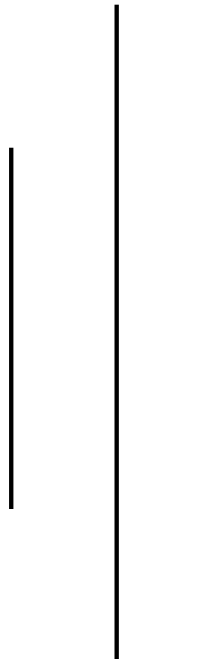


Nepal Rastra Bank
Risk Management Guidelines



Nepal Rastra Bank
Bank Supervision Department

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1. Risk Management Guidelines

1.1 Overview

Banks are always faced with different types of risks that may have a potentially negative effect on their business. Risk-taking is an inherent element of banking and, indeed, profits are in part the reward for successful risk taking in business. On the other hand, excessive and poorly managed risk can lead to losses and thus endanger the safety of a bank's depositors. Risks are considered warranted when they are understandable, measurable, controllable and within a bank's capacity to readily withstand adverse results. Sound risk management systems enable managers of banks to take risks knowingly, reduce risks where appropriate and strive to prepare for a future, which by its nature cannot be predicted.

Nepal Rastra Bank laid significant emphasis on the adequacy of a bank's management of risk. Nepal Rastra Bank puts forward this document for the purpose of providing guidelines to all commercial banks on risk management systems that are expected to be in place. This document sets out minimum standards that shall be expected of a risk management framework. Overall risk management is of utmost importance to Banks, and as such, policies and procedures should be endorsed and strictly enforced by the senior management and the board of the Bank.

1.2 Risk Management Process

For the purpose of these guidelines, risk refers to the possibility that the outcome of an action or event could bring adverse impacts on the bank's capital, earnings or its viability. Such outcomes could either result in direct loss of earnings and erosion of capital or may result in imposition of constraints on a bank's ability to meet its business objectives. These constraints could hinder a bank's capability to conduct its business or to take advantage of opportunities that would enhance its business. As such, managements of banks are expected to ensure that the risks a bank is taking are warranted.

Risk Management is a discipline at the core of every bank and encompasses all activities that affect its risk profile. It involves identification, measurement, monitoring and controlling risks to ensure that:

- a) The individuals who take or manage risks clearly understand it.
- b) The organization's Risk exposure is within the limits established by Board of Directors.
- c) Risk taking Decisions are in line with the business strategy and objectives set by BOD.
- d) The expected payoffs compensate for the risks taken.
- e) Risk taking decisions are explicit and clear.
- f) Sufficient capital as a buffer is available to take risk.

Each situation is unique, in terms of roles and capabilities of individuals and the structure, activities and objectives of the bank. Risk management practices considered suitable for one bank may be unsatisfactory for another. Because of the vast diversity in risk that banks take, there is no single prescribed risk management system that works for all. Moreover, in the context of a particular bank, the definition of a sound or adequate risk management system is ever changing, as new technology accommodates innovation and better information and as market efficiency grows. Each bank should tailor its risk management program to its needs and circumstances. To remain competitive, banks must adapt and constantly improve their process. A sound risk management system should have the following elements:

- Active board and senior management oversight
- Adequate policies, procedures and limits
- Adequate risk measurement, monitoring and management information system; and

- Comprehensive internal controls.

It should not be understood that risk management is only limited to the individual(s), who are responsible for overall risk management function. Business lines are equally responsible for the risks they are taking. Because the line personnel can understand the risks of their activities and any lack of accountability on their part may hinder the sound and effective risk management.

1.3 Risk Assessments and Measurement.

Until and unless risks are not assessed and measured, it will not be possible to manage them. Further a true assessment of risk gives management a clear view of bank's standing and helps in deciding future action plan. To adequately capture banks' risk exposure, risk measurement should represent aggregate exposure of bank to both risk type and business line and encompass short run as well as long run impact on bank. To the maximum possible extent banks should establish systems/models that quantify their risk profile; however, in some risk categories such as operational risk, quantification is quite difficult and complex. Wherever it is not possible to quantify risks, qualitative measures should be adopted to capture those risks. The importance of staff having relevant knowledge and expertise cannot be undermined. Any risk measurement framework, especially those which employ quantitative techniques/model, is only as good as its underlying assumptions, the rigor and robustness of its analytical methodologies, the controls surrounding data inputs and its appropriate application.

1.4 Risk Management Framework

In any bank, support for crucial programs must come from the top. Each entity's senior management and governing board must set the bank's risk appetite by establishing appropriate policies, limits and standards and ensuring that they are followed and enforced. Risks must be measured, monitored and reported to key decision-makers. Banks should institute a setup that supervises overall risk management at the bank. Such a setup could be in form of a risk manager, committee or department depending on the size and complexity of the bank. Ideally, overall risk management function should be independent from those who take or accept risk on behalf of the bank.

The complexity and formality may vary widely among banks; but they should have clear procedures for assessing risk and evaluating performance regularly. There must also be adequate accountability, clear lines of authority and separation of duties between business functions and those involved in risk management and internal control. Where individuals responsible for overall risk management function are involved in day-to-day operations, then sufficient checks and balances should be established to ensure that risk management is not compromised. Overall risk management function provides an oversight of the management of risks inherent in the bank's activities. The functions are;

- Identifying current and emerging risks;
- Developing risk assessment and measurement systems;
- Establishing policies, practices and other control mechanisms to manage risks;
- Developing risk tolerance limits for Senior Management and Board approval;
- Monitoring positions against approved risk tolerance limits; and
- Reporting results of risk monitoring to Senior Management and the Board.

An effective risk management framework includes:

- Clearly defined risk management policies and procedures covering risk identification, acceptance, measurement, monitoring, reporting and control.
- A well constituted organizational structure defining clearly roles and responsibilities of individuals involved in risk taking as well as managing it.

- Banks, in addition to risk management functions for various risk categories may institute a setup that supervises overall risk management at the bank.
- Such a setup could be in the form of a separate department or bank's Risk Management Committee (RMC) could perform such function.
- There should be an effective management information system that ensures flow of information from operational level to top management and a system to address any exceptions observed. There should be an explicit procedure regarding measures to be taken to address such deviations.
- The framework should have a mechanism to ensure an ongoing review of systems, policies and procedures for risk management and procedure to adopt changes.

Each bank should develop a mechanism for assessing and reviewing its risk management policies, processes and procedures for individual risk elements, at a regular interval, based on the main findings of the monitoring reports and the results of analysis of developments arising from external market changes and other environmental factors. The results of such review should be properly documented and reported to the Board for consideration and approval. Banks should carry out a self-assessment of its risk management framework for each risk element and assign appropriate rating as regards the quality of its systems and procedures.

1.5 Risk Management Guideline (RMG)

The guideline at hand does not replace, rather supplements the existing regulations and guidelines. The guideline will become a focal point of reference for all requirements of the Nepal Rastra Bank for overall risk policy formulation and management. The guideline applies to the commercial banks in Nepal. It is not intended to be so comprehensive that it covers each and every aspect of risk management activity. This guideline provides minimum standard for the risk management practice to be exercised in the banks. A bank may establish a more comprehensive and sophisticated framework than that outlined in the guideline. This is entirely acceptable as long as all essential elements of the guideline are fully taken into account.

The guideline is in line with internationally accepted risk management principles and the best practices. It is also aligned with the revised version of Core Principles for Effective Banking Supervision, which the Basel Committee published in October 2006. Core Principle 7 on 'Risk Management Processes' mentions that "*banks and banking groups must have comprehensive risk management processes (including Board and senior management oversight) to identify, evaluate, monitor and control or mitigate all material risks and to assess their overall capital adequacy in relation to their risk profile. These processes should be commensurate with the size and complexity of the bank*". Other relevant Core Principles (CP) includes credit risk (CP8), market risk (CP13) liquidity risk (CP14), operational risk (CP15) and interest rate risk (CP16). Moreover, principles set for the specific risk categories (Credit, Market, Operational, and Liquidity) are presented in the box.

The types and degree of risks an organization may be exposed to depend upon a number of factors such as its size, complexity, business activities, volume etc. This guideline covers the most common risks of Nepalese commercial banks; mainly Credit Risk, Market Risk, Operational Risk and Liquidity Risk. Depending on the nature and size of business, banks can introduce several stringent measures for the efficient risk management.

There are several risks like; strategic risk, reputation risk, legal risk etc. which can be measured in terms of qualitative criteria. Banks risk management process should incorporate all the risks associated with its business activities. This guideline presents the broader principles and concepts for the risk management in banking business. It provides minimum standard as well as general guidelines to encourage banks for directing their efforts towards stringent measures for risk management. Only objective of the RMG is to contribute towards maintaining and improving financial safety and soundness through better risk management practices in the banks.

2. Managing Credit Risk

2.1 Overview

Credit risk is the likelihood that a debtor or financial instrument issuer is unwilling or unable to pay interest or repay the principal according to the terms specified in a credit agreement resulting in economic loss to the bank. Credit risk also refers the risk of negative effects on the financial result and capital of the bank caused by borrower's default on its obligations to the bank.

Credit risk is the major risk that banks are exposed during the normal course of lending and credit underwriting. Credit risk arises from non-performance by a borrower. For most banks, loans are the largest and most obvious source of credit risk; however, credit risk could stem from activities both on and off balance sheet. It may arise from either an inability or an unwillingness to perform in the pre-committed contracted manner. In a bank's portfolio, losses arise from outright default due to inability or unwillingness of a customer or counter party to meet commitments in relation to lending, trading, settlement and other financial transactions. Alternatively losses may result from reduction in portfolio value due to actual or perceived deterioration in credit quality.

Credit risk comes from a bank's dealing with individuals, corporate, banks and financial institutions or a sovereign. Credit risk does not necessarily occur in isolation. The same source that endangers credit risk for the bank may also expose it to other risk. For instance a bad portfolio may attract liquidity problem.

This section presents fundamental credit risk management policies and practices that are recommended for adoption by the banks. The guideline outlines general principles that are designed to govern the implementation of more detailed lending procedures and practices within the banks.

