Operational Risk Management: A Survey Of Systems, Strategies And Preparedness Of Indian Banks

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INTRODUCTION

The year 2008 would definitely be etched in history as the year of shut downs, layoffs, bailouts, bankruptcies, frauds, mis-selling, rogue trading, poor internal controls. The global financial services sector experienced the worst imaginable times during 2008. Many of the world's mature banking systems failed and were the recipient of government rescue funds. The year witnessed the collapse and near collapse of some of the largest and most diversified financial institutions in the world. A range of explanations emerged as the root cause of the financial meltdown. Greed, increasing complexity of banking & financial products, major advances in technology, rapid expansion of bank operations, increasing vulnerability of financial institutions, poor modeling were amongst the causes of this meltdown. All these causes have a striking resemblance with Operational Risk events. It is observed that failure in Operational Risk Management (ORM) by the financial institutions fuelled the subsequent Credit & Liquidity Crisis and the Financial Meltdown, which engulfed the world in the closing months of 2008. The root cause of the problem was not the *"new"* or so-called *"unknown risks"* from Derivatives, Collateralized Debt Obligations; *rather it was the failure of managing Operational Risk.*

In light of this crisis, operational risk management has become imperative for all the Financial Institutions. Indian Banks were relatively protected from the sub prime crisis and faced only an indirect impact of the liquidity crunch post the credit crisis. Strict lending criteria, no loans to sub prime borrowers with a combination of culture and regulations cushioned them from the crisis. This study has performed a cross comparison analysis of operational risk practices amongst 31 banks of different categories and sizes in India.

Operational Risk identification and measurement is still in the evolutionary stage as compared to the maturity that market and credit risk measurements have achieved. Basel II (BCBS 2004) provides three options for computing capital charge for Operational Risk with increasing sophistication and risk sensitivity. It encourages banks to move along the spectrum of available approaches as they develop more sophisticated operational risk measurement systems and practices. Internationally active banks and banks with significant operational risk exposures are expected to use a more sophisticated approach. Three alternative approaches have been prescribed for capital allocation to operational risk **(i)** Basic Indicator Approach **(ii)** Standardized Approach and **(iii)** Advanced Measurement Approach.

Operational risk events such as September 11 terrorist attacks , numerous rogue trading losses (most recent at *Societe Generale)* and numerous failures as a result of sub prime crisis highlight that non management of operational risk can cause havoc on the banking system, lead to bankruptcies of institutions and eventual closure too. In light of these facts, it is imperative to analyze the present state of practices in Operational Risk Management (ORM) being followed by Indian banks and find out the banks which are far behind their peers in ORM and hence, more exposed to the risk .

The present paper attempts to explore the limiting criteria for banks (size or category) which do not have a well developed operational risk management system. This would bring to light the various shortcomings of Operational Risk Management system of Indian Banks and help in overcoming them. The data used for the study is primary, questionnaire collected from risk practitioners (Chief risk officers / officials in the Operational Risk Management department / Risk management department) in a cross section of 31 banks.

Statistical analysis of the primary data has revealed some of the important facts about the Indian Banks like status of implementation of operational risk management, their practices and preparedness w.r.t. advanced approaches of management of operational risk in light of Basel II disclosures; while factor analysis has explained the most

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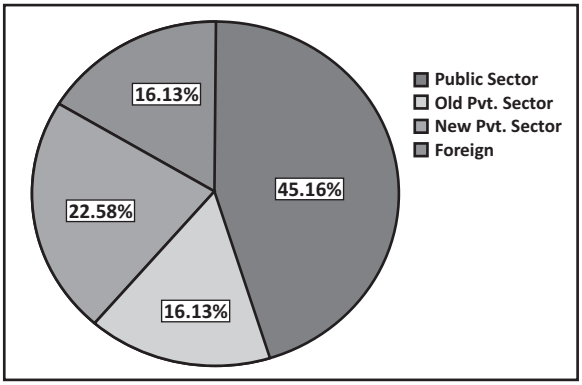
distinguishing factors amongst the sample banks. The Reserve Bank of India has clearly articulated the approach for implementation of Basel II for commercial banks in India (RBI 2007a, 2009). Under these guidelines, all commercial banks in India are required to adopt the Basic Indicator Approach (BIA) for operational risk to begin with, and the entire commercial banking sector has begun Basel II compliance since March 2009. The Central Bank has also published the roadmap on advanced approaches to be followed by the Indian Banks. As per this roadmap, the likely date of approval by RBI for introducing AMA (Advanced Management Approach) is March 31, 2013. The Reserve Bank of India has also made it very clear in its guidance note that banks are expected to have clear policies and procedures to manage operational risk, notwithstanding the approach for regulatory capital computation.

