sources report follow-ups of significant credit cases. Therefore, continual updates of the reference will highlight the latest market trends or updates related to the case topics, helping to broaden a learner's views for putting up recommendations in the executive report.

The Collapse of Lehman Brothers: A Case Study (investopedia.com)
Three weeks that changed the world | Banking | The Guardian
The Truth About Lehman Brothers and AIG | Time
Not Too Big To Fail: Why Lehman Had to Go Bankrupt - Knowledge at Wharton (upenn.edu)
- THE CAUSES AND EFFECTS OF THE LEHMAN BROTHERS BANKRUPTCY (govinfo.gov)
Hong Kong Monetary Authority - Norman Chan on Seven Lessons of the Global Financial Crisis (hkma.gov.hk)
Norman T L Chan: When markets fail (bis.org)

Case Appendix 6
Template – Executive Report

Note to learners:
The template on the following pages shows the structure of the executive report. Please embed an executive summary, synthesis the given and researched information and data, and discuss the associated issues, root causes, and insights to support best practices (or defy non-practice), an aggregate of which leads to recommendations to the Bank to overcome the constraints in identification and response to early warning signals.

Upon completion of the report on or before the requested due date, send it by email to the trainer. The trainer will send the feedback to you.

Name	[Name of learner]
Module Number	[Module Number]
Submodule Number	[Sub module Number]
Email address	[Learner's email address]

Section I Executive summary (in about 300 words) *Articulate the relevance of L Co's case to your assigned tasks. Summarize the purpose of the executive report and its key points.*

Section II Summary information and data (in about 300 words) *Prepare a summary with the given information and data, as well as other researched information, to demonstrate your knowledge about the Bank's credit strategy and the external environment.*

Section IIIA Issues, immediate causes of failure and insight (in about 300 words) *L Co's stakeholders delayed reactions to early warning signals, which directly led it to the failure. Discuss the immediate sources and causes of the changes in risk level or system risk. Generate insight regarding the associated risk factors that it should have addressed as early as possible.*

Section IIIB Discuss the procrastination of L Co's response to early warning signal (in about 300 words) *Discuss the root causes underlying the immediate causes of L Co's failure. Demonstrate professionalism by applying impartial and unbiased judgment regarding the association of the root causes to L Co's decision, leading to procrastination in response to the early warning signals.*

Section IIIC Best practice, and methods (in about 300 words) *Pursual to Section IIIA and IIIB, discuss the principles for effective monitoring risk factors and recommend the best practices and methods to ensure identification of early warning signals. (Include but not limited to credit administration compliance, tracking risk indicators, review of the forecast, report to senior management on risk profile analysis, and others).*

Section IV Constraints of the recommendations and potential solutions (in about 300 words) *Demonstrate professionalism by applying impartial and unbiased judgment with the discussion of the constraints of the recommendation in Section (IIIC) and suggest potential solutions to overcome. Also, include the required disciplines to ensure unbiased judgment and timely response to early warning signals.*

Section V Reference links *List all references deployed to complete the case report.*

Section VI Presentation Slides *Attach the presentation slides to highlight the key items of the executive report. Use the same slides for a 10 – 15 minutes presentation, if requested by the trainer, before the trainer's feedback.*

Sample

Executive Report

Note to the Trainer: This sample is for trainers' reference only

Name	Chan, Taiman
Module Number	Module 1
Submodule Number	Submodule 1
Email address	T.M.Chan20000707@gmail.com

Section I Executive Summary (in about 300 words)

Articulate the relevance of L Co's case to your assigned tasks. Summarize the purpose of the executive report and its key points.

Root Causes of The L Co's Failure

L Co's failure was the compounded outcome of its management's lack of timely actions toward risk signals, its misalignment of credit strategies and business objectives, and the continual macroeconomic stimulating policies supported with low-interest rates, which resulted in the property market bubbles that burst eventually. The economic downturn and the interest rate surge led to the collapse of market confidence and the financial crisis.

Relevance of the L Co's Experience to the Identification of and Response To early warning signals in present economic situation

There are more stringent rules and regulations since 2008 to monitor the banks' risk level changes. Authorities in multiple countries have invested massive efforts to reach a continual consensus on credit risk (and other risk) management principles and approaches. However, while the world is still recovering from the post-crisis of the 2008 financial meltdown, the COVID-19 pandemic triggered new series of economic pulse-stop.

Also, the outbreak of war between Ukraine and Russia when pandemic was near its end has brutally intervened in the global governments' resort to low-interest rates to sustain the post-pandemic economic recovery. The dramatic surge in energy prices leads to the expectation of hyperinflation, and the elevated yield curves jeopardize economic recoveries and create new worries about economic depressions hence property market melt-down. The prolonged pandemic measures in major Asian markets aggravate economic sectors' downturns and business failures in specific markets. Together with the property bubble burst in China, the market sentiment resembles that in 2008.