A typical Credit risk management framework in a bank may be broadly categorized into following main components;

- Board and senior Management's Oversight
- Organizational structure
- Systems and procedures for identification, acceptance, measurement
- Monitoring and control risks.

2.2 Board and Senior Management's Oversight

2.2.1 Board Oversight

The Board of directors has a vital role in granting credit as well as managing the credit risk of the bank. It is the overall responsibility of a bank's Board to approve credit risk strategy and significant policies relating to credit risk and its management which should be based on the overall business strategy. Overall strategy as well as significant policies have to be reviewed by the board regularly.

Each bank, depending upon its size, should constitute a Credit Risk Management Committee (CRMC), ideally comprising of head of credit department and treasury. This committee should be empowered to oversee credit risk taking activities and overall credit risk management function. The CRMC should be mainly responsible for;

- The implementation of the credit risk policy/strategy approved by the Board.
- Monitor credit risk and ensure compliance with limits approved by the Board.

- Recommend to the Board, for its approval, clear policies on standards for presentation of credit proposals, financial covenants, rating standards and benchmarks.
- Recommend delegation of credit approving powers, prudential limits on large credit exposures, standards for loan collateral, portfolio management, loan review mechanism, risk concentrations, risk monitoring and evaluation, pricing of loans, provisioning, regulatory/legal compliance,

Principles for the Assessment of Banks' Management of Credit Risk¹

A. Establishing an appropriate credit risk environment

Principle 1:

The board of directors should have responsibility for approving and periodically reviewing the credit risk strategy and significant credit risk policies of the bank. The strategy should reflect the bank's tolerance for risk and the level of profitability the bank expects to achieve for incurring various credit risks.

Principle 2:

Senior management should have responsibility for implementing the credit risk strategy approved by the board of directors and for developing policies and procedures for identifying, measuring, and monitoring and controlling credit risk. Such policies and procedures should address credit risk in all of the bank's activities and at both the individual credit and portfolio levels.

Principle 3:

Banks should identify and manage credit risk inherent in all products and activities. Banks should ensure that the risks of products and activities new to them are subject to adequate procedures and controls before being introduced or undertaken, and approved in advance by the board of directors or its appropriate committee.

The responsibilities of the board with regard to credit risk management shall include to:

- Ensure that appropriate policies, plans and procedures for credit risk management are in place. Ensure the bank implements sound fundamental policies;
- Define the bank's overall risk tolerance in relation to credit risk;
- Ensure that top management as well as staffs responsible for credit risk management possess sound expertise and knowledge to accomplish the risk management function;
- Ensure that bank's significant credit risk exposure is maintained at prudent levels and consistent with the available capital. Review trends in portfolio quality and the adequacy of bank's provision for credit losses;
- Ensure that internal audit reviews the credit operations to assess whether or not the bank's policies and procedures are adequate and implemented;
- Review exposures to insiders and their related parties, including policies related thereto;
- Ratify exposures exceeding the level of the management authority delegated to management and be aware of exposures; and
- Outline the content and frequency of management report to the board on credit risk management.

2.2.1.1 Senior Management Oversight

The overall responsibility of risk management rests on the board of directors. The responsibility of senior management is to transform strategic direction set by board in the shape of policies and procedures. The formulation of policies relating to risk management itself may not be adequate until and unless these are clearly communicated down the line. Senior management has to ensure that these policies are embedded in the culture of an organization. Senior Management is responsible for implementing the bank's credit risk management

¹ Principles for the management of credit risk, BCBS

strategies and policies and ensuring that procedures are put in place to manage and control credit risk and the quality of credit portfolio in accordance with these policies. The responsibilities of Senior Management with regard to credit risk management shall include:

- Developing credit policies and credit administration procedures for Board approval;
- Implementing credit risk management policies to ensure effective credit risk management process;
- Ensuring the development and implementation of appropriate reporting system;
- Monitoring and controlling the nature and composition of the bank's credit portfolio;
- Monitoring the quality of credit portfolio and ensuring that the portfolio is soundly and conservatively valued and probable losses are adequately provided for;
- Establishing internal controls and setting clear lines of accountability and authority; and
- Building lines of communication for the timely dissemination of credit risk management policies, procedures and other credit risk management information to all the credit staffs.

2.2.2 Organizational structure

Organizational structures may vary according to size, complexity and diversification of bank's activities. The structure should facilitate effective management oversight and proper execution of credit risk management and control processes. It is necessary to maintain the bank's overall credit risk exposure within the parameters set by the board of directors

It is the responsibility of bank's Board to approve the overall lending authority structure and explicitly delegate credit approval authority to senior management, the credit committee and other lending authorities. Lending authority assigned to the officers should be commensurate with their experience, ability and personal character. Banks may adopt multiple credit approvers for sanctioning various functions such as credit ratings, risks approvals etc. to institute a more effective system of check and balance. There should also be periodic review of lending authority assigned to officers.

2.3 Credit Strategy, Policies, Procedures and Limits

2.3.1 Credit Strategy

The primary purpose of bank's credit strategy is to determine the risk appetite. Risk appetite, at the organizational level, is the amount of risk exposure, or potential adverse impact from an event, that the bank is willing to accept. Once it is determined, the bank shall develop a plan to optimize return while keeping credit risk within predetermined limits. The credit risk strategy thus should cover:

- The bank's plan to grant credit based on various client segments and products, economic sectors, geographical location, currency and maturity;
- Target market within each lending segment and level of diversification/concentration;
- Pricing strategy.

Credit risk strategy should be developed on the basis of bank's target market and its internal strength. The strategy should provide continuity in approach and take into account cyclic aspect of country's economy and the resulting shifts in composition and quality of overall credit portfolio. The credit procedures should aim to obtain a deep understanding of the bank's clients, their credentials and their businesses in order to fully know their customers. These strategies should be reviewed periodically and amended, as deemed necessary; it should be viable in the long run.

2.3.2 Credit Policies

Every bank has to develop Credit Policies Guidelines (CPG) that clearly outline the bank's view of business development priorities and the terms and conditions that should be adhered to for loans to be approved. The CPG should be updated at a regular interval to reflect changes in the economic outlook and the evolution of the bank's loan portfolio. To make it effective, policies should be communicated timely and should be implemented by all levels of the bank through appropriate procedures. It should be distributed to all lending authorities and credit officers. Credit policies establish framework for making investment and lending decisions and reflect bank's tolerance for credit risk. Any significant deviation to these policies must be communicated to the Senior Management/Board and corrective measures should be taken. At a minimum, credit policies should include:

- Areas of credit in which the bank plans to lend and does not lend (acceptable and unacceptable lines of credit). These areas can be on the basis of credit facilities, type of collateral security, types of borrowers, or geographic sectors on which the bank may focus;
- Bank's formal credit approval process; detailed and formalized credit evaluation/appraisal process, administration and documentation;
- Credit approval authority at various levels;
- Clear guidelines for each of the various types of credits, such as loans, overdrafts, mortgages, leases, etc.
- Concentration limits on single counter party and group of connected counter parties, particular industries or economic sectors, geographic regions and specific products. Banks can set their own stringent internal exposure limits comply with any prudential limits or restrictions set by the Nepal Rastra Bank;
- Authority for approval of allowance for probable losses and write-offs;
- Credit Pricing;
- Roles and responsibilities of units/staff involved in credit;
- Guidelines on regular monitoring and reporting system.
- Guidelines on management of problem loans; and
- Internal rating (Risk grading) systems including definition of each risk grade and clear demarcation for each risk grade.

The credit policy should spell out the process to ensure appropriate reporting and approval of credit extension beyond prescribed limits. The policy should also spell out approvals of disbursements of excess over limits, and other exceptions to credit policy. In order to be effective, credit policies must be communicated throughout the bank, implemented through appropriate procedures, and periodically revised to take into account changing internal and external circumstances.

2.3.3 Credit Procedures

The credit procedures should aim to obtain a deep understanding of the bank's clients and their businesses in order to fully know their customers. Banks should develop procedures that adequately capture salient issues regarding the borrower's industry; macro economic factors; the purpose of credit; source of repayment; track record and repayment history of the borrower; repayment capacity of the borrower; the proposed terms and conditions and covenants; adequacy and enforceability of collaterals; and appropriate authorization for the loan.

2.3.4 Credit Limits

An important element of credit risk management is to establish exposure limits covering on-balance sheet and off-balance sheet credit exposures for single counter party and group of connected counter parties. The objective of setting credit limit is to prevent banks from relying excessively on a large borrower or group of borrowers. Banks are expected to develop their

own stringent limit structure while remaining within the exposure limits set by the Nepal Rastra Bank. The size of the limits should be based on the credit strength of the counterparty, purpose of credit, economic conditions and the bank's risk appetite. Limits should also be set for respective products, activities, specific industry, economic sectors and/or geographic regions to avoid concentration risk. Credit limits should be reviewed regularly at least annually or more frequently if counter party's credit quality deteriorates. All requests of increase in credit limits should be substantiated.

2.4 Credit Origination

A sound and well-defined criteria for new credits as well as the expansion of existing credits is necessary for credit risk management. Before allowing a credit facility, the bank should make an assessment of risk profile of the customer/transaction. This may include:

- Credit assessment of the borrower
(macro-economic factors, industry and firm specific analysis)
- The purpose of credit and source of repayment.
- The track record / repayment history of borrower.
- Repayment capacity and other sources of income of the borrower.
- Terms, conditions and covenants for the credit agreement.
- Consistency in past history and future projections; Expected future cash flow of the borrower.
- Adequacy, enforceability and liquidity status of collaterals.
- Approval from appropriate authority

Banks have to make sure that the credit is used for the purpose it was borrowed. Where the obligor has utilized funds for purposes not shown in the original proposal, banks should take steps to determine the implications on creditworthiness. In case of corporate loans where borrower own group of companies such diligence becomes more important. Banks should classify such connected companies and conduct credit assessment on consolidated/group basis.