Primary data contains information of fourteen public sector banks, five old private sector banks, seven new private sector banks and five foreign banks. The survey questionnaires were sent to these banks in the month of July 2009. The written / e-mailed responses to the questionnaires were received between August 2009 and September 2009. The written / e-mailed responses were followed up by personal visits or phone calls to all banks in order to gain further insight into the implementation of operational risk management by these banks.

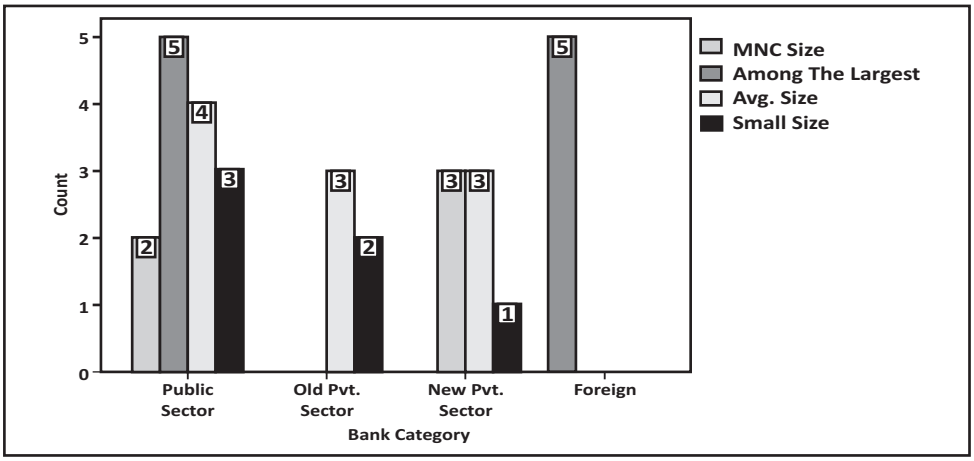
It is said that, *'Well begun is half done.'* -The same applies to the Indian banks - gearing up themselves to face the unknown, unseen and unpredictable challenges of operational risk. The steps taken today will go a long way in helping them build up a strong operational risk management framework. It is essential for the banks to develop an ORM culture all through the bank and sensitize the employees towards it. It is equally pertinent to develop such policies and practices (based on observed causes of operational risk like attrition, outsourcing etc.) in the bank at all levels so as to prevent losses due to operational risk.The 14 public sector banks constitute 45% of the sample, 5 each Private Sector (old) and foreign banks represent 16% each of the sample size. The sample includes all 7 private sector banks (new) operating in India, comprising of 23% of the sample.

Exhibit 1: Category of Respondent Banks



The study encompasses different sized banks in all categories, except the foreign banks where all banks are MNC size. The banks were categorized as MNC - large, average or small sized on the basis of assets. This will help to explore a

