Banking is defined basically as accepting deposits of money for the purpose of lending or investment. This means “lending” is such a primary function of banking that “banking” emerged because there had to be “lending”. Thus the risk associated with lending, otherwise called “credit risk” was twin born with banking. This risk, therefore, has to be managed well if banking has to sustain successfully and prosper. Similarly important is the Operational Risk as well. This chapter, thus, focuses on various issues related to Credit Risk Management and Operational Risk Management by commercial banks in India.

7.1 Credit Risk Management (CRM)

Credit Risk in very simple terms, is the risk that promised cash flows from loans and securities held by the banks may not be paid in full and on time i.e., it is the possibility of default – non-payment or delayed payment. In terms of RBI Guidelines ‘Credit Risk is defined as the possibility of losses associated with diminution in the credit quality of borrowers or counterparties. In a bank’s portfolio, losses stem from outright default due to inability or unwillingness of a customer or counterpart to meet commitments in relation to lending, trading, settlement and other financial transactions. Alternatively, losses result from reduction in portfolio value arising from actual or perceived deterioration in credit quality.’

Credit Risk can arise out of lending to an individual, firm, corporate, bank or financial institution or a sovereign. Effective management of credit risk is quintessential of survival of a bank as major business of a bank is always loans. As has already been brought out in this thesis, the failure of Japanese Banks, failure of Savings and Loan Associations of the USA are important examples where credit risk was not managed properly.

Credit Risk Management (CRM) encompasses identification, measurement, monitoring and control of credit risk exposures. The Reserve Bank of India has issued extensive guidelines for CRM in Indian banks, which are summarized as under:

The essentials of credit risk management are the following:

a) Credit Policy and Strategy
b) Organisational Structure for CRM
c) Operations and Systems for effective CRM

Accordingly the CRM at the Study Units is analysed under the three following heads

i) Credit Risk Management Strategy and Structure
ii) Credit Risk Management – Micro aspects
iii) Credit Risk Management – Macro aspects

7.1.1. Credit Risk Management Strategy and Structure

The most fundamental aspect of a successful credit risk management strategy is to look for an appropriate and vibrant credit policy by the bank.
Banking has been a business for ages. It is, therefore, certain that bankers will have some do's and don'ts. These “do’s and don’ts” are referred to as “credit policy”. More systematic and formal organizations draw up a written document generally referred to as “Credit Policy” or “Loan Policy”, while others, small and informal organizations follow these principles by practice. As it is quite likely that there will be a large number of banks or large banks with voluminous business affecting the entire economy of a country, the regulatory central banks normally lay down certain norms to be followed on a broad framework of reference and certain conditionality so as to ensure discipline and integrity in the financial system of a country. The Reserve Bank of India has similarly laid down certain rules, regulations, guidelines and practices to be followed by Indian banks.

i.) Credit Policy and Strategy:

The RBI Guidelines require that every bank has to have a credit risk policy (CRP) document duly approved by its Board of Directors. This document based on the risk philosophy (credit) of the bank should consist of details regarding risk identification, risk measurement, risk grading / aggregation techniques, risk reporting and monitoring, risk control and mitigation techniques, documentation, legal issues, management of problem cases (loans) etc. Definite target markets, risk acceptance criteria, delegation of authority for credit sanction and disbursement, guidelines for portfolio management including monitoring of portfolio concentration etc., should be covered in the CRP document so drawn up.

. All operational issues like delegation of powers, pricing of loan, standards of collaterals etc., should be clearly defined in the credit risk policy documents.
ii. Organisational Structure for CRM:

The detailed organizational structure furnished for Risk Management is shown here below, with emphasis on Credit Risk Management (dark lines) vide Chart-7.1.

2. RBI, DBOD Guidance note on Credit Risk Management, 2002 (Oct 9, 2002)
www.rbi.org.in
The Credit Risk Management Committee (CRMC) is required to be headed by the Chairman / CEO / ED of the bank with representatives from other departments as shown in the chart. The CRMC is responsible for policy formulation and seeking approval therefor from the Board and for implementation of such policy. The CRMD should be responsible for measuring, controlling and managing the credit risk on a bank-wide basis and to ensure compliance to functioning within the prudential limits set by the Board.

iii. Operations and Systems for effective CRM:

The CAD is responsible for relationship management (business development), and transaction management (like risk assessment loan pricing, internal approvals like sanctioning, documentation, loan administration, on-going loan monitoring). It is also responsible for portfolio management at macro level and management of problem cases of loans.

The monitoring activities should ensure separation of credit risk management from credit sanction; an independent audit and risk review function; consistency in quality of portfolio building; diversification in portfolio building; transparency in credit risk taken, etc. Successful credit management requires experience, judgment and commitment to technical development. Banks must have a Management Information System (MIS) which should enable them manage and measure the inherent credit risk in all the activities off and on the balance sheet. The MIS should provide adequate information on composition of credit portfolio including identification of any concentration of risk.
In practice, credit sanction would involve developing a Credit Rating Framework with clear understanding of grading system for calculation of credit risk. The Basel Committee has defined credit rating as a “summary indicator” of the risk associated with a credit decision leading to loss due to default of a counter-party. Assessment of risk is made by Banks based on certain qualitative and quantitative information and is generally expressed using some symbols like AAA, AA, A, BBB etc. These are put in to 8 grades with AAA as 1, AA as 2 etc., and C & D being the last two viz., 7th and 8th grades. While some banks have extended the rating range from 8 to 10 (by extending the middle ones), some have reduced the range to 7 clubbing the last two symbols / grades in to one category, as the loan proposals with both these ratings get rejected for purposes of approval.