Banks utilize collateral and guarantees to help mitigate risks inherent in individual credits but transactions should be entered into primarily on the strength of the borrower's repayment capacity. Collateral cannot be a substitute for a comprehensive assessment of the borrower or counter party, nor can it compensate for insufficient information.

Banks should have policies covering the acceptability of various forms of collateral, procedures for the ongoing valuation of such collateral, and a process to ensure that collateral is, and continues to be, enforceable and realizable. With regard to guarantees, banks should evaluate the level of coverage being provided in relation to the credit-quality and legal capacity of the guarantor.

2.5 Approving New Credits and Extension of Existing Credits

In case of new relationships consideration should be given to the integrity and reputation of the borrowers or counter party as well as its legal capacity to assume the liability. Prior to entering into any new credit relationship the banks must become familiar with the borrower or counter party and be confident that they are dealing with individual or organization of sound reputation and credit worthiness. However, a bank must not grant credit simply on the basis of the fact that the borrower is perceived to be highly reputable i.e. name lending should be discouraged.

Operating under a sound credit granting process²

Principle 4: Banks must operate under sound, well-defined credit-granting criteria. These criteria should include a thorough understanding of the borrower or counter party, as well as the purpose and structure of the credit, and its source of repayment.

Principle 5: Banks should establish overall credit limits at the level of individual borrowers and counter parties, and group of connected counter parties that aggregate different types of exposures, both in the banking and trading book and on and off balance sheet.

Principle 6: Banks should have a clearly established process in place for approving new credits as well as the extension of existing credits.

Principle 7: All extensions of credit must be made on an arm's-length basis. In particular, credits to related companies and individuals must be monitored with particular care and other appropriate steps taken to control or mitigate the risks of connected lending.

A bank's credit-granting approval process should establish accountability for decisions taken and designate who has the authority to approve credits or changes in credit terms. A potential area of abuse arises from granting credit to connected and related parties, whether companies or individuals. Related parties typically include a bank's promoters, major shareholders, subsidiaries, affiliate companies, directors, and executive officers. The relationship includes the ability to exert control over or influence a bank's policies and decision-making, especially concerning credit decisions (please refer to NRB Directive no 3 on Transactions with Related Parties). A bank's ability to systematically identify and track extensions of credit to insiders is crucial. The issue is whether credit decisions are made on a rational basis and according to approved policies and procedures.

2.6 Credit Administration

Credit administration is a critical function in maintaining the safety and soundness of a bank. The credit administration function is basically a back office activity that supports and controls extension and maintenance of credit. A typical credit administration unit should perform the functions of credit documentation, disbursement and monitoring; loan repayment; and maintenance of credit files, collateral and security documents. Once a credit is granted, it is the responsibility of Credit Administration to ensure that the credit is properly maintained. It is the responsibility of credit administration to ensure completeness of documentation (loan agreements, guarantees, transfer of title of collaterals etc) in accordance with approved terms and conditions. This includes keeping the credit file up to date, obtaining current financial information, sending out renewal notices and preparing various documents such as loan agreements. While developing credit administration areas, banks should ensure:

- the efficiency and effectiveness of credit administration operations, including monitoring documentation, contractual requirements, legal covenants, collateral, etc.;
- the accuracy and timeliness of information provided to management information systems;
- the adequacy of control over all "back office" procedures; and
- Compliance with prescribed management policies and procedures as well as applicable laws and regulations.

² Principles for the management of credit risk, BCBS

For the various components of credit administration to function appropriately, senior management must understand and demonstrate that it recognizes the importance of this element of monitoring and controlling credit risk.

Maintaining an appropriate credit administration, measurement and monitoring process³

Principle 8: Banks should have in place a system for the ongoing administration of their various credit risk-bearing portfolios.

Principle 9: Banks must have in place a system for monitoring the condition of individual credits, including determining the adequacy of provisions and reserves.

Principle 10: Banks should develop and utilize internal risk rating systems in managing credit risk. The rating system should be consistent with the nature, size and complexity of a bank's activities.

Principle 11: Banks must have information systems and analytical techniques that enable management to measure the credit risk inherent in all on- and off-balance sheet activities. The management information system should provide adequate information on the composition of the credit portfolio, including identification of any concentrations of risk.

Principle 12: Banks must have in place a system for monitoring the overall composition and quality of the credit portfolio.

Principle 13: Banks should take into consideration potential future changes in economic conditions when assessing individual credits and their credit portfolios, and should assess their credit risk exposures under stressful conditions.

Banks need to enunciate a system that enables them to monitor quality of the credit portfolio on day-to-day basis and take remedial measures as and when any deterioration occurs. Such a system would enable an bank to ascertain whether loans are being serviced as per facility terms, the adequacy of provisions, the overall risk profile is within limits established by management and compliance of regulatory limits. Monitoring procedures and systems should be in place so as to provide an early indication of the deteriorating financial health of a borrower.

Banks should ensure that all security documents are kept in a fireproof safe. Registers for documents should be maintained to keep track of their movement. Procedures should also be established to track and review relevant insurance coverage for certain facilities/collateral. Physical checks on security documents should be conducted on a regular basis.

The credit files should include all of the information necessary to ascertain the current financial condition of the borrower or counter party as well as sufficient information to track the decisions made and the history of the credit. Bank should devise procedural guidelines and standards for maintenance of credit files. The credit files not only include all correspondence with the borrower but also contain sufficient information necessary to assess financial health of the borrower and its repayment performance. It should be filed in organized way so that external/internal auditors or NRB inspector could review it easily.

³ *Principles for the management of credit risk, BCBS*

2.7 Internal Credit Risk Rating System

Banks should develop an internal credit risk rating system for its loans and advances. The risk rating should categorize all credits into various classes on the basis of underlying credit quality. Risk rating is a key measurement of a bank's asset quality, and as such, it is essential that rating is a robust process. All facilities should be assigned a risk grade. In case of deterioration in risk is noted, the Risk Grade assigned to a borrower and its facilities should be immediately changed. NRB does not advocate any particular credit risk rating system; it should be bank's own choice. But the rating system should be consistent with the nature, size and complexity of a bank's activities and should have at least the following parameters:

- covers a broad range of the bank's credit exposure, including off-balance sheet exposures;
- covers both performing and non-performing assets;
- has several grades covering exposures, with the lowest rating accorded to those where losses are expected;
- has risk ratings for "performing" credits with several grades (including the grades like "watch list" or "special mention");
- has regulatory classifications (performing, substandard, doubtful & bad) should be incorporated within the risk rating systems; and
- has the credit risk rating system detailed in the credit policy and procedures developed for the determination and periodic review of the credit grades.

The rating system, which has been endorsed by the board, has to be submitted to Nepal Rastra Bank. For banks, which have yet to implement the rating system, a plan, endorsed by the board, must be submitted to Nepal Rastra Bank specifying the timeframe, persons responsible and steps taken for the implementation of a credit grading system. Such plans must be submitted to Nepal Rastra Bank not later than **end of December 2010**.

Banks should regularly monitor and evaluate the actual default or loss experience of credits in each risk grade as one means to assess the consistency and reliability of the ratings being used.

2.8 Credit Risk Monitoring and Control

Credit risk monitoring refers to the continuous monitoring of individual credits inclusive of off-balance sheet exposures to obligors as well as overall credit portfolio of the bank. Banks need to develop and implement comprehensive procedures and information systems to monitor the condition of individual credits and single borrowers across the bank's various portfolios. Banks need to enunciate a system that enables them to monitor quality of the credit portfolio on day-to-day basis and take remedial measures as and when any deterioration occurs. These procedures need to define criteria for identifying and reporting potential problem credits and other transactions to ensure that they are subject to more frequent monitoring as well as possible corrective action, classification and/or provisioning. Establishing an efficient and effective credit monitoring system would help senior management to monitor the overall quality of the total credit portfolio and its trends. As a result the management could reassess its credit strategy /policy accordingly before encountering any major setback. The banks credit policy should explicitly provide procedural guideline relating to credit risk monitoring. At the minimum it should lay down procedure relating to:

- The roles and responsibilities of individuals responsible for credit risk monitoring
- The assessment procedures and analysis techniques (for individual loans & overall portfolio)
- The frequency of monitoring
- The periodic examination of collaterals and loan covenants
- The frequency of site visits

- The identification of deterioration in any loan

Such a system would enable a bank to ascertain whether loans are being serviced as per facility terms, the adequacy of provisions, the overall risk profile is within limits established by management and compliance of regulatory limits.

An effective credit monitoring system includes, measures to:

- ensure that the bank understands the current financial condition of the borrower or counter party;
- ensure that all credits are in compliance with existing covenants;
- follow the use customers make of approved credit lines;
- ensure that projected cash flows on major credits meet debt servicing requirements;
- ensure that, where applicable, collateral provides adequate coverage relative to the obligor's current condition; and
- identify and classify potential problem credits on a timely basis.

Given below are some key indicators that depict the credit quality of a loan:

a. Financial Position and Business Conditions

The most important aspect about an obligor is its financial health, as it would determine its repayment capacity. Business/industry risk, borrower's position within the industry and external factors such as economic condition, government policies, and regulations should be taken into consideration. The Key financial performance indicators on profitability, equity, leverage and liquidity should be analyzed on a regular basis.

b. Conduct of Accounts

In case of existing obligor the operation in the account would give a fair idea about the quality of credit facility. Banks should monitor the obligor's account activity, repayment history and instances of excesses over credit limits. For trade financing, banks should monitor cases of repeat in extensions of due dates for trust receipts and bills.

c. Loan Covenants

Bank should regularly review the credit in terms of the obligor's ability to adhere to financial covenants stated in the loan agreement, and any breach detected should be addressed promptly.

d. Collateral valuation

Banks need to reassess value of collaterals on periodic basis. The frequency of such valuation depends upon nature of collaterals. Appropriate inspection should be conducted to verify the existence and valuation of the collateral.

Ensuring adequate controls over credit risk⁴

Principle 14: Banks should establish a system of independent, ongoing credit review and the results of such reviews should be communicated directly to the board of directors and senior management.