Exhibit 2: Size And Category Wise Distribution Of Respondent Banks



possible relationship between the size of the bank and various strategies and practices vis-à-vis operational risk.
MNC sized banks are present only in the Public sector and Foreign Banks. 23% respondents are MNC sized, whereas 26% are amongst the largest in the country, 33% are average sized and 19% are small sized banks. Public Sector Banks sample constitutes of all types of banks, whereas old Private sector banks category consists of only average and small sized banks.
The role of the respondents in their respective banks is primarily of a risk practitioner than that of a policy formulator. Of the 31 banks surveyed, 25 respondents were Risk Practitioner and 6 were Risk Policy formulators. This is attributable to the fact that in most of the banks, the Board of Directors or Independent consultants define the policies. Efforts were made to include all the CROs/Senior Most Officials in risk management department as respondents. 55% respondents belong to the risk management department and 45% respondents are senior most in their divisions, belonging to the board or being equivalent to CRO, CFO, head of compliance or specialized project manager for operational risk. Though the respondents vary in their hierarchy, all belong to the risk management domain.
All 31 banks have a well defined *Policy For Operational Risk Management*. Most of the banks have got the policy approved from their respective boards. The remaining are in the process. In most of the banks, operational risk is managed by a division of the risk management department.
RBI has suggested a model *organizational set-up for the risk management department* of the banks with well defined set-up for operational risk department as well. Majority of the banks (77%) follow the Organizational set-up as suggested by the Central Bank guidelines, whereas the remaining banks have formulated an organizational set-up suggested by their board or the one defined by their respective overall organization set-up. Reporting of operational risk department in these banks is done to the CRO.
The Loss Data Collection Exercise 2008 (LDCE) carried out by BCBS considers *involvement* as a significant factor, since it is believed that deeper involvement leads to better effectiveness of the operational risk management programme. Wide variations were reported in the involvement of operational risk functionaries at different banks. MNC size and large sized banks (including public sector, new private sector and foreign banks) have involvement at the zonal level and some respondents had involvement at the branch level. However, the involvement is limited to the head office at small and average sized banks. All the respondent banks have an exclusive CRO reflecting the sincerity of Indian banks towards risk management. Chi square test revealed significant relationship between the level of involvement and bank category (p value .042) and size of the bank (p value .000).
As far as *awareness / training and reporting issues* are concerned, majority (83%) of the respondents consider this factor as significant. **Principle 5** of the BCBS's sound practices paper emphasizes on regular *reporting* of pertinent information to board of directors supporting proactive management of operational risk. Majority of the banks consider reporting to be an important issue with the exception of few small sized banks, who believe reporting is somewhat significant .
The roadmap released by RBI for advanced *approaches of capital calculation of operational risk* shall not be mandatory before 2013. The operational risk capital becomes different for banks only when they adopt advanced approach. Hence, small and average banks (16%) do not give this factor a lot of importance. Others consider it significant or very significant. However, this difference in attitude is not significant with respect to both size (p value .411) and category of the bank (p value .078).
Frequent reporting by operational risk head ensures regular checks of the framework and timely detection of errors. Most of the respondent banks had a system of quarterly reporting. None of the public sector banks had a monthly reporting system, however, most of the foreign banks reported monthly and 43% of the private sector (new) banks as well as private sector (old) banks (20%) had a monthly reporting system. The relationship between bank category and frequency of reporting was observed to be *significant* (p value .003).
Basel II guidelines have listed out seven different event types *categorized as operational risk.* These event types have been categorized on the basis of historical experience of various operational risks based on loss events in the past. These events range from internal and external fraud to employment practices, damage to physical assets amongst others. The survey intended to take the opinion of respondents as to which particular event is perceived as most important by them.
Most of the high severity loss events (due to operational risk) in the past have been a result of *internal fraud*. Prominent examples include the cases of Societe Generale, Madoff, Barings amongst others. All the private sector banks and foreign banks consider Internal Fraud to be most important operational risk event. Overall, 90% banks rate Internal

Fraud as the most important Operational Risk and 10% perceive it be important. The Sub Prime Crisis is an evidence of an external fraud event taking place in the US that caused havoc on Indian entities. Other examples of external fraud include robbery, forgery, cheque kiting, damage from computer hacking. Most of them (75%) believe it to be important, whereas 25% are neutral about External Fraud as an Operational Risk. All old private sector banks and foreign banks consider it to be an important factor. The relationship between type of bank and the factor is not significant.

The Events - Employment Practices & Workplace Safety Practices, Clients, Products & Business Practices and Business Disruption and System Failure were considered important by most of the banks . However, no significant relationship was observed between the factor and the category of the bank, implying that all types of banks share similar opinions about these factors. Most of the respondents (74% mainly public sector banks) were either neutral or did not consider the event - *Damage to Physical Assets (Natural Disaster, Terrorism)*as important. A change in mindset is required here as recent past is testimony of India's vulnerability to terrorism. The variation in importance given to the *event* by different categories of banks is significant (p value 0.033).

As far as *Present Status of ORM Implementation* all over the world is concerned, the LDCE 2008 carried out by BCBS is clearly an evidence of the growth of banks worldwide in the field of modeling and management of operational risk management. The sample banks from India and Brazil lagged far behind their peers from US, UK, Japan and Australia. The difference is visible in all aspects with respect to operational risk ranging from methods of data collection to the analysis of data and development of appropriate models using the same. Many banks in these countries have already received AMA accreditation reflecting their advancement in the field of ORM.

Identification of operational risk inherent in Material Activities is the stepping stone to efficient ORM. Overall, 58% respondent banks have initiated the process of identification of Operational Risk inherent in Material Activities, but only 36% public sector banks and 20% private sector (old) banks have initiated the process. Even the relationship between the category of the bank and process of identification of operational risk inherent in material activities is significant (p value .001). Banks which have not started this process do not realize that identification of operational risk inherent in material activities would help them to take appropriate precautionary measures to minimize instances of loss due to operational risk.