The interview by the researcher with the banks under study was therefore focused on how commercial banks in India have been following these requirements of the central bank (RBI) and are managing their credit risk. The answers to the questions regarding credit risk management strategy and structure like existence of a credit policy; as to when was it formulated with reference to the RBI Guidelines; the style and organizational structure followed etc., are summarized in the Table 7.1 hereunder.

A scrutiny of the Table reveals that all the banks under study have a written (documented) credit policy in force and that 23 of the twenty-four banks had this policy even before the RBI Guidelines were issued in this regard. The Karnataka Bank Ltd., however confirmed having drawn up a credit policy only subsequent to the RBI Guidelines.
## Table 7.1 Credit Risk Management – Strategy and Structure

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Query Parameter</th>
<th>Banks' Response</th>
<th>No. of Banks which responded</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>PSBs</td>
<td>OPSBs</td>
</tr>
<tr>
<td>1</td>
<td>Existence of a documented credit policy (CP)</td>
<td>Yes</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>2</td>
<td>Practice of CP vis-à-vis RBI Guidelines</td>
<td>Proactive</td>
<td>13</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reactive</td>
<td>--</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Existence of CRMC</td>
<td>Yes</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>4</td>
<td>Existence of a separate CRMD</td>
<td>Yes</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>1</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Absence of Information</td>
<td></td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td>5</td>
<td>Existence of an Operational Credit Rating Framework</td>
<td>Yes</td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Absence of Information</td>
<td></td>
<td>--</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td>6</td>
<td>Credit Rating Review - Periodicity</td>
<td>Annual</td>
<td>13</td>
<td>6</td>
</tr>
</tbody>
</table>

Source: Data collected from Study Units
**CRMC and CRMD**

The Credit Risk Management Strategy starts with clearly defined responsibilities and roles of the Credit Risk Management Committee (CRMC). Different banks call this Committee by different names, but the roles and responsibilities of this body, which oversees the credit risk management function, are the same. Some large banks however practice a system of policy formulation and macro-supervision by the CRMC and a separate Credit Risk Management Department (CRMD) for routine operational functions like sanctioning, review, monitoring etc.

Most banks have implemented the structure of CRMC and CRMD (wherever applicable) as recommended by the Reserve Bank of India. The designation of the concerned executives is not similar in all the banks. What is observed most importantly is that, the top management is actively engaged in the activities of the CRMC. The functions of the CRMC include recommendations for formulating credit policy and for organizational structure for sanction, supervision and periodic review of credit limits. The function of this organizational setup is reviewed by the CRMC itself. Different banks have different levels of executives in the CRMC, but always headed by the Chief Executive in most banks. Some large banks have the Executive Director (Chief Operating Officer) or a member of the top management team as the Chairman of CRMC. In large banks the routine functions of credit review, monitoring, portfolio assessment etc., and similar aspects are overseen by an additional structure called CRMD (in view of large volume of work), to support CRMC. In respect of some banks like Vijaya Bank,
however, the CRMC itself does all the functions that the CRMD in other banks would do.

All the banks, generally, have a system of delegation of lending powers to various executives including the CEO, for sanction of various levels of credit limits. Approvals for very large amounts of credit go to the Executive Committee or to the Board of Directors. Very large banks like HDFC Bank, ICICI Bank also have committees between the Chief Executive and the Board for sanction of intermediate limits beyond the powers of individual designated officers. As the variety and the number are very large, it becomes unwieldy for a bankwise write-up.

The study revealed, as indicated at Table 7.1 that most banks (21 out of 24) have adopted the credit rating framework as a strategy to arrive at credit decision-making. Credit Rating is a very detailed exercise of approval of loan proposal and considers all aspects to assess a proposal from the point of view of liquidity, profitability, security, leverage, management capability, market / industry acceptability etc., all of which are classified into different kinds of risks like financial risk, business / market risk, technology risk, management risk etc. A comprehensive aggregate of individual rating / assessment of all these risks will only lead to a final rating symbol or grade. Decision of credit approval is made based on this “Grade”. This grade / rating is subject to annual review and all the banks which responded, follow the review of rating at least annually in the case of lower risk assets and more frequently like biannually / quarterly in the case of high risk assets.
7.1.2. CRM–Credit Assessment-Micro Aspects:

This basically refers to the ‘Transaction Risk’ associated with each credit decision/transaction and is assessed through Credit Rating Framework.

Credit Risk Identification: Any deviation from the norms, policies, practices etc. (set out in the Credit Risk Policy) at the time of operational implementation is a signal of identification of credit risk.