Principle 15: Banks must ensure that the credit-granting function is being properly managed and that credit exposures are within levels consistent with prudential standards and internal limits. Banks should establish and enforce internal controls and other practices to ensure that exceptions to policies, procedures and limits are reported in a timely manner to the appropriate level of management.

Principle 16: Banks must have a system in place for managing problem credits and various other workout situations.

⁴ Principles for the management of credit risk, BCBS

2.9 Credit Risk Review & Stress Testing

The bank must establish a mechanism of independent, ongoing assessment of credit risk management process. All facilities except those managed on a portfolio basis should be subjected to individual risk review at least once in a year. The results of such review should be properly documented and reported directly to the board. The purpose of such reviews is to assess the credit administration process, the accuracy of credit rating and overall quality of loan portfolio independent of relationship with the obligor. Banks should conduct credit review with updated information on the counter party's financial and business conditions, as well as conduct of account.

An important element of sound credit risk management is analyzing what could potentially go wrong with individual credits and the overall credit portfolio if conditions/environment, in which borrowers operate, change significantly. The results of this analysis should then be factored into the assessment of the adequacy of provisioning and capital of the bank. Such stress analysis can reveal previously undetected areas of potential credit risk exposure that could arise in times of crisis.

Possible scenarios that banks should consider in carrying out stress testing include:

- Significant economic or industry sector downturns;
- Adverse market-risk events; and
- Unfavorable liquidity conditions.

Banks should have industry profiles in respect of all industries where they have significant exposures. Such profiles must be reviewed /updated on a regular basis. Each stress test should be followed by a contingency plan as regards recommended corrective actions. Senior management must regularly review the results of stress tests and contingency plans. The results must serve as an important input into a review of credit risk management framework and setting limits and provisioning levels.

2.10 Managing Problem Credits

Bank should establish a system that helps identify problem loan ahead of time when there may be more options available for remedial measures. Banks should clearly set out how they will manage their problem credits. Once the loan is identified as problem, it should be managed under a dedicated remedial process. Responsibility for such credits may be assigned to the originating business function, a specialized workout section, or a combination of both, depending upon the size and nature of the credit and the reason for its problems. When a bank has significant credit-related problems, it is important to segregate the workout function from the credit origination function. The additional resources, expertise and more concentrated focus of a specialized workout section normally improve collection results. In such case, the Recovery Unit (RU), as a separate unit, shall manage accounts with sustained deterioration (a risk rating of sub Standard or worse).

The RU's primary functions can be to:

- Determine Account Action Plan/Recovery Strategy
- Pursue all options to maximize recovery, including placing customers into legal proceedings or liquidation as appropriate.
- Ensure adequate and timely loan loss provisions are made based on actual and expected losses.
- Regular review of substandard or worse accounts.

A problem loan management process encompasses the following basic elements.

(i) **Negotiation and follow-up**

Proactive effort should be taken in dealing with counter parties to implement remedial plans, by maintaining frequent contact and internal records of follow-up actions. Often rigorous efforts made at an early stage prevent banks from litigations and loan losses.

(ii) **Remedial strategies**

Sometimes appropriate remedial strategies such as restructuring of loan facility, enhancement in credit limits or reduction in interest rates help improve obligor's repayment capacity. However it depends upon business condition, the nature of problems being faced and most importantly borrower's commitment and willingness to repay the loan. If timely action is not taken to address problem loans, opportunities to strengthen or collect on these poor-quality assets may be missed and losses may accumulate to a point where they threaten a bank's solvency. An assessment of workout procedures should consider the organization of this function, including departments and responsible staff, and assess what the performance of the workout units has been by reviewing attempted and successful recoveries (in terms of both number and volume) and the average time for recovery. The work out methods utilized and the involvement of senior management should also be evaluated.

(iii) **Collateral and security document**

Banks have to ascertain the loan recoverable amount by updating the values of available collateral with formal valuation. Security documents should also be reviewed to ensure the completeness as well as enforceability of contracts and collateral/guarantee.

(iv) **Reporting and Reviewing**

Problem credits should be subject to more frequent review and monitoring. The review should update the status and development of the loan accounts and progress of the remedial plans. Progress made on problem loan should be reported to the senior management.

2.11 Management Information System (MIS)

Bank's quality of risk management is based on the accuracy, validity, reliability and timeliness of information available. Bank's credit risk measurement process is highly dependent on the quality of management information systems. The information thus generated enables the board and all levels of management to fulfill their respective oversight roles, including determining the adequate level of capital that the bank should be holding. Banks should have a management information system in place to ensure that exposures approaching risk limits are brought to the attention of senior management. All exposures should be included in a risk limit measurement system. The information system should be able to aggregate credit exposures to individual borrowers and counter parties and report on exceptions to credit risk limits on a meaningful and timely basis.

3. Managing Market Risk

3.1 Overview

Market risk refers to the risk to a bank resulting from movements in market prices, in particular, changes in interest rates, foreign exchange rates, and equity and commodity prices. Market risk is defined as the risk of losses in on and off-balance sheet positions arising from movements in market prices. The risks subject to this requirement are:

- the risks pertaining to *interest rate related instruments* and *equities* in the trading book;
- *foreign exchange risk* and *commodities risk* throughout the bank.

Market risk exposure may be explicit in portfolios of securities/equities and instruments that are actively traded. On the other hand, it may be implicit such as interest rate risk due to mismatch of loans and deposits. Besides, market risk may also arise from activities categorized as off-balance sheet item. Therefore market risk is potential for loss resulting from adverse movement in market risk factors such as interest rates, foreign exchange rates, and equity and commodity prices. The risk arising from these factors have been discussed below.

3.1.1 Foreign Exchange Risk

Foreign exchange risk is the risk of negative effects in the financial result and capital of the bank caused by changes in exchange rates. It is the current or prospective risk to earnings and capital arising from adverse movements in currency exchange rates. It refers to the impact of adverse movement in currency exchange rates on the value of open foreign currency position. As a result, banks may suffer losses due to changes in discounts of the currencies concerned.

The foreign exchange positions arise from the following activities:

- trading in foreign currencies through spot, forward and option transactions as a market maker or position taker, including the unheeded positions arising from customer-driven foreign exchange transactions;
- holding foreign currency positions in the banking book (e.g. in the form of loans, bonds, deposits or cross-border investments); or
- engaging in derivative transactions that are denominated in foreign currency for trading or hedging purposes.

In the foreign exchange business, banks also face the risk of default of the counter parties or settlement risk. Thus, banks may incur replacement cost, which depends upon the currency rate movements. Banks also face another risk called time-zone risk, which arises out of time lags in settlement of one currency in one center and the settlement of another currency in another time zone. The foreign exchange transactions with counter parties situated outside Nepal also involve sovereign or country risk.

3.1.2 Interest Rate Risk

Interest rate risk is the risk of negative effects on the financial result and capital of the bank caused by changes in interest rates. Changes in interest rates affect a bank's earnings by changing its net interest income and the level of other interest-sensitive income and operating expenses. Changes in interest rates also affect the underlying value of the bank's assets, liabilities and off-balance sheet instruments because the present value of future cash flows change when interest rates change. The immediate impact of variation in interest rate is on bank's net interest income, while a long term impact is on bank's net worth since the economic value of bank's assets, liabilities and off-balance sheet exposures are affected. An effective risk management process that maintains interest rate risk within prudent levels is essential for the safety and soundness of banks.

Interest rate risk arises when there is a mismatch between positions, which are subject to interest rate adjustment within a specified period. Interest rate risk is usually assessed from two common perspectives. Earnings perspective, which focuses on the impact of variation in interest rate on accruals or reported earnings, and economic value perspective, which reflects the impact of fluctuation in the interest rates on economic value of a financial institution.

3.1.3 Commodity Risk

A bank that is active in commodities trading should also account for variations in the "convenience yield" between derivatives positions, such as forwards and swaps, and cash positions in the commodity. All significant levels of commodity exposures should be properly managed.

3.1.4 Equity Price Risk

It is risk to earnings or capital that results from adverse changes in the value of equity related portfolios of a bank. Price risk associated with equities could be systematic or unsystematic. The former refers to sensitivity of portfolio's value to changes in overall level of equity prices, while the later is associated with price volatility that is determined by firm specific characteristics.

3.2 Market Risk Management

Each bank should put in place a set of systems and procedures appropriate to its size and complexity of its operations for identifying, measuring monitoring and controlling market risk. The risk appetite in relation to market risk should be assessed keeping in view the capital of the bank as well as exposure to other risks. Once the market risk appetite is determined, the bank should develop a strategy for market risk-taking in order to maximize returns while keeping exposure to market risk at or below the pre-determined level.

3.2.1 Board and Senior Management Oversight

Management of market risk should start from the board and top management level. Effective board and senior management oversight of the bank's overall market risk exposure is a foundation of risk management process. For its part, the board of directors has following responsibilities;

- Define banks overall risk tolerance in relation to market risk.
- Ensure that bank's overall market risk exposure is maintained at prudent levels and consistent with the available capital.
- Ensure that top management as well as individuals responsible for market risk management possesses sound expertise and knowledge to accomplish the risk management function.
- Ensure that the bank implements sound fundamental principles that facilitate the identification, measurement, monitoring and control of market risk.

The board of directors should periodically review the financial results of the bank and, based on these results, determine if changes need to be made to the strategy. While the board gives a strategic direction and goals, it is the responsibility of top management to transform those directions into procedural guidelines and policy document and ensure proper implementation of those policies.

Accordingly, senior management is responsible to:

- Develop and implement procedures that translate business policy and strategic direction set by BOD into operating standards that are well understood by bank's personnel.
- Ensure adherence to the lines of authority and responsibility that board has established for measuring, managing, and reporting market risk.

- Oversee the implementation and maintenance of Management Information System that identify, measure, monitor, and control bank's market risk.
- Establish effective internal controls to monitor and control market risk.

The banks should formulate market risk management policies which are approved by board. The policy should clearly define the lines of authority and the responsibilities of the Board of Directors, senior management and other personnel responsible for managing market risk; set out the risk management structure and scope of activities; and identify risk management issues, such as market risk control limits, delegation of approving authority.