Most of the banks (84%) have initiated the process of identification of *Operational Risk inherent in Products*, especially for new, structured products reflecting heightened consciousness of banks towards this factor . Most of the banks have also initiated the process of *identification of Operational Risk inherent in processes (77.4%), people (Human error/ fraud) and systems(81%).*

Majority of the banks have rated *robustness of their operational risk framework* as very effective or partly effective. This difference in perception about robustness of framework amongst banks of different categories is *significant* (p value 0.004).

At present , all the banks in India *measure capital against operational risk* as per Basic Indicator Approach (BIA). RBI has released the roadmap for Indian banks to move to sophisticated approaches which will help them bring down the capital charge. However, modeling for AMA (Advanced Measurement Approach) requires a lot of preparation, which is discussed and analyzed here. Banks need to collect a minimum of three years of *Internal loss data* for developing the model for AMA. All the banks are collecting the Internal Loss Data. There is variation in the time period since when they have been doing this.

Exhibit 3 : Use Of Internal Loss As Input In Different Categories Of Banks

Bank Category * Input Internal Loss Cross tabulation			
	Input Internal Loss (% within bank category)		
	Past 1 year	1 - 3 years	More than 3 years
Public Sector	28.6%	21.4%	50.0%
Old Private sector	.0%	60.0%	40.0%
New Private Sector	.0%	28.6%	71.4%
Foreign Bank	.0%	.0%	100.0%
Total (% out of 31)	**12.9%**	**25.8%**	**61.3%**

61% respondents have been collecting data regarding internal loss for the past three years or more. This difference

between category of the bank and collection of internal loss data is not significant (p value 0.104). Internal loss data of banks is insufficient for the purpose of modeling since operational risk has a heavy tail distribution due to presence of low frequency high intensity (LFHI) events . Banks supplement their internal loss data with external loss data to get the right kind of distribution. External loss data is collected by an agency, which maintains a pool of loss data of its member banks. Very few respondents have been collecting external loss data for more than an year and all these are large public sector banks. Non availability of an agency to pool external loss data of Indian Banks till February 2009 is the main reason responsible for this. Also, the banks which have not yet initiated the process of modelling operational risk do not realize the importance of collecting external loss data. 45% the respondents have been collecting external loss data for the past one year, which includes all foreign banks, 70% private sector (new) banks, 40% private sector (old) banks and 14% public sector banks.

Exhibit 4 : Use Of External Loss As An Input In Different Category Of Banks

Bank Category * Input External Loss Data Crosstabulation				
	Input External Loss			
	Do not use	Past 1 year	1 - 3 years	More than 3 years
Public Sector	64.3%	14.3%	14.3%	7.1%
Old Private sector	60.0%	40.0%	.0%	.0%
New Private Sector	28.6%	71.4%	.0%	.0%
Foreign Bank	.0%	100.0%	.0%	.0%
Total	**45.2%**	**45.2%**	**6.5%**	**3.2%**

An analysis of annual reports of the banks shows that all the banks which intend to move to AMA in future would be using RCSA (*Risk Control Self-Assessment)*, which is a qualitative modeling criterion. Only one fourth of the respondents have been using RCSA as an input for more than 3 years. The difference in usage of RCSA at present by different categories of banks is *significant* (p value 0.004). Public sector banks and private sector (old) banks lag behind their counterparts in use of RCSA as a key input since they have not started preparing for the advanced approaches for capital calculation of operational risk.

Indian banks have not yet realized the potential benefit of the *Scorecard approach,* since majority of those surveyed do not use it as yet in measurement of operational risk capital. When they prepare themselves for the advanced approaches, perhaps the usage of scorecards would also improve. Use of *Key Risk Indicators and Key Performance Indicators* is very popular worldwide. Some banks have more than 1000 KPIs / KRIs, which are used as an input in their operational risk measurement method. However, amongst Indian banks , one- third of the respondents do not use KPIs / KRIs as an input. These banks have not yet realized that usage of KPIs / KRIs helps in identification of potential operational risk events and take appropriate steps to minimize it. Usage of KPIs / KRIs is useful even if these banks are not preparing for the advanced approaches. Half of surveyed public sector banks are using it, 60% of the private sector (old) banks, most of the private sector (new) banks and all the foreign banks use KPIs / KRIs as a key input. The difference in usage of KPIs / KRIs by different categories of banks is *significant (* value .031).

