

Banking Frauds & Relevance of Data Analytics

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Abstract: *It may be noted that any regulatory measure on financial industry will like to ensure:*

i) Financial stability

ii) Improved performance

iii) Control of revenue leakage

iv) Transparency

These are all inter-related. However while we analyze the aspect of revenue leakage we come across many occasions of excessive risks undertaken by banks (may be arising out of unreasonable greed & expectations) as happened in cases of Mortgage loans in USA in 2007 resulting in huge non-performing assets (NPA). In banking only statistical analysis is not enough, there has to be other considerations also like 'welfare economics' etc. Commercial Banking is driven by the environment but at the same time it creates the environment too. The other reason for NPA is FRAUD – as simple as that. Naturally this fraud is done by the customer of the bank quite often in collusion with the Bank officers (and managers). India which is quite low in the ranking of 'corruption perception index' [1] we have seen significant growth of NPA [2] and underlying Fraud. At the same time the tools of Data Analytics are now available for managerial analysis and decisions. We have studied a few techniques to evaluate how effective they could be in NPA (Fraud) control.

Keywords: *Frauds, Analytics, NPA, SFIO, Ontology, Basel Committee*

I. Introduction

Ensuring good financial health of Bank is not only of national importance but also is a global requirement today. This is so because banks play an important role in all commercial activities. Often these commercial transactions cross boundaries of a country set by political considerations. Thus often the transaction connects, directly or indirectly, banks of two or more countries and therefore multiple governments. If stability of one bank is doubtful, honoring the financial transaction also becomes a risk which is not acceptable. We have seen in 2007 how a collapse of financial system in USA pulled down the global economy. With the objective of ensuring a financial stability 'Basel Committee on Banking Supervision (BCBS)' established various norms to improve stability and performance. Governments of all countries were asked to maintain the necessary criteria so that cross country transactions can be accepted by Bank for International Settlement (BIS). Accordingly the regulatory bodies (RBI in India) imposed required conditions for better management of banks, one well known criteria being 'capital adequacy' norm.

For Risk Management in Bank we try to evaluate Management Risk, Market Risk, Country Risk, Operations Risk etc. Most important is 'Credit Risk' management where we estimate probability of failure of repayments against Loans. This is not a case of Fraud per se. However, often the revenue leakage due to non payment is result of a fraudulent transaction and the amount is pretty high. A typical organization loses about 5% of its revenue to fraud every year. In 2013 alone worldwide total fraud loss was reported to be \$3.7 trillion [2014 ACFE Survey]. Banks being a TRUST organization must control this leakage.

II. Banking In India

There were private banks in India for centuries. Now and then such banks failed and the customers lost all their money. In a seminal action India Nationalized 16 banks in 1969 and later extended it to 28 banks. This was a major decision to stabilize Indian banking system. At a later date more private banks were licensed under strict control of Government of India through RBI as the regulatory authority. In case of Credit Risk we may observe that failure & fraud are opposite sides of the same coin – in both cases Bank loses! We may note here – It is often difficult to differentiate 'bona fide' from 'mala fide' action. A famous quote of Chanakya is - *It is impossible to know when and how much water a fish drank; similar is the act of stealing government money by officials.* We may also recall what he said in addition - *A person should not be too honest. Straight trees are cut first and honest people are screwed first.* Conflicts are basic characteristic of the Indian Philosophy but a wise guy should be able to take the essence depending on the perspective. Public sector Banks in India has a social

responsibility too. Loans are extended to lower income groups for upliftment of social status through some work engagement or cultivation etc. Surprisingly the default rate is quite low with these groups. But government as a populist measure periodically waves the interest and principals especially of peasants.

2.1 NPA growth: Non Performing Assets (NPA) is created in the accounting books of banks when repayments of installments are defaulted. The healths of NPAs are graded as per the norm set up by RBI and accordingly provisions are created.

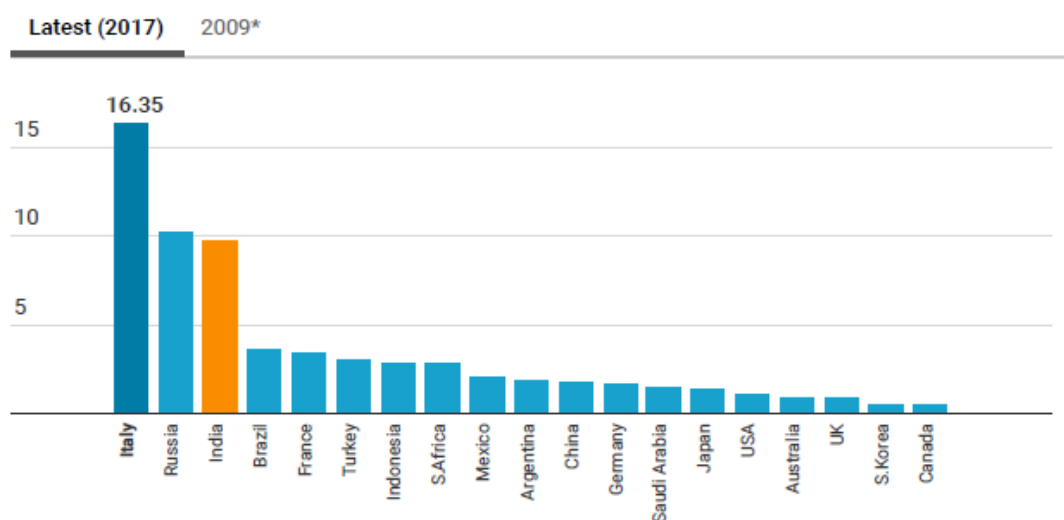
NPAs are revenue leakages created due to:

- i) Risk failure (Credit Risk)
- ii) Frauds
 - (a) Done by customers
 - (b) Done by bank staff
 - (c) Together in connivance

India's banking system, as reported, was saddled with Rs7.29 Lakh Crore of gross non-performing assets (NPAs) — about 5% of the country's GDP—at the end of March 2017 and now it will be much higher like 9 Lakh Crore [2]. The NPA status is very bad [3]

Indian banks' NPA ratio is now among the worst in G-20

Non-performing loans (as % of total gross loans)



*Data for China is for 2010 instead of 2009. Latest data for Germany is 2016 and for South Korea is 2014.

Source: IMF financial soundness indicators • Get the data • Created with Datawrapper

Figure 1

We have also noted that measures like i) Assets reconstruction, ii) Insolvency and Bankruptcy Code (IBC), iii) Establishing National Company Law Tribunal (NCLT), iv) Financial Resolution and Deposit Insurance etc are basically only eye washes. RBI is not likely to come out with a solution to cover loss in near future.

2. Banking Data & Analytics: Bank computerization in India began in 1985 following the Rangarajan Committee report. After ALPM, Total Branch Mechanization was done and then Core Banking System (CBS). Simultaneously delivery channels have been expanded with ATMs, POS, Net Banking while EFT of various types have been introduced. NPCI has played a major role in interbank transactions & clearing. As was expected initially we now have huge volume of transaction database which can be 'Mined' to extract quantitative knowledge that was not earlier available. Using this knowledge we can build appropriate policies to control risk. Statistical analysis also helps managing Assets against the Liabilities (ALM).

Analytics techniques are effective for fraud detection across industry boundaries. These include applications in insurance fraud, credit card fraud, anti-money laundering, healthcare fraud, telecommunications fraud, click fraud, tax evasion, and more. Steps involved and tools available are:

- Data Collection, Sampling and Preprocessing techniques
- Predictive Analysis with Regression, Decision Trees, Neural Networks, SVM, Ensemble Methods

- Descriptive analysis of fraud detection which comprises unsupervised learning methodologies including clustering and outlier detection procedures (graphical and statistical methods)
- Social Network Analysis and Graph Theory, Community Mining, Bipartite and Multipartite Graphical Representation and Impact of Neighborhoods Metrics

III. Case Study

About 1000 cases of 5 years have been collected from a large Nationalized Bank in India. These are statements of the cases in Text form. Reasons of Frauds are identified to be:

- a) *Policy violations*
 - i) *Misuse Of Power of Authority*
 - ii) *Standard Operating Procedure Violations*
 - iii) *Diversion of Loan*
- b) *Entity based violations*
 - i) *Over Valuation of Collateral or Non-Existence of Collateral*
 - ii) *Fraudulent Documentation*
 - iii) *Fraudulent Instrumentation*
 - iv) *Identity Theft*
 - v) *Multiple Collusion*
 - vi) *Account Takeover*
 - vii) *Theft*
 - viii) *Digital Fraud/Cyber Fraud*

Ontology (semantic) based analysis [4], [5] have been made to determine how the Fraud can be Identified in time for Prevention, Early Detection, Quick Resolution.

3.1 One Sample Case study:

(Bank employees resorting to fraudulent forex transaction)

This case involving fraudulent forex transaction occurred in the fourth quarter of 2009 but was discovered in second quarter of 2012. The fraudulent involvement was \$2, 65,000 while \$ 176,667 was the amount which was recovered. One of bank employee was fraudulently doing forex transaction and was not maintaining proper voucher and transactional slips. Fake transactional documents were submitted. In reconciliation statements foreign bills and negotiation settlement register was found doctored. Finally the matter was taken up by the investigating agencies.

This is so close to current case of NIRAV MODI which is pure fraud of quite high magnitude and seems to be the result of lack of compliance triggered by matching bribes at multiple levels.

IV. Conclusions:

- It is clear that Data Analytics help us to identify and classify the risks involved. But the ultimate decision and action is undertaken by human beings only.
- India is a Country with very low Corruption Perception Index (ranked 81 out of 180 countries) as estimated by Transparency International. Here often the 'Fairs are foul and the Fouls are fair'. Thus relatively easier to commit Fraud.
- You can take the horse to the pond but cannot make it drink. Until top management and regulatory authority are very serious and determined about detecting and controlling fraud, no Data Analytic tool can help us to avoid Serious Frauds (supposed to be investigated by SFIO *only after it has happened*).

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