The boards of directors and senior management have ultimate responsibility for understanding the nature and level of market risk taken by the bank. Board oversight may be delegated to an appropriate subcommittee such as the Asset and Liability Committee (ALCO) or Risk Management Committee.

3.2.2 Structure

The organizational structure used to manage market risk varies depending upon the nature size and scope of business activities of the bank. Since the structure varies at a minimum it should take into account following aspect.

- The structure should be in line with the overall strategy and risk policy set by the BOD.
- Those who take risk (front office) must know the organization's risk profile, products that they are offering, and the limits assigned to them.
- The risk management function should be independent, reporting directly to senior management or BOD.
- Establishment of strong MIS for controlling, monitoring and reporting market risk.

Besides the role of Board as discussed earlier a typical organization set up for Market Risk Management should include: -

- The Risk Management Committee
- The Asset-Liability Management Committee (ALCO)
- The Middle Office.

3.2.2.1 Risk Management Committee

It is generally a board level subcommittee constituted to supervise overall risk management functions of the bank. The structure of the committee may vary in banks depending upon the size and volume of the business. Generally it includes head of Credit, Market and operational risk Management divisions. It will decide the policy and strategy for integrated risk management containing various risk exposures of the bank including the market risk. The responsibilities of Risk Management Committee with regard to market risk management aspects include;

- Formulate policies and guidelines for identification, measurement, monitoring and control for all major risk categories.
- Ensuring the bank has clear, comprehensive and well-documented policies and procedural guidelines relating to risk management and the relevant staff fully understands those policies.
- Ensuring that resources allocated for risk management are adequate given the size nature and volume of the business and the personnel involved in measuring, monitoring and controlling risk possess sufficient knowledge and expertise.
- Reviewing and approving market risk limits, including triggers or stop losses for traded and accrual portfolios.
- Ensuring robustness of financial models and the effectiveness of all systems used to calculate market risk.
- Ensuring that the bank has a strong management information system relating to risk reporting.

3.2.2.2 Asset-Liability Committee

ALCO is a senior management level committee responsible for supervision/management of Market Risk (mainly interest rate and liquidity risks). The committee generally comprises of senior managers from treasury, Chief Financial Officer, business heads generating and using the funds of the bank, credit, and individuals from the departments having direct link with interest rate and liquidity risks. The CEO or any senior person nominated by CEO is the head of the committee. The size as well as composition of ALCO depends on the size of each bank, business mix and organizational complexity. To be effective ALCO should have members from each area of the bank that significantly influences liquidity risk. Major responsibilities of the committee include:

- Monitoring the structure /composition of bank's assets and liabilities Identifying balance sheet management issues like balance sheet gaps, interest rate gap/profiles etc. that are leading to under-performance.
- Developing maturity profile and mix of incremental assets and liabilities.
- Determining interest rates the bank and deciding on the future business strategy.
- Reviewing and documenting bank's funding policy.
- Deciding the transfer pricing policy of the bank.
- Evaluating market risk involved in launching of new products.
- Reviewing deposit-pricing strategy for the local market.
- Receiving and reviewing reports on liquidity risk, market risk and capital management
- Reviewing liquidity contingency plan for the bank.

ALCO should ensure that risk management is not limited to collection of data only. Rather, it will ensure that detailed analysis of assets and liabilities is carried out so as to assess the overall balance sheet structure and risk profile of the bank. The ALCO should cover the entire balance sheet/business of the bank while carrying out the periodic analysis.

3.2.2.3 Middle Office

The risk management functions relating to treasury operations are mainly performed by middle office. Besides the existence of front office and back office, the concept of middle office has recently been introduced so as to monitor measure and analyze risks inherent in treasury operations of banks independently. The unit also prepares reports for the information of senior management as well as bank's ALCO. Basically the middle office performs risk review function of day-to-day activities. Being a highly specialized function, it should be staffed by people who have relevant expertise and knowledge. The methodology of analysis and reporting may vary from bank to bank depending on their degree of sophistication and exposure to market risks. These same criteria will govern the reporting requirements demanded for the Middle Office, which may vary from simple gap analysis to computerized VAR modeling.

Middle Office staff may prepare forecasts (simulations) showing the effects of various possible changes in market conditions related to risk exposures. Banks using VAR or modeling methodologies should ensure that its ALCO is aware of and understand the nature of the output, how it is derived, assumptions and variables used in generating the outcome and any shortcomings of the methodology employed.

Segregation of duties should be evident in the middle office, which must report to ALCO independently of the treasury function. In respect of banks without a formal Middle Office, it should be ensured that risk control and analysis should rest with a department with clear reporting independence from Treasury or risk taking units, until normal Middle Office framework is established.

3.2.3 Risk Measurement

Accurate and timely measurement of market risk is necessary for proper risk management and control. Each bank should evolve measurement process, which is capable of identifying, and

quantifying market risk factors that affect the value of traded and non-traded portfolios, income stream and other business activities using all available data. There is a wide range of risk measurement techniques ranging from static measurement techniques (Gap analysis) to highly sophisticated dynamic modeling (Monte Carlo Simulation), the banks may employ any technique depending upon the nature size and complexity of the business.

Banks may adopt multiple risk measurement methodologies to capture market risk in various business activities; however management should have an integrated view of overall market risk across products and business lines. The measurement system ideally should:

- Assess all material risk factors associated with a bank's assets, liabilities, and Off Balance sheet positions.
- Utilize generally accepted financial concepts and risk measurement techniques.
- Have well documented assumptions and parameters. It is important that the assumptions underlying the system are clearly understood by risk managers and top management.

Regardless of the measurement system, the usefulness of each technique depends on the validity of the underlying assumptions and accuracy of the basic methodologies used to model risk exposure. The integrity and timeliness of data relating to current positions are key elements of risk measurement system.

3.2.4 Risk Monitoring

Risk monitoring processes should be established to evaluate the performance of bank's risk strategies/policies and procedures. A separate unit performs the function of risk monitoring or it can be a part of banks internal audit depending on the size and complexity of business. It is important that the monitoring function should be independent of units taking risk, which reports directly to the risk management committee.

Banks should have an information system that is accurate, informative and timely to ensure dissemination of information to management to support compliance with board policy. Reporting of risk measures should be regular and should clearly compare current exposures to policy limits. Further past forecast or risk estimates should be compared with actual results to identify any shortcomings in risk measurement techniques. The board on regular basis should review these reports. While the types of reports for board and senior management could vary depending upon overall market risk profile of the bank, at a minimum following reports should be prepared.

- Summaries of bank's aggregate market risk exposure
- Reports demonstrating bank's compliance with policies and limits
- Summaries of finding of risk reviews of market risk policies, procedures and the adequacy of risk measurement system including any findings of internal/external auditors or consultants

3.2.5 Risk Control

Banks should have adequate internal controls to ensure the integrity of their market risk management process. These internal controls should be an integral part of the institution's overall system of internal control. Bank's internal control structure ensures the effectiveness of process relating to market risk management. Staff responsible for risk monitoring and control procedures should be independent of the functions they review. Key elements of internal control process include internal audit and review and an effective risk limit structure.

An effective system of internal control for market risk should ensure that:

- there is a strong control environment;
- there is in place an adequate process for identifying and evaluating risk;
- there are adequate control activities such as policies, procedures and methodologies; and
- there is an effective management information system.

Management should ensure that sufficient safeguards exist to minimize the potential that individuals initiating risk-taking positions may inappropriately influence key control functions of the risk management process such as the development and enforcement of policies and procedures, the reporting of risks to senior management, and the conduct of back-office functions.

3.2.6 Limits

Banks need to set limits, including operational limits, for the different trading desks and/or traders which may trade various products, instruments in different markets. Limits need to be clearly understood, and any changes clearly communicated to all relevant/related parties. Risk Taking Units must have procedures that monitor activity to ensure that they remain within approved limits at all times. Limit breaches or exceptions should be made known to appropriate senior management without delay. There should be explicit policy as to how such breaches are to be reported to top management and the actions to be taken.

3.2.7 Audit

Market risk measurement process should be reviewed and validated on a regular basis. This review function can be performed by a number of units in the organization including internal audit department. The audit or review should take into account.

- The appropriateness of bank's risk measurement system given the nature, scope and complexity of bank's activities
- The accuracy or integrity of data being used in risk models.
- The reasonableness of scenarios and assumptions
- The validity of risk measurement calculations.

3.2.8 Stress testing

Bank's risk measurement system should support a meaningful evaluation of the effect of stressful market conditions on the bank. Stress testing should be designed to provide information on the kinds of conditions under which strategies or positions would be most vulnerable, and thus may be tailored to the risk characteristics of the bank. Possible stress scenarios might include:

- abrupt changes in the general level of market rates;
- changes in the relationships among key market rates (i.e. basis risk);
- changes in the slope and the shape of the yield curve (i.e. yield curve risk);
- changes in the liquidity of key financial markets or changes in the volatility of market rates; or
- conditions under which key business assumptions and parameters break down.

In conducting stress tests, special consideration should be given to instruments or markets where concentrations exist as such positions may be more difficult to liquidate or offset in stressful situations. Banks should consider "worst case" scenarios in addition to more probable events. Management and the board of directors should periodically review both the design and the results of such stress tests, and ensure that appropriate contingency plans are in place.

4. Managing Liquidity Risk

Liquidity risk is the potential for loss to a bank arising from either its inability to meet its obligations or to fund increases in assets as they fall due without incurring unacceptable cost or losses.

4.1 Overview

Liquidity is the ability of an institution to transform its assets into cash or its equivalent in a timely manner at a reasonable price to meet its commitments as they fall due. Liquidity risk is considered a major risk for banks. It arises when the cushion provided by the liquid assets are not sufficient enough to meet its obligation. In such a situation banks often meet their liquidity requirements from market. Funding through market depends upon liquidity in the market and borrowing bank's liquidity.