Scenario Analysis is a popular input in the OR measurement methodology and is considered as a successful forward

Exhibit 5 : Input Scenario Analysis - Cross Tabulation

Exhibit 5 : Bank Category * Input Scenario Analysis Cross tabulation				
	Input Scenario Analysis			
	Do not use	Past 1 year	1 - 3 years	More than 3 years
Public Sector	57.14%	35.7%	7.1%	.0%
Old Private sector	40.0%	40.0%	.0%	7.1%
New Private Sector	14.28%	0%	85.71%	.0%
Foreign Bank	--	--	60%	40%
Total	**35.5%**	**22.60%**	**32.2%**	**9.7%**

looking technique. Four banks in Australia have been granted AMA accreditation and they have used scenario analysis extensively in their model. However, one third respondents do not use scenarios as an input in their measurement methodology. All the foreign bank respondents used scenario analysis (40% of them have been doing it for more than 3 years). p value (.001) suggests that the relationship between use of scenario analysis is *significant* with respect to the category of bank (p value .001).

EVT (Extreme Value Theory) is a quantitative modeling method suitable for operational risk, since there are instances of extreme data points and heavy tail in operational risk. Once Indian banks prepare for the AMA accreditation, use of EVT will be inevitable. However, as of now, 68% of the respondents do not use EVT in their measurement methodology, while others have incorporated it in the *past one year*. Even the p value (.046) between category of bank and use of EVT is *significant*.

Across the globe, different methods have been used for risk management. *Collection of internal loss data* is the first step to measurement of operational risk. Half of the respondents collect data of all internal losses and near miss as well, which is the best collection method suggested by analysts. Other respondents collect either losses over a floor value or all losses. Banks should be encouraged to maintain near miss database as well. Indian Banks Association (IBA) formed an external loss database in February 2009 and is persuading all the banks to share their data with it. Prior to this, banks used to build up external loss database on the basis of newspaper clippings and market intelligence. The analysis indicates that only the respondents from MNC size and among the largest banks of the country collect and scale external loss data. Half of the respondents have not even started collecting any external loss data. The collection & usage of external loss data is significantly related to both size (p value .009) and category of bank (p value .004). This implies that small size of the bank is a hurdle in collection and usage of external loss data.

A *frequent KRI review* helps in including new indicators and doing away with the redundant ones. 39% respondents do not have any fixed review frequency, while others do it annually / bi-annually. Few private sector (old and new) banks and most of the foreign banks review their KRIs every six months. A significant relationship (p value .003) has been observed between bank ownership and frequency of KRI review.

A well structured *rotation policy* ensures that people do not get to know so many intricacies of the job, which they can exploit to their own interest. The two major examples are that of Kerviel (Societe Generale) and Nick Leeson (Barings). Both these traders had worked in the internal as well as trading division, hence, they were familiar with the accounting intricacies which helped them in devising tricks to hide the original position. Routine job rotation can help avert this situation. 42% respondents have a rotation policy for moving staff to different job / location. Most of the banks have a rotation policy only up to a certain hierarchical level. No significant relationship was observed between category of bank and rotation policy (p value .160). The *Frequency of Rotation* varies across banks with most of them following the policy of rotation every 3 years (65%), while it was more than 3 years in some of the banks (32%).

High *attrition rate* leads to instability in the organization, and loss of dedicated, trained workforce. Private Sector (New) banks have the highest attrition rate in the country followed by private sector (old) banks. Public sector banks have the lowest attrition rate within the sample population followed by the foreign banks. Private Sector (new) banks need to develop appropriate polices to increase the retention rate of their employees to bring stability to institutions and keep operational risk in check. The difference in attrition rates amongst different categories of banks was significant (p value .001). Most of the banks with high rates of attrition believe that it is a potential operational risk.

Outsourcing has become a necessary evil in the banking system. However, this exposes banks to increased operational risk. RBI has issued specific guidelines to banks with respect to dealing with the outsourced employees and take protective steps. Majority of the respondents (90.3%) use outsourced services and contractors, of which, most of them (87%) believe that outsourcing leads to increase in financial crime. However, banks realize the potential risk from outsourcing and have developed adequate mechanisms to deal with it and hence prevent loss.

Effective *internal controls* can substantially lower down the probability of loss due to operational risk. All respondents from foreign banks and majority of private sector banks (new) have rated their internal controls as very effective. In contrast, only 21% respondents from public sector banks and *none* from private sector (old) rate their internal controls as very effective. Large proportion of these respondents rated the controls as partly effective. The difference in rating of internal controls by different category of banks is *significant* (p value .007).