Measurement / Assessment of Credit Risk – Development of Credit Risk Models

A credit risk model seeks to determine quantifiable risk that the promised cash flows will not be forthcoming. The credit risk modeling has become very important for the following reasons:

i. Banks have now become more professional in quantitative treatment of credit risk.

ii. The new competition by intense marketing of loans may lead to low quality assets. Hence, a credit risk modeling is essential in order to ensure a minimum acceptable quality of assets.

iii. Regulator’s concern on capital requirement relating to credit risk makes it imperative to have good quality loans which is possible only with credit risk modeling.

Credit Risk Models provide the decision maker with reasons to accept or reject a credit risk as they provide quantifying parameter as also aggregating and managing indications and are extensively used for the purposes of credit rating determination, credit approval, estimation of risk premium, to suggest early warning, etc. Credit Risk Models are thus playing important roles in banks’ risk
management and performance measurement processes, customer profitability analysis, risk based pricing, active portfolio management and capital structure decisions.

Credit Risk Models can be broadly classified into two categories –

1. Qualitative model

2. Quantitative models - (i) Credit Scoring Model
   (ii) RAROC Models

1. Qualitative Model :

This model is used when it is either not possible to use quantitative models because of absence of data or when the credit risk, *prima-facie*, is simple to understand and interpret. This is a non-quantitative model dependent on two key factors viz. *borrower specific factors and market specific factors*. The borrowers specific factors are reputation of the borrower, leverage (debt-equity ratio), volatility of earnings, collaterals etc. Market specific factors include business item, level of interest rates etc. The probability of default is studied and decision on credit sanction is based on lower probability of default. A pictorial representation of the relationship between probability of default and leverage is shown at figure 7.1 below:
2. Quantitative Models.

i. Credit Scoring Models are quantitative models which enable calculation of a score to represent the probability of default by an applicant / borrower or to sort applicants/borrowers into different default risk classes.

   (i) The linear discriminant model introduced by Altman (1967) also known as Z-score model separates defaulting applicants / borrowers from non-defaulting applicants/ borrowers on the basis of certain financial ratio.

Altman’s discriminant function (credit-classification model) takes the form:

\[ Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5 \]

Where

- \( X_1 \) = Working capital (CA-CL)/total assets ratio
- \( X_2 \) = Retained earnings/total assets ratio
- \( X_3 \) = Earnings before interest and taxes/total assets ratio
- \( X_4 \) = Market value of equity/book value of long-term debt ratio
- \( X_5 \) = Sales/total assets ratio

The higher the value of \( Z \), the lower the default risk classification of the borrower. Thus, low or negative values of \( Z \) indicate that the borrower belongs to a relatively high default risk class.

ii. RAROC Model: This popular model is extensively used for evaluation of credit risk and pricing of credit based on market data. The RAROC (Risk-adjusted Return on Capital) was developed by Bankers Trust (which was later acquired by Deutsche Bank in 1998.)

The RAROC for a borrower / project is calculated as under:

\[
\text{RAROC} = \frac{\text{One-year income on a loan}}{\text{Loan (asset) risk or capital at risk}}
\]

---

5.Ibid., p.289.
where, Loan (asset) risk of Capital at Risk $\Delta L$ is calculated using the formula.

$$\Delta L = -D_L \times L \times \left[ \frac{\Delta R}{1+R} \right]$$

where

$D_L = \text{Duration of the loan}$

$= \text{Weighted average time to maturity on the loan using the relative present values of the cash flows as weights.}$

$L = \text{Size of the loan, and}$

$$\left[ \frac{\Delta R}{1+R} \right] = \text{Interest rate shock. (Also called the expected maximum change in the credit premium or risk factor of the loan)}$$

A loan is approved only if RAROC is sufficiently high relative to a benchmark return on capital (ROE) for the bank where ROE measures the return that shareholders require on their equity investment in the bank. The idea here is that a loan should be made only if the risk-adjusted return on the loan adds to the bank's equity value as measured by the ROE required by the bank's shareholders.

**Credit Risk Modeling Practice in India:**

The Reserve Bank of India has permitted the banks to adopt any model depending on their size, complexity, risk bearing capacity, and risk appetite but to ensure to achieve the following:

1. Differentiation of degree of credit risk in different credit exposures – either borrower based or transaction based or sector based – is possible.
2. Concentration of risk in the portfolios is identified.
3. Adequacy / inadequacy of loan provisions is identified.
4. Appropriate pricing of credit is possible.
5. Variations in macro economic factors can be recognised.
6. Impact on profitability of transactions and relationship can be determined.
Banks in India generally use the Qualitative Models coupled with Credit Rating Technique to decide loans more than Rs. 5 lakhs. “Credit Scoring Models” are used to assess the probability of default in respect of low and poor quality assets (large in number but small in aggregate value), using sophisticated statistical techniques like linear and multiple discriminant analysis. Such models facilitate computation of “Exposure at Default” (EAD), “Probability of Default” (PD) and “Loss Given Default” (LGD) towards risk capital requirement.