Liquidity risk can best be described as the risk of a funding crisis. Plan for growth and unexpected expansion of credit can be the main sources of such funding crisis. Banks with large off-balance sheet exposures or the banks, which rely heavily on large corporate deposit, have relatively high level of liquidity risk. Further the banks experiencing a rapid growth in assets should have major concern for liquidity.

Fundamental principles for the management and supervision of liquidity risk*

Principle 1: A bank is responsible for the sound management of liquidity risk. A bank should establish a robust liquidity risk management framework that ensures it maintains sufficient liquidity, including a cushion of unencumbered, high quality liquid assets, to withstand a range of stress events, including those involving the loss or impairment of both unsecured and secured funding sources. Supervisors should assess the adequacy of both a bank's liquidity risk management framework and its liquidity position and should take prompt action if a bank is deficient in either area in order to protect depositors and to limit potential damage to the financial system.

Governance of liquidity risk management

Principle 2: A bank should clearly articulate a liquidity risk tolerance that is appropriate for its business strategy and its role in the financial system.

Principle 3: Senior management should develop a strategy, policies and practices to manage liquidity risk in accordance with the risk tolerance and to ensure that the bank maintains sufficient liquidity. Senior management should continuously review information on the bank's liquidity developments and report to the board of directors on a regular basis. A bank's board of directors should review and approve the strategy; policies and practices related to the management of liquidity at least annually and ensure that senior management manages liquidity risk effectively.

Principle 4: A bank should incorporate liquidity costs, benefits and risks in the internal pricing, performance measurement and new product approval process for all significant business activities (both on and off-balance sheet), thereby aligning the risk-taking incentives of individual business lines with the liquidity risk exposures their activities create for the bank as a whole.

Liquidity risk should not be seen in isolation, because financial risks are not mutually exclusive and liquidity risk often triggered by consequence of these other financial risks such as credit risk, market risk etc. For instance, a bank increasing its credit risk through asset concentration etc may be increasing its liquidity risk as well. Similarly a large loan default or changes in interest rate can adversely impact a bank's liquidity position. Further if management misjudges the impact on liquidity of entering into a new business or product line, the bank's strategic risk would increase.

* Principles for Sound Liquidity Risk Management and Supervision, BCBS

4.2 Liquidity Risk Indicators

Given below are some early warning indicators that have potential to ignite liquidity problem for a bank. Bank management needs to monitor carefully such indicators and exercise careful scrutiny wherever it deems appropriate. Examples of such internal indicators are:

- A negative trend or significantly increased risk in any area or product line.
- Concentrations in either assets or liabilities.
- Deterioration in quality of credit portfolio.
- A decline in earnings performance or projections.
- Rapid asset growth funded by volatile large deposit.
- A large size of off-balance sheet exposure.
- Deteriorating third party evaluation (negative rating) about the bank and negative publicity.
- Unwarranted competitive pricing that potentially stresses the banks.

4.3 Liquidity Risk Management

The formality and sophistication of risk management processes established to manage liquidity risk should reflect the nature, size and complexity of a bank's activities. Sound liquidity risk management employed in measuring, monitoring and controlling liquidity risk is critical to the viability of any bank. Banks should have a thorough understanding of the factors that could give rise to liquidity risk and put in place mitigating controls.

A liquidity risk management involves not only analyzing banks on and off-balance sheet positions to forecast future cash flows but also how the funding requirement would be met. The later involves identifying the funding market the bank has access, understanding the nature of those markets, evaluating banks current and future use of the market and monitor signs of confidence erosion.

Bank's Liquidity Risk Management Procedures should be comprehensive and holistic. At the minimum, they should cover formulation of overall liquidity strategy, risk identification, measurement, and monitoring and control process.

4.4 Board and Senior Management Oversight

The board has to ensure that the bank has necessary liquidity risk management framework and bank is capable of confronting uneven liquidity scenarios. The prerequisites of an effective liquidity risk management include an informed board, capable management, and staff having relevant expertise and efficient systems and procedures. It is primarily the duty of board of directors to understand the liquidity risk profile of the bank and the tools used to manage liquidity risk. Generally, in this respect the responsibilities of the Board include:

- Providing guidance on the level of tolerance for liquidity risk;
- Establishing an appropriate structure for the management of liquidity risk and identifying lines of authority and responsibility for managing liquidity risk exposure;
- Appointing senior managers who have the ability to manage liquidity risk and delegate to them the required authority to accomplish the job;
- Continuously monitoring the bank's performance and overall liquidity risk profile through reviewing various reports;
- Ensuring that senior management takes necessary steps to identify, measure, monitor and control liquidity risk; and
- Reviewing adequacy of the contingency plans of the banks.

Senior management is responsible for the implementation of sound policies and procedures keeping in view the strategic direction and risk appetite specified by board. To effectively oversee the daily and long-term management of liquidity risk senior managers should:

- Develop and implement procedures and practices that translate the board's goals, objectives, and risk tolerances into operating standards that are well understood by bank personnel and consistent with the board's intent.
- Adhere to the lines of authority and responsibility that the board has established for managing liquidity risk.
- Oversee the implementation and maintenance of management information and other systems that identify, measure, monitor, and control the bank's liquidity risk.
- Establish effective internal controls over the liquidity risk management process.

4.5 Liquidity Risk Strategy and Policies

Banks should formulate and implement appropriate liquidity risk management policies approved by the Board of Directors. The liquidity strategy must be documented in a liquidity policy, and communicated throughout the bank. The strategy should be evaluated periodically to ensure that it remains valid. Specific details of the policy may vary from bank to bank according to the nature, size and complexity of their business. At minimum it should cover general liquidity strategy (short- and long-term), specific goals and objectives in relation to liquidity risk management, process for strategy formulation and the level within which it is approved. The strategy should provide continuity in approach and should be reviewed and amended periodically as deemed necessary; it should be viable in the long term and through various economic cycles. The liquidity risk strategy defined by board should enunciate specific policies on particular aspects of liquidity risk management, such as:

4.5.1 Composition of Assets and Liabilities.

The strategy should outline the mix of assets and liabilities to maintain liquidity. Liquidity risk management and asset/liability management should be integrated to avoid steep costs associated with having to rapidly reconfigure the asset liability profile from maximum profitability to increased liquidity.

4.5.2 Diversification and Stability of Liabilities.

The strategy should ensure that the bank have a diversified sources of funding day-to-day liquidity requirements. A bank would be more resilient to tight market liquidity conditions if its liabilities were derived from more stable sources. To comprehensively analyze the stability of liabilities/funding sources the bank need to identify:

- Liabilities that would stay with the bank under any circumstances;
- Liabilities that run-off gradually if problems arise; and
- That run-off immediately at the first sign of problems.

4.5.3 Access to Inter-bank Market.

The inter-bank market is one of the sources of liquidity. However, the strategies should take into account the fact that in crisis situations access to inter bank market could be difficult as well as costly.

4.5.4 Contingency Funding Plan

Designing contingency funding plan to enable banks meet their funding needs under stress scenarios. Such a plan, commonly known as Contingency Funding Plan (CFP), is a set of policies and procedures that serve as a blue print for a bank to meet its funding needs in managing liquidity risk in a timely manner and at a reasonable cost. The CFP should project the future cash flows and funding sources of a bank under market scenarios including aggressive asset growth or rapid liability erosion.

4.6 Liquidity Policy

The banks should formulate liquidity policies, which are recommended by senior management/ALCO and approved by the Board of Directors. While specific details vary

across banks according to the nature of their business, the key elements of any liquidity policy include:

- General liquidity strategy (short- and long-term), specific goals and objectives in relation to liquidity risk management, process for strategy formulation and the level within the bank it is approved;
- Roles and responsibilities of individuals performing liquidity risk management functions, including structural balance sheet management, pricing, marketing, contingency planning, management reporting, lines of authority and responsibility for liquidity decisions;
- Liquidity risk management structure for monitoring, reporting and reviewing liquidity;
- Liquidity risk management tools for identifying, measuring, monitoring and controlling liquidity risk (including the types of liquidity limits and ratios in place and rationale for establishing limits and ratios);
- Contingency plan for handling liquidity crises.

The liquidity policy should be communicated down the line throughout in the organization. There should be periodic review in a regular basis and when there are any material changes in the bank's current and prospective liquidity risk profile. Such changes could arise from internal circumstances (e.g. changes in business focus) or external circumstances (e.g. changes in economic conditions). Reviews provide the opportunity to update and amend the bank's liquidity policies in light of the bank's liquidity management experience and development of its business. Banks should establish appropriate procedures and processes to implement their liquidity policies. The procedural manual should explicitly outline necessary operational steps and processes to execute the relevant liquidity risk controls. The manual should be periodically reviewed and updated to take into account new activities, changes in risk management approaches and systems.

4.7 Asset Liability Committee

Bank should develop appropriate structure for managing overall liquidity of the bank. Generally the function of liquidity risk management is performed by an ALCO. Ideally ALCO comprises of senior management from each key area of the bank that assumes and manages liquidity risk. It is important that these members have clear authority over the units responsible for executing liquidity-related transactions so that ALCO directives reach these line units unimpeded. The ALCO should meet on a regular basis. Generally responsibilities of ALCO include developing and maintaining appropriate risk management policies and procedures, MIS reporting, limits, and oversight programs. ALCO usually delegates day-to-day operating responsibilities to the bank's treasury department. However, ALCO should establish specific procedures and limits governing treasury operations before making such delegation. To ensure that ALCO can control the liquidity risk arising from new products and future business activities, the committee members should interact regularly with the bank's risk managers and strategic planners.

4.8 Liquidity Risk Management Process

An effective liquidity risk management includes systems to identify, measure, monitor and control its liquidity exposures. Management should be able to accurately identify and quantify the primary sources of a bank's liquidity risk in a timely manner. To properly identify the sources, management should understand both existing as well as future risk that the bank can be exposed to. Management should always be alert for new sources of liquidity risk at both the transaction and portfolio levels. Key elements of an effective risk management process include an efficient MIS, systems to measure, monitor and control existing as well as future liquidity risks and reporting them to senior management.