The *modeling of operational risk* is required only when banks attempt for AMA accreditation. As per RBI stipulations, this will not be feasible before April 2013. However, the preparation for the same must start by now. Good Progress has been made in this field only by 16% respondents comprising mainly of foreign banks and very few Private Sector

(old) and (new) banks. Process of Modeling has been started by one third banks, which includes mainly private sector banks (new) and foreign banks. Almost half of the respondent banks (48%) are yet to begin the process of modeling of operational risk comprising mainly of public sector (79%) and old private sector banks (60%). The difference amongst different categories of banks for progress in Quantification & Modeling is significant (p value .004).

The **factor analysis** has been used to decipher **critical factors** that distinguish the sample banks from each other. This will lead to awareness amongst banks about selective factors which need to be given relatively more significance to develop a healthy operational risk management structure. **Reliability analysis** provides an overall index of the repeatability or internal consistency of the scale. The Reliability Analysis using Cronbach Alpha model and Factor Analysis has been performed separately on the three sections of the questionnaire.

Eight variables were considered for factor analysis from section 1 of the questionnaire on *Organizational Setup & Philosophy for Operational Risk Management*. The value of alpha in reliability analysis is 0.581, i.e., greater than 0.5, implying contents of section I of the questionnaire are reliable. The value of KMO Measure of Sampling Adequacy is equal to 0.504 and the significance value of Bartlett's test is 0.002, indicating significant relationships among the factors. Both the tests justify the use of factor analysis as a data reduction technique. Principal components analysis has been used to obtain the initial factor solution.

Four factors were observed to have Eigen value greater than 1. Thus, factor analysis reduced the set of 8 variables to 4 factors, which together explain 77.743% of the variance.

Exhibit 6 : Total Variance Explained Of Components Of Section 1

	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.405	30.064	30.064	2.405	30.064	30.064	1.971	24.633	24.633
2	1.616	20.205	50.268	1.616	20.205	50.268	1.595	19.944	44.577
3	1.191	14.881	65.150	1.191	14.881	65.150	1.565	19.564	64.141
4	1.007	12.593	77.743	1.007	12.593	**77.743**	1.088	13.602	**77.743**
5	.685	8.567	86.310						
6	.551	6.892	93.203						
7	.286	3.576	96.779						
8	.258	3.221	100.000						

The Rotated Component Matrix with the help of varimax method of rotation reveals that the four factors important in organizational setup & philosophy for Operational Risk Management are: **(i)** Level of Involvement of Operational risk functionaries, **(ii)** Relative Significance of Operational Risk Reporting, **(iii)** Relative Significance of Operational Risk Awareness / Training and **(iv)** Relative significance of Operational Risk Capital Calculation.

Exhibit 7: Rotated Component Matrix For Factors Affecting Organizational Setup & Philosophy

	Component			
	1	2	3	4
CompOR	.227	.835	-.076	.018
ORInvolve	**.854**	-.064	-.166	.200
RespStratgy	-.163	.003	-.869	.111
RespTraning	-.109	.085	**.844**	.270
REspREporrt	.028	**.847**	.139	.058
REspCapCal	-.005	.066	.097	**.958**
FreqREport	.729	.124	.160	-.203
FinSuprt	.787	.387	.100	-.024

The extracted factors indicate that there is wide variation in *level of involvement* at different banks. They must attempt to penetrate as deep as possible to improve the effectiveness of their operational risk management programme. Indian

Banks must also realize the significance of operational risk *reporting*. Emphasis must be given to *operational risk awareness / training* to improve effectiveness of ORM practices in respective banks. RBI shall approve movement to AMA only after March 31,2013. Hence, *capital calculation of operational risk* is not given importance by small and average sized banks. The Present status of respondents indicating their preparedness for movement to advanced approaches of operational risk capital calculation was analyzed. 15 variables including existence of a framework, usage of various quantitative and qualitative inputs and frequency of their review were considered for factor analysis from Section - 2 of the questionnaire. The value of alpha in reliability analysis is 0.928, implying contents of section 2 of the questionnaire are reliable. The value of KMO Measure of Sampling Adequacy(0.832) and significance value of Bartlett's test (0.000) justify the use of factor analysis as a data reduction technique.

Exhibit 8 : Total Variance Explained Of Components Of Section 2

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	**7.760**	51.730	51.730	7.760	51.730	51.730	3.797	25.314	25.314
2	**1.775**	11.837	63.567	1.775	11.837	63.567	3.667	24.447	49.762
3	**1.282**	8.545	72.112	1.282	8.545	**72.112**	3.353	22.350	**72.112**
4	.969	6.459	78.571						
5	.639	4.261	82.832						
6	.598	3.987	86.819						
7	.474	3.157	89.976						
8	.356	2.374	92.350						
9	.332	2.210	94.560						
10	.287	1.910	96.471						
11	.157	1.047	97.517						
12	.111	.740	98.257						
13	.099	.659	98.916						
14	.095	.632	99.548						
15	.068	.452	100.000						

Factor analysis reduced the set of 15 factors to 3 factors which together explain 72 % of the variance.