Learnings and Discussions

This executive report discusses the associated issues, root causes, and insights from L Co's learning to support best practices (or defy non-practice) and monitoring methods recommended to the Bank. It also discusses the constraints of the recommendations and the potential solutions to overcome them.

About the Executive Report

Since the content of the executive report serves as a pre-text for the Bank to review the Bank's practices, methods, and disciplines regarding timely identification and response to early warning signals, I have exercised competency and possibly available resources to analyze the L Co's failure and to discuss and to recommend the best practices, the monitoring methods, and the disciplines to ensure unbiased judgment.

This report consists of four sections:

I. Executive summary
II. Information and data
III. Discussion on lessons learned and recommendation
IV. Constraints of the recommendation and potential solution

Section II Summary information and data (in about 300 words)

Prepare a summary with the given information and data, as well as other researched information, to demonstrate your knowledge about the Bank's credit strategy and the external environment.

The summary below extracts information from the case and other reliable external sources. Where information is not available, I make assumptions.

Bank Size and Scale

- a medium size bank[46] that has a robust cross-organizational credit risk culture
- exposed to economic cycles in Hong Kong, China, the UK, and the USA
- highly focused on asset quality improvement in the short term for long-term growth
- open-minded to technology investment
- strong credit risk culture

Assumption

Given this is a medium size local bank, it is assumed that the Bank has substantial exposure to clients with business in China.

Bank's Credit Risk Strategy

The Bank's overall risk appetite guides its business plan. As a result, the return on assets from businesses aligns with the planned risk level, strategic goals, business outlooks, and risk management policies.

Assumption

Credit risk appetite aligned with the Bank's risk appetite to guide the business plan.

Credit Risk Management Resources for Credit Risk Management

The Bank's credit strategies guide its business direction

Assumption

At par with the market, the Bank has RP team of a broad spectrum from the most experienced to the less experienced, with a similar turnover rate. Also, The Bank has an open attitude about additional investment in credit risk management since it has significantly prioritized asset quality improvement

The Economic Outlooks

Researched information – China's economy[47]

- Industrial output grows slower than expected
- Retail sales fall
- Property investment sees the biggest drop since early 2020
- Economic outlook gloomy on softening external demand

Researched information – Hong Kong economy [48]

- Full-year economic forecast has negative growth
- Underlying inflation estimate remained at 2%

Researched information – UK economy[49]

- Expected decrease of 0.4%
- Inflation remains high
- Companies put investment on hold
- Gloomy implications for long-term growth

Researched information – USA economy[50]

- IMF cuts U.S. growth forecast to 2.3%
- Consumer spending cools off

[46] Hong Kong Banking Report 2022 (assets.kpmg)
[47] China's economy loses momentum as COVID curbs hit factories, consumers | Reuters
[48] Hong Kong's steep slide shows misplaced priorities | Reuters
[49] UK economy to shrink in 2023, risks 'lost decade': CBI | Reuters
[50] IMF again cuts U.S. 2022 growth forecast to 2.3% as consumer spending cools | Reuters

Section IIIA Issues, immediate causes of failure and insight (in about 300 words)

L Co's stakeholders delayed reactions to early warning signals, which directly led it to the failure. Discuss the immediate sources and causes of the changes in risk level or system risk. Generate insight regarding the associated risk factors that it should have addressed as early as possible.

L Co's stakeholders should have reacted promptly to the early warning signals of external risk level changes. Unfortunately, because of the delayed response, external risk changes finally eroded the values of L Co's assets to a detrimental extent.

Discussion: Immediate Causes Leading to L Co's Failure

L Co's failure depicts that prolonged changing external risks, however mild and insignificant at the beginning, might significantly impact the asset values. Immediate causes of Lo Co's credit risk level change are:

- Asset valuation - The property bubbles burst, and the valuation of the firm's mortgage-based assets reduced so quickly that L Co lost confidence in the market.
- Liquidity crunch - Reduction in asset values triggered overselling of assets. Counterparties reduce their credit exposures promptly; hence L Co could not roll over its debt to access necessary liquidity.
- Confidence free-fall - Free fall of market confidence. The market believed that L Co was too big to fail, but the expected government-assisted recovery never did realize

Insight: Associated Risk Factors Which Should Have Been Addressed as Early as Possible

Lessons learned also shed light on the fact that both external and internal risk factors can be crucial to asset quality level change.