4.9 Management Information System

An effective management information system (MIS) is essential for sound liquidity management decisions. Bank should be able to monitor its day-to-day liquidity position and

risk control. Liquidity MIS should be developed keeping a crisis monitoring in mind. Accuracy and timeliness of information are important elements for monitoring liquidity. Since bank liquidity is primarily affected by large, aggregate principal cash flows, detailed information on every transaction may not improve analysis.

An appropriate mechanism for monitoring activities helps in proper identification of liquidity risks through early warning indicators, which have the potentials of igniting the problem. Management should develop systems that can capture significant information. The content and format of reports depend on a bank's liquidity management practices, risks, and other characteristics. Management should regularly consider how best to summarize complex or detailed issues for senior management or the board. Besides several types of information important for managing day-to-day activities and for understanding the bank's inherent liquidity risk profile includes:

- Asset quality and its trends.
- Earnings projections.
- The bank's general reputation in the market and the condition of the market itself.
- The type and composition of the overall balance sheet structure.
- The type of new deposits being obtained, as well as its source, maturity, and price.

4.10 Liquidity Risk Measurement and Monitoring

An effective measurement system is essential for adequate management of liquidity risk. Banks should institute systems that enable them to capture liquidity risk ahead of time so that appropriate remedial measures could be prompted to avoid any significant losses. An effective measurement and monitoring system is essential for adequate management of liquidity risk.

Banks vary in relation to their liquidity risk depending upon their size and complexity of business. Therefore they require liquidity risk measurement techniques accordingly. For instance banks having large networks may have access to low cost stable deposit, while small banks have significant reliance on large size bank deposits.

Liquidity risk measurement and monitoring system not only helps in managing liquidity in times of crisis but also optimize return through efficient utilization of available funds. Abundant liquidity does not obviate the need for a mechanism to measure and monitor liquidity profile of the bank.

Fundamental principles for the management and supervision of liquidity risk**Measurement and management of liquidity risk**

Principle 5: A bank should have a sound process for identifying, measuring, monitoring and controlling liquidity risk. This process should include a robust framework for comprehensively projecting cash flows arising from assets, liabilities and off-balance sheet items over an appropriate set of time horizons.

Principle 6: A bank should actively monitor and control liquidity risk exposures and funding needs within and across legal entities, business lines and currencies, taking into account legal, regulatory and operational limitations to the transferability of liquidity.

Principle 7: A bank should establish a funding strategy that provides effective diversification in the sources and tenor of funding. It should maintain an ongoing presence in its chosen funding markets and strong relationships with funds providers

Principle 8: A bank should actively manage its intraday liquidity positions and risks to meet payment and settlement obligations on a timely basis under both normal and stressed conditions and thus contribute to the smooth functioning of payment and settlement systems.

Principle 9: A bank should actively manage its collateral positions, differentiating between encumbered and unencumbered assets. A bank should monitor the legal entity and physical location where collateral is held and how it may be mobilized in a timely manner.

Principle 10: A bank should conduct stress tests on a regular basis for a variety of short-term and protracted institution-specific and market-wide stress scenarios (individually and in combination) to identify sources of potential liquidity strain and to ensure that current exposures remain in accordance with a bank's established liquidity risk tolerance. A bank should use stress test outcomes to adjust its liquidity risk management strategies, policies, and positions and to develop effective contingency plans.

Principle 11: A bank should have a formal contingency funding plan (CFP) that clearly sets out the strategies for addressing liquidity shortfalls in emergency situations. A CFP should outline policies to manage a range of stress environments, establish clear lines of responsibility, include clear invocation and escalation procedures and be regularly tested and updated to ensure that it is operationally robust.

Principle 12: A bank should maintain a cushion of unencumbered, high quality liquid assets to be held as insurance against a range of liquidity stress scenarios, including those that involve the loss or impairment of unsecured and typically available secured funding sources. There should be no legal, regulatory or operational impediment to using these assets to obtain funding.

Public disclosure

Principle 13: A bank should publicly disclose information on a regular basis that enables market participants to make informed judgments about the soundness of its liquidity risk management framework and liquidity position.

Presented below are some commonly used liquidity measurement and monitoring techniques adopted by the banks;

4.10.1 Contingency Funding Plans

The major risk a bank runs is liquidity risk. Under any circumstances a bank has to honor its commitments. As a result, it has to make sure that enough liquidity is available to meet fund requirements in situations like liquidity crisis in the market, policy changes by central bank, a name problem of the bank etc. So, a bank's balance sheet should have enough liquid assets for meeting contingencies. A liquidity contingency plan should be in place to ensure a bank is prepared to combat any crisis situation.

What is Contingency Funding Plan?

Contingency Funding Plan (CFP) is a set of policies and procedures that serves as a blue print for a bank to meet its funding needs in a timely manner at a reasonable cost. A CFP is a projection of future cash flows and funding sources of a bank under market scenarios including aggressive asset growth or rapid liability erosion. To be effective it is important that a CFP should represent management's best estimate of balance sheet changes that may result from a liquidity or credit event. A CFP can provide a useful framework for managing liquidity risk both short term and in the long term. Further it helps ensure that a bank can prudently and efficiently manage routine

and extraordinary fluctuations in liquidity. The scope of the CFP is discussed in more detail below.

Use of CFP for Routine Liquidity Management

For day-to-day liquidity risk management integration of liquidity scenario will ensure that the bank is best prepared to respond to an unexpected problem. In this sense, a CFP is an extension of ongoing liquidity management and formalizes the objectives of liquidity management by ensuring:

- A reasonable amount of liquid assets are maintained.
- Measurement and projection of funding requirements during various scenarios.
- Management of access to funding sources.

Use of CFP for Emergency and Distress Environments

Not necessarily a liquidity crisis shows up gradually. In case of a sudden liquidity stress it is important for a bank to be seen to meet its obligations in an organized, candid, and efficient way. Since such a situation requires a spontaneous action, banks that already have plans to deal with such situation could address the liquidity problem more efficiently and effectively. A CFP can help ensure that bank management and key staffs are ready to respond to such situations. Bank liquidity is very sensitive to negative trends in credit, capital, or reputation. Deterioration in the company's financial condition (reflected in items such as asset quality indicators, earnings, or capital), management composition, or other relevant issues may result in reduced access to funding.

Scope of CFP

The sophistication of a CFP depends upon the size, nature, and complexity of business, risk exposure, and organizational structure. To begin, the CFP should anticipate all of the bank's funding and liquidity needs by:

- Analyzing and making quantitative projections of all significant on- and off balance- sheet funds flows and their related effects.
- Matching potential cash flow sources and uses of funds.
- Establishing indicators that alert management to a predetermined level of potential risks.

The CFP make projection on the bank's funding position during both temporary and long-term liquidity changes, including those caused by liability erosion. The CFP should explicitly identify, quantify, and rank all sources of funding by preference, such as:

- Reducing assets.
- Modification or increasing liability structure.
- Using other alternatives for controlling balance sheet changes.

The CFP includes asset side as well as liability side strategies to deal with liquidity crises. The asset side strategy may include; whether to liquidate surplus money market assets, when to sell liquid or longer-term assets etc. While liability side strategies specify policies such as pricing policy for funding, the dealer who could assist at the time of liquidity crisis, policy for early redemption request by retail customers, use of NRB discount window etc. A CFP also chalks out roles and responsibilities of various individuals at the time of liquidity crises and the management information system between management, ALCO, traders, and others.

4.10.2 Maturity Ladder

Banks may utilize flow measures to determine their cash position. A maturity ladder analysis estimates a bank's inflows and outflows and thus net deficit or surplus (GAP) over a time horizon. A maturity ladder is a useful device to compare cash inflows and outflows both on a day-to-day basis and over a series of specified time periods. A simple example of maturity ladder is presented in the NRB Ni.Fa.No.5.1 under NRB Directives No. 5. The number of time frames in such maturity ladder is of significant importance and up to some extent depends upon nature of bank's liability or sources of funds. Banks need to focus on the maturity of its assets and liabilities in different tenors. Mismatch is accompanied by liquidity risk and excessive

longer tenor lending against shorter-term borrowing can put a bank's balance sheet in a very critical and risky position. To address this risk and to make sure a bank does not expose itself in excessive mismatch, a bucket-wise (e.g. next day, 2-7 days, 7 days-1 month, 1-3 months, 3-6 months, 6 months-1 year, 1-2 year, 2-3 years, 3-4 years, 4-5 years, over 5 year) maturity profile of the assets and liabilities is prepared to understand mismatch in every bucket.

In the short term, bank's flow of funds could be estimated more accurately and also such estimates are of more importance as these provide an indication of actions to be taken immediately. Further, such an analysis for distant periods will maximize the opportunity for the bank to manage the GAP well in advance before it crystallizes. Consequently banks should use short time frames to measure near term exposures and longer time frames thereafter.

Banks need to calculate daily GAP for next one or two weeks, monthly gap for next six months or a year and quarterly thereafter. Preparing an estimate of cash flows, following aspect needs to be considered;

- The funding requirement arising out of off- Balance sheet commitments also need to be accounted for.
- Many cash flows associated with various products are influenced by interest rates or customer behavior. Banks need to take into account behavioral aspects along with contractual maturity. In this respect past experiences could give important guidance to make any assumption.
- Some cash flows may be seasonal or cyclical.
- Management should also consider increases or decreases in liquidity that typically occur during various phases of an economic cycle.

Banks should have liquidity sufficient to meet fluctuations in loans and deposits. As a safety measure banks should maintain a margin of excess liquidity. To ensure that this level of liquidity is maintained, management should estimate liquidity needs in a variety of scenarios.