Exhibit 9 : Rotated Component Matrix For Factors Affecting Present Status of ORM Implementation

	Component				Component			
	1	2	3			1	2	3
Identify OpRiskin	.693	.217	.173		EVT	.031	.827	.183
RobustF/W	.311	.459	.664		VaR	.058	.747	.121
Int Loss	**.722**	.241	.354		Others	.709	-.100	.090
Ext Loss	.597	.598	-.226		Whatdata	.709	.092	.391
RCSA	.346	.440	.665		ExtLossMthd	.301	**.861**	.182
ScrCard	.138	-.205	**.819**		FreqKRI	.601	.360	.575
KPI	.531	.367	.546		ORFrmwrk	.642	.464	.451
Scenario	.215	.526	.720					

Rotated Component Matrix reveals that the three factors important in differentiating present status of ORM implementation amongst Indian banks are : **(i)** Identification process of Operational Risk inherent in various activities, **(ii)** Usage of EVT (extreme value theory) in Operational risk measurement and management and **(iii)** Usage of scorecards in operational risk measurement and management.

The *extracted factors* imply that many banks have not yet initiated the *identification process in all the four areas viz., product, process, people and systems*. Banks both in terms of size and category need to widen their identification process in all the four areas. Indian Banks have not geared up themselves completely for the AMA approach. They need to improve *usage of EVT* for the AMA accreditation. Indian banks have not yet realized the potential benefit of *The Scorecard approach,* since most of the respondents (77.4) do not use it as a key input as yet. Advances in usage of EVT and scorecards will even out differences amongst Indian banks in their preparation for advanced approaches to ORM. 12 Variables were considered for factor analysis from Section 3 of the questionnaire to extract the most critical factors in the usage of various risk management methods, inputs into operational risk management strategy like existence of a framework, usage of various quantitative and qualitative inputs and frequency of their review. The value of alpha in reliability analysis is 0.660, indicating that contents of section 3 are reliable. The significance value of Bartlett's test of Sphericity is .000 and value of KMO Measure of Sampling Adequacy is 0.577 indicating significant relationships among the factors, hence justifying the use of factor analysis as a data reduction technique.Factor analysis has led to extraction of 5 factors (with Eigen value more than 1) from the set of 12 variables explaining 78 % of variance.

Exhibit 10 : Total Variance Explained Of Components Of Section 3

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.555	29.625	29.625	3.555	29.625	29.625	3.046	25.387	25.387
2	2.047	17.054	46.679	2.047	17.054	46.679	2.026	16.885	42.273
3	1.424	11.871	58.550	1.424	11.871	58.550	1.680	13.997	56.270
4	1.200	9.996	68.546	1.200	9.996	68.546	1.323	11.025	67.295
5	1.121	9.339	77.885	1.121	9.339	**77.885**	1.271	10.590	**77.885**
6	.676	5.630	83.515						
7	.580	4.831	88.346						
8	.492	4.098	92.444						
9	.324	2.703	95.147						
10	.253	2.110	97.257						
11	.210	1.748	99.005						
12	.119	.995	100.000						

Exhibit 11 : Rotated Component Matrix For Factors Affecting Risk Management Methods, Human Resource, Outsourcing

	Component				
	1	2	3	4	5
Pillar1Mthd	.359	-.008	-.083	.777	.240
MonitrOpRisk	.216	.397	**.790**	.102	.195
FreqMonitr	**.802**	.304	-.056	-.004	.043
RotnPolicy	.267	-.131	.066	.070	**.781**
RotnFreq	.766	-.128	.131	.130	.092
AttrnRate	-.438	-.045	.075	**.787**	-.186
CompBreak	.732	-.032	.342	-.072	.030
FinlCrime	.233	-.385	.779	-.084	-.096
StaffIncentiv	.469	-.067	.035	.034	-.685
EthicCultur	.748	-.075	.416	-.115	-.189
Outsrce	-.062	.874	-.234	-.172	-.028
OutsrcPrtct	.077	**.904**	.184	.103	-.076

Rotated Component matrix explains that the five factors important in risk management methods, human resource and outsourcing aspect of Operational Risk management of Banks are : **(i)** Frequency of monitoring Operational Risk, **(ii)** Policies to Protect from outsourcing risk, **(iii)** Process of monitoring Operational Risk, **(iv)** Attrition Rate in the organisation and (v) Rotation Policy for moving staff to different jobs.