The Table 5.27 is a testimony to the fact that the major assets (loans and advances) of Indian banks form 52% (PSBs) to 65% (NGPSBs) of the liabilities in general. Only the remaining portion goes in to Investments and other assets. Hence the credit decision of any bank is the most important activity for the purposes of both profitability and liquidity. It is, therefore, necessary to know the methodology of such decision process. Responses received to the Interview Schedule, from the Study Units, which depict the process of credit decision making, are tabulated at Table 7.2.
### Table - 7.2

**Management of Credit Risk – Micro Aspects**

<table>
<thead>
<tr>
<th>SI No</th>
<th>Sector &amp; Bank</th>
<th>Nature of exposures considered</th>
<th>Target Credit Size</th>
<th>Model Referred/Used/Followed</th>
<th>No. of points in the Credit Rating Scale</th>
<th>Any interaction with ECAI?</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Andhra Bank</td>
<td>All</td>
<td>Rs. 5 lakhs &amp; above</td>
<td>Internal</td>
<td>8</td>
<td>No</td>
<td>Points similar to CRISIL</td>
</tr>
<tr>
<td>2</td>
<td>Bank of Baroda</td>
<td>All</td>
<td>Over Rs.10 Cr</td>
<td>Internal</td>
<td>8</td>
<td>Yes, with CRISIL</td>
<td>Internal model developed similar to CRISIL model</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Rs.25 lakhs – Rs.10 Cr</td>
<td></td>
<td></td>
<td></td>
<td>Rating between 1 – 3 low risk, 4 – 5 normal risk, 6 – 8 high risk All high risk loans are rejected</td>
</tr>
<tr>
<td>3</td>
<td>Canara Bank</td>
<td>All</td>
<td>Over Rs.2 Cr</td>
<td>CRISIL</td>
<td>8</td>
<td>Yes, with CRISIL</td>
<td>Port folio model for Small Loans based on delinquency rates</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Rs.30 lakhs-Rs.2 Cr</td>
<td>Internal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Corporation Bank</td>
<td>All</td>
<td>Over Rs. 1 Cr.</td>
<td>CRISIL</td>
<td>8</td>
<td>No</td>
<td>Customized model for the bank developed by CRISIL. Rating used mainly for pricing. Credit decisions based on credit policy &amp; practice.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Rs.2lakhs-Rs.1 Cr</td>
<td>Internal Scoring Model</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>State Bank of Hyderabad</td>
<td>All</td>
<td>Details unavailable</td>
<td>SBI</td>
<td>8</td>
<td>No</td>
<td>4 is the hurdle rate</td>
</tr>
</tbody>
</table>

All Internal Models are mainly qualitative models. ECAI: External Credit Assessment Institution Source: Data collected from Study Units
### Table - 7.2 (Continued)

**Management of Credit Risk – Micro Aspects**

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Sector &amp; Bank</th>
<th>Nature of exposures considered</th>
<th>Target Credit Size</th>
<th>Model Referred/Used/Followed</th>
<th>No. of points in the Credit Rating Scale</th>
<th>Any interaction with ECAI?</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>State Bank of Mysore</td>
<td>All</td>
<td>Rs.25 lakhs &amp; above</td>
<td>SBI</td>
<td>8</td>
<td>No</td>
<td>4 is the hurdle rate</td>
</tr>
<tr>
<td>7</td>
<td>Syndicate Bank</td>
<td>All</td>
<td>Details unavailable</td>
<td>Internal</td>
<td>9</td>
<td>No</td>
<td>--</td>
</tr>
<tr>
<td>8</td>
<td>Union Bank of India</td>
<td>All</td>
<td>Rs.2 lakhs-Rs.10 lakhs</td>
<td>Internal</td>
<td>9</td>
<td>No</td>
<td>Scoring model for small loans below Rs. 2 lakhs. Separate model for NBFC. FDR loans, Agricultural Loans, Bridge loan against TL are not covered under rating system.</td>
</tr>
<tr>
<td>9</td>
<td>Vijaya Bank</td>
<td>All</td>
<td>Over Rs. 2 lakhs</td>
<td>Internal</td>
<td>11</td>
<td>Yes, with CRISIL &amp; ICRA</td>
<td>--</td>
</tr>
<tr>
<td>10</td>
<td>IDBI Ltd.,</td>
<td>All</td>
<td>Details unavailable</td>
<td>--</td>
<td>7</td>
<td>No</td>
<td>--</td>
</tr>
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</table>

All Internal Models are mainly qualitative models. ECAI: External Credit Assessment Institution

Source: Data collected from Study Units
### Table - 7.2 (Continued)
#### Management of Credit Risk - Micro Aspects