4.11 Liquidity Ratios and Limits

Banks may use a variety of ratios to quantify liquidity. These ratios can also be used to create limits for liquidity management. Such ratios would be meaningless unless used regularly and interpreted taking into account qualitative factors. Ratios should always be used in conjunction with more qualitative information about borrowing capacity, such as the likelihood of increased requests for early withdrawals, decreases in credit lines, decreases in transaction size, or shortening of term funds available to the bank. To the extent that any asset-liability management decisions are based on financial ratios, a bank's asset-liability managers should understand how a ratio is constructed, the range of alternative information that can be placed in the numerator or denominator, and the scope of conclusions that can be drawn from ratios. Because ratio components as calculated by banks are sometimes inconsistent, ratio-based comparisons of banks or even comparisons of periods at a single bank can be misleading.

One of the most serious sources of liquidity risk comes from a bank's failure to "roll over" a maturing liability. Cash flow ratios and limits attempt to measure and control the volume of liabilities maturing during a specified period of time. Liability concentration ratios and limits help to prevent a bank from relying on too few providers or funding sources. Limits are usually expressed as either a percentage of liquid assets or an absolute amount. Sometimes they are more indirectly expressed as a percentage of deposits, purchased funds, or total liabilities. For example: liquid assets to total deposit ratio, credit to deposit ratio, total loans/total deposits, short term liabilities to liquid assets ratio, total loans/total equity capital, borrowed funds/total assets etc are examples of common ratios used by banks to monitor current and potential funding levels.

In addition to the statutory limits of liquid assets requirement and cash reserve requirement, the board and senior management should establish limits on the nature and amount of liquidity risk they are willing to assume. The limits should be periodically reviewed and adjusted when conditions or risk tolerances change. When limiting risk exposure, senior management should consider the nature of the bank's strategies and activities, its past performance, the level of earnings, capital available to absorb potential losses, and the board's tolerance for risk. Balance sheet complexity will determine how much and what types of limits a bank should establish over daily and long-term horizons. Liquidity ratios and limit can be early indicators of excessive risk or inadequate liquidity risk management.

4.12 Foreign Currency Liquidity Management

Each institution should have a measurement, monitoring and control system for its liquidity positions in the major currencies in which it is active. In addition to assessing its aggregate foreign currency liquidity needs and the acceptable mismatch in combination with its domestic currency commitments, an institution should also undertake separate analysis of its strategy for each currency. Merely meeting the NRB Foreign Currency Exposure limits is not enough to manage the institution's exposure to foreign currency risk. Banks should develop their own strong internal risk management process based on the size, nature and complexities of their business exposure.

4.13 Internal Controls

Banks should institute review process that should ensure the compliance of various procedures and limits prescribed by senior management. The structure (unit) for review should be independent of the funding areas. Reviewers should verify the level of liquidity risk and management's compliance with limits and operating procedures. Any exception to that should be reported immediately to the board for necessary actions.

5. Managing Operational Risk

Operational risk is the risk of loss resulting from inadequate or failed internal processes, people and system or from external events.

5.1 Overview

Rapid development in the pace of financial innovation is making the activities of bank and their risk profiles (i.e. the level of risk across an institution's activities and/or risk categories) more complex. A clear understanding of operational risk is critical to the effective management and control of this risk category.

Operational risk is the risk of negative effects on the financial result and capital of the bank caused by omissions in the work of employees, inadequate internal procedures and processes, inadequate management of information and other systems, and unforeseeable external events. Operational risk event types having the potential to result in substantial losses include:

- Internal fraud; for example, intentional misreporting of positions, employee theft, and insider trading on an employee's own account.
- External fraud; for example, robbery, forgery, cheque kiting, and damage from computer hacking.
- Employment practices and workplace safety; for example, workers compensation claims, violation of employee health and safety rules, organized labor activities, discrimination claims, and general liability.
- Clients, products and business practices; for example, fiduciary breaches, misuse of confidential customer information, improper trading activities on the bank's account, money laundering, and sale of unauthorized products.
- Damage to physical assets; for example, terrorism, vandalism, earthquakes, fires and floods.
- Business disruption and system failures; for example, hardware and software failures, telecommunication problems, and utility outages.
- Execution, delivery and process management; for example; data entry errors, collateral management failures, incomplete legal documentation, unapproved access given to client accounts, non-client counter party undue performance, and vendor disputes.

Operational risk is associated with the problems of accurately processing, settling, and taking or making delivery on trades in exchange for cash. It also arises in record keeping, processing system failures and compliance with various regulations. It is associated with human error, system failures and inadequate procedures and controls. It is the risk of loss arising from the potential that inadequate information system; technology failures, breaches in internal controls, fraud, unforeseen catastrophes, or other operational problems may result in unexpected losses or reputation problems. Operational risk exists in all products and business activities.

Operational Risk Management Principles

There are some fundamental principles that all banks, regardless of their size or complexity, should address in their approach to operational risk management.

- Ultimate accountability for operational risk management rests on the board, and the level of risk that the organization accepts, together with the basis for managing those risks, is driven from the top down by those charged with overall responsibility for running the business.
- The board and executive management should ensure that there is an effective, integrated operational risk management framework. This should incorporate a clearly defined organizational structure, with defined roles and responsibilities for all aspects of operational risk management/monitoring and appropriate tools that support the identification, assessment, control and reporting of key risks.
- Board and senior management should recognize, understand and have defined all categories of operational risk applicable to the bank. Furthermore, they should ensure that their operational risk management framework adequately covers all of these categories of operational risk, including those that do not readily lend themselves to measurement.
- Operational risk policies and procedures that clearly define the way in which all aspects of operational risk are managed should be documented and communicated. These operational risk management policies and procedures should be aligned to the overall business strategy and should support the continuous improvement of risk management.
- All business and support functions should be an integral part of the overall operational risk management framework in order to enable the bank to manage effectively the key operational risks facing the bank.
- Line management should establish processes for the identification, assessment, mitigation, monitoring and reporting of operational risks that are appropriate to the needs of the bank, easy to implement, operate consistently over time and support an organizational view of operational risks and material failures.

The board should provide senior management with clear guidance and direction regarding the principles underlying the framework and approve the corresponding policies developed by senior management.

5.2 Board and senior management's oversight

The ultimate responsibility of operational risk management rests with the board of directors. The Board of Directors should be aware of the major aspects of the bank's operational risks. The board should approve and review periodically the bank's operational risk management framework. Bank should establish an organizational culture that places a high priority on effective operational risk management and adherence to sound operating controls. The board should establish tolerance level and set strategic direction in relation to operational risk. Such a strategy should be based on the requirements and obligation to the stakeholders of the bank.

Senior management should transform the strategic direction given by the board through operational risk management policy. Board delegates the management of this process and execution of such process must be ensured. The policy should include:

- The strategy formulated by the board.
- The systems and procedures to institute effective operational risk management framework.
- The structure of operational risk management function and the roles and responsibilities of individuals involved.

Board of the bank should approve the policy. The policy establishes a process to ensure that any new or changed activity will be evaluated for operational risk prior to come into effect. The management should ensure that it is communicated and understood throughout the bank. The management also needs to place proper monitoring and control processes in order to have effective implementation of the policy. The policy should be regularly reviewed and updated, to ensure it continue to reflect the environment within which the bank operates.

5.3 Operational Risk Function

A separate independent function should be established for effective management of operational risks in the bank. The structure (unit) performs the jobs related to identify, measure, monitor and report operational risks as a whole and ensure that the management of operational risk in the bank is carried out as per strategy and policy. The function helps to establish policies and standards and coordinate various risk management activities. Besides, it should also provide guidance relating to various risk management tools, monitors and handle incidents and prepare reports for management and BOD.

5.4 Operational Risk Management

Management should evaluate the adequacy of tools and techniques both in terms of its efficiency and effectiveness. Steps should be taken to design and implement cost- effective solutions to reduce the operational risk to an acceptable level. The extent and nature of the controls adopted by the banks can be different, very often such measures encompass areas such as Code of Conduct, Delegation of authority, Segregation of duties, audit coverage, compliance, succession planning, mandatory leave, staff compensation, recruitment and training, dealing with customers, complaint handling, record keeping, MIS, physical controls, etc

5.4.1 Risk Assessment and Quantification

A number of techniques are evolving but still operational risk remains the most difficult risk category to quantify. Banks should identify and assess the operational risk inherent in all material products, activities, processes and systems and its vulnerability to these risks. Banks should also ensure that before new products, activities, processes and systems are introduced or undertaken, the operational risk inherent in them is subject to adequate assessment procedures. It would not be feasible at the moment to expect banks to develop such measures. However the banks could systematically track and record frequency, severity and other information on individual loss events. Such a data could provide a meaningful information for assessing the bank's exposure to operational risk and developing a policy to mitigate / control that risk.

5.4.2 Risk Monitoring and Reporting

Banks should develop a regular reporting of the information to senior management and the board of directors that supports the proactive management of operational risk. Senior Management should establish a program to:

- Monitor assessment of the exposure to all types of operational risk faced by the bank;
- Assess the quality and appropriateness of mitigating actions, including the extent to which identifiable risks can be transferred outside the bank; and
- Ensure that adequate controls and systems are in place to identify and address problems before they become major concerns.

Regular monitoring activities can offer the advantage of timely detecting and correcting deficiencies in the policies, processes and procedures for managing operational risk. Promptly detecting and addressing these deficiencies can substantially reduce the severity of a loss. This mechanism should be appropriate to the scale of risk and activity undertaken. Management should ensure that information is received by the appropriate channel, on a timely basis, in a form and format that helps in the monitoring and control of the business.

5.4.3 Control Mechanism.

Banks should assess the feasibility of alternative risk limitation and control strategies. Banks should adjust their operational risk profile using appropriate strategies, in light of their overall risk appetite and profile. To be effective, control activities should be an integral part of the regular activities of a bank. A framework of formal, written policies and procedures is necessary; it needs to be reinforced through a strong control culture that promotes sound risk management practices.

5.4.4 Contingency Planning

Banks should have disaster recovery and business continuity plans to ensure its ability to operate as a going concern and minimize losses in the event of severe business disruption. The business disruption and contingency plans should take into account different types of scenarios to which the bank may be vulnerable and should be commensurate with the size and complexity of its operations. Management should identify critical business processes, including those where there is dependence on external vendors or other third parties, for which rapid resumption of service would be most essential.