- External risk (macro-economy)

The external risk factors lead to the "systematic risks" that impact on macro-economy and, ultimately, the credit market. Examples:
- Geo-political situation
- Commodity prices, e.g., crude oil
- Inflation
- Stock market significant movement
- Property market corrections

- External risk (industrial)

For industries with significant contributions to economic growth, the related risk factors impact the credit market. Examples are
- Industry-specific risk (e.g., the mortgage market continuously attracted increasingly sub-prime quality borrowers to go into the property market)
- Industry profit drivers (e.g., continuous low-interest rate environment encourages easy credit policy toward the sub-prime quality borrowers)
- Industry life cycle (e.g., the market demand by prime quality customers for mortgage loans saturated at some point in time, pushing downward the quality of the potential mortgage customers)

- Internal (Entity) risk

- According to the document of "The Causes and Effects of the Lehman Brothers Bankruptcy," the management has a significant role to play in an entity's crisis:
-Imbalanced incentive program for the entire management team
-Imbalanced incentive program for an ultimate revenue generator
-Weak finance function
-Weak compliance function
-Inadequate risk management function, e.g.,
o Lack of risk management personnel
o Lack of risk management infrastructure
-Top management's accountability culture

Section IIIB Discuss the root causes of L Co's failure to react to early warning signal (in about 300 words)

Discuss the root causes underlying the immediate causes of L Co's failure. Demonstrate professionalism by applying impartial and unbiased judgment regarding the association of the root causes to L Co's decision, leading to procrastination in response to the early warning signals.

It's recorded in the hearing of L Co that "… did turn a blind eye to clear warnings of impending danger sounded as early as 1998. As a result, they missed golden opportunities to treat localized problems before they dispersed throughout the economic system. "

The list below shows the root causes underlying L Co's failure and reflection on the procrastination of responses to warning signals:

- Product understanding: the financial institutions had issued mortgage securities with minimal disclosures, and the financial products covering the credit default risk were relatively new by then. The stakeholders should have a thorough comprehension of the impact of external risk factors on the risk level of the portfolios.

  Reflection on the management's judgment
  If the management has a thorough understanding of the impact of the external risk on the business owing to the risk features of the concentrated portfolio, it is likely to be more responsive to early warning signals.

- Misalignment of credit risk strategy and business plan: despite the Risk Officer's established risk management framework, putting up people to monitor the risk and providing early warning signals, the business strategies grew ambitiously in the concerned portfolio.

  Reflection on the management's judgment
  If the compensation package of the top management and top sales are highly correlated with immediate and short-term business performance, delaying the actions to mitigate risk is tempting.

- The worst might not be the worst: L Co did have a credit risk management framework and dedicated employees to perform risk management functions.

  Reflection on the management's judgment
  The worst scenario assumptions in the credit risk models undermined the worst market realities. If the risk model parameters had incorporated worst scenarios much less severe than the worst in the market realities, management might not have been able to make an unbiased judgment.

- The external risk factors have contagion effect on one another. The risk model of L Co might not have accounted for all the significant contagion risks' impact in unseen changes in external risk factors. Dedicated resources are required to establish model assumptions with various testing, for instance, back-testing.

  Reflection on the management's judgment
  If assumptions on contagion risks do not match with the market realities, the management might not have arrived at a fair judgment on the risk positioning.

Section IIIC Best practice, and methods (in about 300 words)

Pursual to Section IIIA and IIIB, discuss the principles for effective monitoring risk factors and recommend the best practices and methods to ensure identification of early warning signals. (Include but not limited to credit administration compliance, tracking risk indicators, review of the forecast, report to senior management on risk profile analysis, and others).

The list below lists the best practices and methods for identifying early warning signals:

Best Practices for Effective Monitoring of Risk Factors to Identify Early Risk Signals

Resources, Framework, structure, process, documentation, and culture are prerequisites to efficient and effective risk monitoring for identifying early warning signals. The list below attempts to share the best practices which should be in place for the practical identification of early risk signals:

- Resources
  A bank must stack adequate resources for the credit risk management structure: trained and skilled people and finance.

- Framework

  Apply the "three lines of defense" risk model. The 1st, 2nd, and 3rd lines of defense are risk owners, risk controllers, and internal audit divisions.

- Structure

  The risk committee provides oversight of risk management. However, the support comes from the management committee, which includes the credit committee, the departments, and the frontlines.

- Process

  A bank should have a process to identify, measure, and monitor early warning signals. The signals identified cascade to the appropriate parties within the above structure.

- Documentation

  Documents form an essential part of knowledge management. Moreover, adequately prepared documentation (e.g., collaterals' legal title, repayment history, and others) enables efficient follow-up with clients during turnover and handover.

- Culture

  The Bank invested over the years to form a robust credit risk culture so that everyone across the organization contributes to the identification of early warning signals.