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Sector &amp; Bank</th>
<th>Nature of exposures considered</th>
<th>Target Credit Size</th>
<th>Model Referred/Used/Followed</th>
<th>No. of points in the Credit Rating Scale</th>
<th>Any interaction with ECAI?</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The Dhanalakshmi Bank Ltd.</td>
<td>All</td>
<td>Details unavailable</td>
<td>ICRA</td>
<td>--</td>
<td>Yes, with ICRA</td>
<td>Leverage concept</td>
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<tr>
<td>2</td>
<td>The Federal Bank Ltd.</td>
<td>All</td>
<td>Details unavailable</td>
<td>Internal</td>
<td>9</td>
<td>No</td>
<td>Rating between 1 – 5 Accept, 6 – 10 Reject.</td>
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<tr>
<td>3</td>
<td>ING Vysya Bank</td>
<td>All</td>
<td>Details unavailable</td>
<td>Internal</td>
<td>10</td>
<td>No</td>
<td>Similar to CRISIL model</td>
</tr>
<tr>
<td>4</td>
<td>The Karnataka Bank Ltd.</td>
<td>All</td>
<td>Over Rs. 25 lakhs</td>
<td>Internal</td>
<td>9</td>
<td>No</td>
<td>Rating between 1 – 5 Accept, 6 – 10 Reject.</td>
</tr>
<tr>
<td>5</td>
<td>The Karur Vysya Bank Ltd.</td>
<td>All</td>
<td>Details unavailable</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>6</td>
<td>Lord Krishna Bank Ltd.</td>
<td>All</td>
<td>Details unavailable</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>7</td>
<td>The Lakshmi Vilas Bank Ltd.</td>
<td>All</td>
<td>Over Rs. 50 lakhs</td>
<td>ICRA</td>
<td>7</td>
<td>Yes, with ICRA</td>
<td>--</td>
</tr>
<tr>
<td>8</td>
<td>The South Indian Bank Ltd.</td>
<td>All</td>
<td>Over Rs. 50 lakhs</td>
<td>Internal</td>
<td>8</td>
<td>No</td>
<td>Borrower Rating &amp; Obligor Rating, both are made.</td>
</tr>
<tr>
<td></td>
<td><strong>NEW GEN. PVT. SECTOR BANKS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>HDFC Bank</td>
<td>All</td>
<td>Details unavailable</td>
<td>Internal</td>
<td>10</td>
<td>Yes</td>
<td>Rating between 1 – 4 Accept, 5 – 6 Select 7 – 10 Reject</td>
</tr>
<tr>
<td>2</td>
<td>ICICI Bank</td>
<td>All</td>
<td>Details unavailable</td>
<td>Internal</td>
<td>9</td>
<td>Yes</td>
<td>Similar to CRISIL model</td>
</tr>
<tr>
<td>3</td>
<td>Kotak Mahindra Bank</td>
<td>All</td>
<td>Details unavailable</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

All Internal Models are mainly qualitative models. ECAI: External Credit Assessment Institution. Source: Data collected from Study Units.
It is seen from the above Table, that all the banks, whether public or private (new or old) consider “All” the exposures while making credit decisions. “Exposures” here refer to the risks that the bank is exposed to, based on the nature of credit facility made available to the client. Examples of such credit facilities are term loans, working capital, contingent liabilities (like letter of credit, letter of guarantee etc.,) personal loans, housing loans, vehicle loans etc. However different banks have different cut-off levels of limits from which such meticulous credit sanction process methodology is adopted. Decision in respect of small loans and retail lending are made based on a simplified Credit Scoring Model.

Table 7.2 also contains Bank-wise complete details of the methodology for decision making for sanctioning credit facilities. What is, of course, very pertinent is that most banks have adopted a basic credit rating model developed by CRISIL (a leading credit rating agency in India) with some proprietary differences for deciding whether or not to finance a loan proposal. The State Bank of India and its associates make use of the model developed by the SBI. It is observed that all banks have such a rigorous process, in general, for all loans of Rs. 25 lakhs and above. Some banks use rating also for pricing the loan particularly to high value clients with high value projects / loans.

FB has developed an internal model with more emphasis on quality of the asset based on leverage. Hence it attaches importance to leverage i.e., own capital brought in by the client as against the amount of credit sought. Similarly, The SIB Ltd has a special emphasis on rating even the obligor and then deciding on the loan proposal.
7.1.3. Credit Risk Management—Macro Aspects

\textit{i. Measuring Credit Risk in Inter-Bank Exposures:}

While handling inter bank exposures on loans, the Reserve Bank of India has asked the banks to look into the key financial parameters viz. CAMELS of the applicant bank, i.e. –

\begin{itemize}
  \item C – Capital Adequacy
  \item A – Asset Quality
  \item M – Management Ability
  \item E – Earnings (profitability)
  \item L – Liquidity, and,
  \item S – Systems
\end{itemize}

The Reserve Bank of India has desired that the applicant (borrower) banks should be rated on the above factors and bank-wise exposure limits should be set taking into account the counterparty and country risks. The credit risk management of exposure to banks should be centralized on a bank-wide basis.

\textit{ii. Assessment and Management of Country Risk:}

Financing of imports and exports is generally a more profitable business for the banks and is, therefore, very important. It is also fraught with different kinds of risks. Such business is handled by select branches, which have specialized expertise in this line. A close monitoring is also warranted in view of the dynamic nature of foreign currency exchange rate mechanism.
Country Risk is the possibility that the country will be unable to service its debts to foreign lenders as undertaken. This risk manifests itself either in the inability or the unwillingness of the obligor to meet its obligation. **Country risk comprises of the following types of risks:**

(i) **Transfer risk** which is the core risk under country risk, arises on account of the possibility of losses due to restriction on external remittances.