The extracted factors of section 3 imply that monitoring of operational risk is essential to protect the organization from losses due to operational risk. Banks must endeavour to monitor not just the losses above a threshold, but the near miss as well. *Monitoring of operational risk* on a monthly or quarterly basis is also important to keep close and timely check on the operational risk events and avoid losses due to it. Use of *outsource services and contractors* also leads to increase in financial crime. Banks must realize the potential risk from outsourcing and develop adequate mechanisms to deal with it to prevent potential loss from operational risk. High *rates of attrition* lead to instability in the organization and can become a major cause of operational risk. Banks with high attrition rates must develop appropriate polices to increase the retention rate of their employees and keep operational risk in check. Prolonged stay at the same position / in the same division makes the employees so familiar to the working systems, that he can find gaps in the policies to use them to his advantage. Banks must endeavor to follow a frequent *rotation policy* and train adequate number of employees so as to take the previous ones' position.

Overall, the factor analysis has led to the extraction of 12 factors. Banks must endeavor to give maximum emphasis to these factors to minimize relative anomalies in their performance and preparation for advanced approaches to ORM. Further, this would create an overall operational risk aware culture in all the organizations.

The study of operational risk management practices of a range of banks in India and other countries give a conclusive evidence of heightened awareness and due importance being given to operational risk. The practices followed evidence of a pragmatic mix of qualitative and quantitative aspects. The sub-prime crisis has made the organizations more conscious and as a result, all new products are subject to risk review and sign-off process for identification and assessment of relevant risks. AMA is on the agenda of many banks and they are gearing up for it by collecting relevant data. Although organizational structures continue to differ on their strategies and systems, there is a consistent trend of operational risk departments reporting under the purview of Chief Risk Officer. Size was observed to be a deterrent to collection of external loss data. Further, the level of involvement of operational risk functionaries was observed to be relatively deeper upto zonal level (in some cases, even upto branch level) only in large banks. A proper framework / model for operational risk management / measurement was prevalent in most of the large banks as compared to their smaller peers. Majority of the respondents believe that outsourcing leads to increase in financial crime. *Internal Fraud* was considered to be the most important operational risk factor followed by *external fraud*. Majority of the banks, especially public sector banks do not consider *Damage to Physical Assets* (Natural Disaster, Terrorism) as an important operational risk factor. Most of the banks (84%) have initiated the process of identification of operational risk inherent in product (84%) and people reflecting heightened consciousness of banks towards it.

Numerous areas emerged where the performance / preparedness of public sector and old private sector banks was observed to be lagging behind that of new private sector and foreign banks. *Existence and effectiveness of operational risk framework , effectiveness of internal controls,* responsiveness of business to operational risk department was better in the foreign and new private sector banks. All the banks are collecting the *Internal Loss Data.* However, many Indian banks have not even started collecting *external loss data* . Though *RCSA, Scenario analysis, EVT and KPI / KRI* are widely used as an input by Indian banks, but the proportion of public sector banks and private sector (old) banks using them is lower. Indian banks have not yet realized the potential benefit of *Scorecards and VaR* approach, since majority of those surveyed do not use them in their measurement methodology. Significant progress in the field of Quantification & Modelling of Operational Risk was made by very few respondents.

It can further be recommended that public sector banks (esp. small and average sized) and private sector banks (old) must gear up their progress towards implementation of operational risk policies, preparedness, usage of key indicators. Private Sector (New) banks must take steps to keep their attrition rate in control , a cause of operational risk. Small and average sized banks can use the experience of their bigger counterparts in tiding over the hurdles in implementation of advanced approaches to capital calculation of operational risk. The Indian banks should learn a lesson from the sub-prime crisis that follow-up on loss data, self-assessment results, scenario analysis results and KRIs based on relevant reports is more important than the numbers themselves. RBI should consider giving relaxations to large banks in implementation of the AMA approach. RBI must look into the status banks with least developed operational risk management policies and accordingly guide and supervise them. Usage of advanced

qualitative factors, monitoring frequency, rotation policy, quantification and modeling of operational risk must be encouraged to even out anomalies amongst banks.

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(Contd. From Page 22)

Earnings per share increased over the last five years. The trend of distributing dividend to the shareholders is also positive. Operating profit of all the companies went up from the year 2004-05 to 2008-09.Overall, the companies have performed well in the last five years and there is a steady trend of soundness of financial performance in all the NBFCs (covered in this study) observed over the last five years .

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