Methods to Identify Early Warning Signals

Given that the Bank is a medium size leading, its portfolio can be relatively simple, and its relationship managers understand the clients well. Moreover, since it has credit exposure in Hong Kong, China, the UK, and the USA, it should have allocated adequate resources to monitor these markets' macroeconomics. The list below suggests the methods to identify early warning signals of internal and external risk factors:

Risk factors	Monitoring process	Risk indicator examples
External risk (macro-economy) changes	- Macro-environment scanning on the economies - Geo-political situations review - Stress testing to identify any vulnerable portfolio under extreme situations - Collateral and guarantee review to see if any valuation deterioration	- Changes in government spending - Changes in private spending - Inflation rate (e.g., YOY < 4%) - Govt debt/GDP (e.g., <50%)
External risk (Industry) changes	- Business environment scanning on the industry sectors - Portfolio analysis to determine if any characteristics change	- Real estate market correction (<5% over 3 months) - Commodity price (e.g., crude oil >$100)
Internal (Entity) risk changes	- Connect with peers in banking industry to obtain more perspective about clients - Credit administration on the individual accounts - Establish alert triggers at several levels of the reporting system - Monitor the migration of internal rating - Borrower's information change	- Sales - Gross Profit - Net Profit - Debt/Equity

..

Section IV Constraints of the recommendations and potential solutions (in about 300 words)

Demonstrate professionalism by applying impartial and unbiased judgment with the discussion of the constraints of the recommendation in Section (IIIC) and suggest potential solutions to overcome. Also, include the required disciplines to ensure unbiased judgment and timely response to early warning signals.

There are four sources of constraints to the recommended methods in Section IIIC. The table below attempts to list the constraints and potential solutions to overcome.

Category	Constraints to the recommendation	Potential solutions and disciplines to overcome the constraints
Data & Information	Structure	• Establish comprehensive knowledge management structure for easy data retrieval
	Compliance	• Ensure compliance of credit administration process so that inhouse data on clients (e.g., payment timeliness) are generated
	Timeliness	• Automation of data input and output speeds up the information generation
	Information asymmetry	• Establish trustful relationship with clients • Monitor news, rumours, press release, and other available information about clients' business • Establish industry network and banking network to gather intelligence about the clients' business
Model	Parameters - Selection	• Continual knowledge management to cumulate inhouse intelligence, industry information and research insight, so that the risk model parameters fully align with credit risk strategies
	Parameters - Contagious effect	• Resources allocation for risk modelling validation with inhouse stakeholders and outcomes of third-party models
	Assumptions - Scenario	• Frequent communications across the organizations to reassure that it's for the best of the Bank's interest to stretch the worst scenarios for stress-testing
	Assumptions - Forecast	• Thorough environment scanning and industry networking to collect sufficient information for forecast assumptions
Judgment	Product features	• Continual professional education to the senior management in a more private and lively way with, for instance, video briefing
	Exercise unbiased judgement	• Continual professional education with regular experience sharing on live cases
	Assessment of the borrowers' resilience in face of adverse situation	• Establish a trustful relationship with the clients to help clients to always maintain a healthy business • Frequent visits to the client's place of businesses for physical observation. • Frequent interactions with the client's customers in case of virtual business environment

	Treating early warning signal as noises	• Regular risk review meeting to discuss the outcomes from the analysis of the risk measures
	Credit risk management culture	• Establish an accountability culture with consequence management • Reinforce the culture with balanced compensation rewarded to revenue generators and board of directions e.g., reward successful transactions rather than reward for immediate revenue
Resources	Finance	• Maintain a strong finance function to ensure adequate appropriation of resources for meet short term and long-term need in credit risk management
	Human Resources	• Maintain a sustainable human resources talent pipeline within the Bank to encourage in-house talent transfers, e.g., transfer of experienced relationship managers to credit departments, and to attract external talents
	Information & technology	• Constant upgrade of information system
	Third party database	• Make use of third-party service providers for models and analysis built upon real time big data for validation of outcomes from inhouse models

Section V Reference links

Lists all references deployed to complete the case report.

- Hong Kong Banking Report 2022 (assets.kpmg)
- China's economy loses momentum as COVID curbs hit factories, consumers | Reuters
- Hong Kong's steep slide shows misplaced priorities | Reuters
- UK economy to shrink in 2023, risks 'lost decade': CBI | Reuters
- IMF again cuts U.S. 2022 growth forecast to 2.3% as consumer spending cools | Reuters
- Why Do We Miss Early Warning Signals Of Emerging Crises? (forbes.com)
- China House Prices Growth | Economic Indicators | CEIC (ceicdata.com)
- Too Big to Fail: Definition, History, Examples, and Reforms (investopedia.com)
- Barings collapse 25 years on: What the industry learned after one man broke a bank (cnbc.com)
- The Barings Collapse: A Regulatory Failure, or a Failure of Supervision (brooklaw.edu)

Section VI Presentation Slides

Attach the presentation slides to highlight the key items of the executive report. Use the same slides for a 10 – 15 minutes presentation, if requested by the trainer, before the trainer's feedback.

The Learner refers to the executive reports and prepares extracts for the PowerPoint Slides.