(ii) **Sovereign risk** is associated with lending to government of a sovereign nation or to taking government guarantees. The risk lies in the fact that sovereign entities may claim immunity from legal process or might redress through legal action.

(iii) **Non-sovereign or political risk** arises when political environment or legislative process of a country leads to Government taking over the assets of a financial entity (e.g. nationalization) and preventing discharge of its liabilities in a manner that had been agreed to.

(iv) **Cross border risk** arises on account of the borrower and the asset being in different countries.

(v) **Currency risk** is the possibility that the exchange rate changes have adverse effect on the expected amount of principal and return of lending or investment

(vi) **Macroeconomic and Structural Fragility Risk arises** because of unfavourable exchange rates and sudden surge in interest rates impairing servicing of debt and includes the risk associated with poor development of domestic bankruptcy loss and weak courts for enforcement.
Indian Practice

The Reserve Bank of India has permitted the banks to adopt the sovereign ratings of international credit rating agencies to assess country risk. The Reserve Bank of India further desires that the banks should move over to their own internal assessment within a prescribed period. The banks may set country exposure limits based on such risk assessment and also monitor the country exposures on weekly basis till such time a real time monitoring is begun.

Similarly each bank has to have an effective control on the various domestic sectors of credit as well, also referred to as ‘Portfolio Risk’ Sectoral concentration study, hence, is also a matter of priority for credit risk management.

Credit Audit (CA) is defined by the RBI as compliance with extent sanction and post sanction processes / procedures laid down by the bank from time to time. CA, therefore, involves examining in detail the credit and investment records from the viewpoint of compliance of various terms and conditions of sanction, system procedures for disbursement and monitoring of credit and investment portfolio as laid down by the bank. Thus CA is strictly not a statutory requirement, but it is definitely a regulatory requirement and hence the RBI has asked banks to implement an appropriate Credit Audit System.

The feedback of various banks on the aforesaid aspects viz., Country Risk Management, Sectoral Concentration and other macro aspects like Credit Audit and RAROC Pricing system for CRM is summarized at the following Table 7.3 and are briefly explained below.
Table 7.3: Management of Credit Risk – Macro Aspects

<table>
<thead>
<tr>
<th>SI No</th>
<th>Query Parameter</th>
<th>No. of banks which responded</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>PSBs</td>
<td>OPSBs</td>
</tr>
<tr>
<td>1</td>
<td>a) Existence of Country Risk limits</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>b) Rating accepted</td>
<td>ECGC</td>
<td>ECGC</td>
</tr>
<tr>
<td></td>
<td>c) Authority to fix the limit</td>
<td>Board</td>
<td>Board</td>
</tr>
<tr>
<td></td>
<td>d) Monitoring Point</td>
<td>Central</td>
<td>Central</td>
</tr>
<tr>
<td></td>
<td>e) Review Periodicity</td>
<td>Quarterly</td>
<td>Quarterly</td>
</tr>
<tr>
<td>2</td>
<td>a) Existence of Sectoral Risk concentration limit</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>b) Authority to fix the limit</td>
<td>Board</td>
<td>Board</td>
</tr>
<tr>
<td>3</td>
<td>Credit Audit – Annual</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>More frequently</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>RAROC Pricing</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: Data collected from Study Units

1. A scrutiny of the above Table 7.3 reveals that all the banks follow a very systematic rating of Country Risk. Country Risk is classified into seven risk categories viz., Insignificant Risk, Low Risk, Moderate Risk, Very High Risk, High Risk, Restricted Risk and Off-Credit Risk. The banks generally follow the rating of the countries as awarded by the ECGC (Export Credit Guarantee Corporation- an undertaking of GOI) and have country-wise separate limits based on such rating. It may be recalled that the Reserve Bank of India has permitted the banks to adopt the sovereign ratings of international credit rating agencies to assess country risk. The banks follow a centralized system for monitoring country risk, which is normally monitored by their Central Foreign Exchange Branch. The
practice of quarterly review of these limits fixed by their Boards is a step
towards continuous monitoring of the country risk.

2. All the banks under study confirmed awaiting instructions from the RBI
for implementing RAROC System of CRM. But some banks like HDFC
Bank, Syndicate Bank, Vijaya Bank, Union Bank of India and Bank Of
Baroda confirmed also that the customer is not concerned with the cost of
funds for the bank and hence his acceptance of the loan from the bank
based on RAROC pricing cannot strictly be enforced. Thus RAROC
pricing, it was opined, is a move towards planning profitability of the bank
than a tool for CRM.

3. Credit Review Mechanism by Credit Audit system has been exemplary by
banks as many banks had this system much before the Guidelines were
issued by the RBI. PSBs like Corporation Bank, Syndicate Bank, Union
Bank of India, Vijaya Bank and IDBI confirmed more frequent audits than
atleast once a year. Two of the OPSBs viz., FB and LVB also confirmed
more frequent credit audits. Only Kotak Mahindra Bank (NGPSB)
doesnot appear to be serious about this aspect, possibly because its
operations are only about two years old by March 2005.

The analyses as above at 7.1.1, 7.1.2 & 7.1.3 go to confirm that all the
banks that have responded under the study have a fair system of CRM.
7.2 Operational Risk Management (ORM):

The Operational Risk is as old as banking itself. However, this risk is the
toughest to assess and no one can be sure despite the best of planning.
Conversion of its effect into monetary terms is further more difficult. The banks
under study, however, displayed a well-informed state of knowledge on this issue.

Operational Risk, as defined by the Basel Committee, is “the risk of direct
or indirect loss resulting from inadequate or failed internal processes, people and
systems or from external events”. The definition excludes strategic and reputation
risk but includes legal risk.

The scope of operational risks requires quantification of unexpected losses
from such event as though they can be measured assuming certain probabilities.
Complete and perfect quantification is difficult in real life. The analysis of the
probability and size of operational risks is also defeated by absence or lack of
relevant data. Under such circumstances, it is approriateto systematize operational
risks and place them in the loss probability and size matrix as at Table 7.4.

Table-7.4

Size and Probability of Unexpected Losses

<table>
<thead>
<tr>
<th>Severity of Risk</th>
<th>Probability of losses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Low</td>
<td>C</td>
</tr>
<tr>
<td>High</td>
<td>D</td>
</tr>
</tbody>
</table>

6. R.B.I., Report on Trend and Progress of Banking in India 2002-03,
Mumbai, 2003.p.25
For operational risk policy, the following rules result from an analysis of the size and probability of losses.

- Business areas with a high likelihood of occurrence and high level of severity of operational risk (Cell A) to be avoided.
- Areas with a low level severity but high probability of losses (Cell B) are often not perceived as ‘risk areas’, but merely ‘cost intensive’ or ‘low quality’. In such cases, problems are frequently found in process and system design.
- Small size losses with a low degree of probability (Cell C) should be accepted if the costs of prevention exceed the amount of reduction in the losses.
- The significant operational losses are mostly located where the probability is low, but the severity is high (Cell D). For such cases, preventive measures such as governance, internal control and management incentives etc., should be put in place.

Designing an Operational Risk Management framework would require identification of Operational Risk through event framework and analysis of causes thereof, designing techniques for its measurement and control and subsequent management thereof.
Identification of Operational Risks:

The Basel Committee has identified seven types of operational risk that engender substantial losses to a bank.

They are:

1. Internal fraud
2. External fraud
3. Employment practices and workplace safety
4. Clients, products and business practices
5. Damage to physical assets
6. Business disruption and system failures
7. Execution, delivery and process management.

Some examples for easy perception of the above risks are the following:

i. Misuse of internal control system, forgery, cash embezzlement etc.
ii. Loans and Advances against fraudulent documentation, fake bills, fake documents of title to property.
iii. A litigation suit by a client charging the bank with negligence.
iv. Chief of Investment Division resigns / dies in an accident.
v. Withdrawal by a client of a wrong credit to his account.
vi. Employees or officers' striking work.
vii. Power failures for long hours disrupting routine work.
viii. Disturbances in the city stopping employees reaching the bank.
ix. Closure of the bank or damage to a data centre during a public riot.
x. Chief Executive or some important Functional Chiefs themselves engage in undesirable banking / speculative activities abusing authority.
Risk Measurement and Control:
The New Capital Adequacy Framework (Basel-II Accord) suggested by the Basel Committee provides a number of approaches towards measurement of operational risks and calculations of capital charge thereof. Three such approaches are the following:

i. Basic Indicator Approach (BIA)
ii. Standardised Approach (SA), and,
iii. Advances Management Approach (AMA)

The details are as under:

i. Basic Indicator Approach – is what the banks in India have to follow for the immediate present and under this approach the banks need to hold capital for operational risk equal to the average over the previous three years of a fixed percentage [denoted by alpha and set at 15% by the Basel Committee for Banking Supervision (BCBS)] of a single indicator currently proposed as positive annual gross income. If the annual gross income is negative or zero for any year, that figure should be excluded from both the numerator and the denominator while calculating the capital charge.

ii. Under the Standardized Approach – the classification of the banks’ activities by the Basel Committee into eight businesses as under comes to help:

i. Corporation finance v. Payment and settlement
ii. Trading and sales vi. Agency and custody services
iii. Retail banking vii. Asset management, and
iv. Commercial banking viii. Retail brokerage
Against each of them a broad indicator is specified to reflect the size of banks business in that area. Within each business line, the capital charge is calculated by multiplying the indicator by a factor (beta) assigned to that business line. The total charge under the standardized approach is the simple summation of the regulatory capital charges across each of these business lines.

iii. The Advanced Measurement Approach- is based on an estimate of operational risks derived from the banks internal risk measurement system, although subject to qualitative and quantitative standards set by the Basel Committee and are, therefore, expected to be more risk sensitive than the other two approaches.

The Supervisor (Central Bank – RBI in India) specifies an Exposure Indicator (EI) – a proxy for the size of a particular business line’s operational risk exposure. In addition to EI, for each business line / loss type combination, banks measure, based on their internal loss data, a parameter representing the probability of occurrence of loss event (PE) as well as the parameter representing the loss given that event (LGE). Expected Loss (EL) is arrived at by multiplying EI with PE and LGE and quantified as under:

$$\sum_i \sum_j \left( \gamma(i,j) \times \Sigma EI(i,j) \right) \times PE(i,j) \times LGE(i,j)$$

where ‘j’ is the risk for the business line referred to by ‘i’. Quantification of operational risk, with the present expertise available is a computational challenging task for policy makers in India.

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Modelling operational risk in banks in India is still in its infancy and expected to gather momentum with the implementation of Basel-II Accord effective from March 2008. Responses to various parameters relating to operational risk from the banks under study are tabulated at Table 7.5 below:

**Table 7.5 : Strategy and Preparedness for Operational Risk Management**

<table>
<thead>
<tr>
<th>SI No.</th>
<th>Query Parameter</th>
<th>No. of Banks which responded</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>PSBs</td>
</tr>
<tr>
<td>1</td>
<td>Existence of Committee for review of Fraud cases</td>
<td>13</td>
</tr>
<tr>
<td>2</td>
<td>Is existing system preventive or curative?</td>
<td>Curative</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. Effective Audit &amp; Internal Control</td>
</tr>
<tr>
<td></td>
<td></td>
<td>d. Insurance</td>
</tr>
<tr>
<td>4</td>
<td>Opinion about Capital coverage for ORM</td>
<td>Subjective</td>
</tr>
</tbody>
</table>

Source: Data collected from Study Units

A scrutiny of the Table 7.5 reveals that all the banks irrespective of whether they are PSBs, OPSBs or NGPSBs, have constituted committees or sub-committees or special committees with Directors of Boards as members, for review of fraud cases. Nevertheless, these have been committees for review of monitoring fraud cases after the incident has already occurred. Hence the efforts are mostly curative in nature. It is sincerely believed that knowledge of how and why of the incidence of these frauds will help make further policies and procedures, which would either prevent or drastically reduce recurrence of such frauds in future.
All the sectors of the banks were univocal in the recommendations for possible remedy and for management intervention for Operational risk Management. They are, commitment towards value based personnel selection and culture management in the organization. Effective audit and internal control and insurance, however, have to supplement the former two. All the banks from all the sectors were also univocally emphatic that capital charge to operational risk management as suggested by Basel-II is subjective.

7.3. Opinion Poll on Banking Risks as played by Basel-II Accord:

Considering the wide spread criticism all over the world on the capital requirement under Basel-II Accord, more particularly that for CRM and ORM, an opinion poll was conducted with the banks under study, as the target group. The feedback is shown at Table 7.6

**Table 7.6: Opinion poll on Importance of Risks**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Query Parameter</th>
<th>Banks’ Response</th>
<th>No. of Banks which responded</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>PSBs</td>
<td>OPSBs</td>
</tr>
<tr>
<td>1</td>
<td>Whether importance of any risks as per the RBI / Basel-II Accord is overplayed?</td>
<td>Yes</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No opinion</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Information unavailable</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Risk assessment requires simplification</td>
<td>2 (CB, Crop B)</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>Nature of Risk overlaid</td>
<td>Liquidity Risk</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operational Risk</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Data collected from Study Units
As can be seen from the above Table, a majority of the banks have affirmed that the importance of the risks is not overplayed. However, 20% of the respondents opined that the operational risk is overplayed. Canara Bank and Corporation Bank opined that the operational risk assessment methodology needs simplification.

Similarly the feedback on the practicability of implementation of Basel-II Accord and readiness of the banks to implement the Accord is summarized at Table 7.7 below.

**Table 7.7 : Opinion poll on implementation of Basel-II Accord**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Query Parameter</th>
<th>Banks’ Response</th>
<th>PSBs</th>
<th>OPSBs</th>
<th>NGPSBs</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Practicability of implementation of Basel-II Accord in totality</td>
<td>Practical</td>
<td>7</td>
<td>2</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Impractical</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No opinion</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Needs simplification</td>
<td>2 (CB, Corp B)</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Absence of information</td>
<td>1</td>
<td>3</td>
<td>--</td>
<td>--</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>13</td>
<td>8</td>
<td>3</td>
<td>24</td>
</tr>
<tr>
<td>2</td>
<td>Readiness for implementation</td>
<td>Ready</td>
<td>13</td>
<td>8</td>
<td>3</td>
<td>24</td>
</tr>
</tbody>
</table>

Source: Data collected from Study Units

It is observed that a majority has opined that it is practicable to implement the recommendations under Basel-II Accord, although some have expressed the need for some simplification. All the banks have further expressed that they are ready for implementation of this Accord as and when desired by the Reserve Bank of India.