

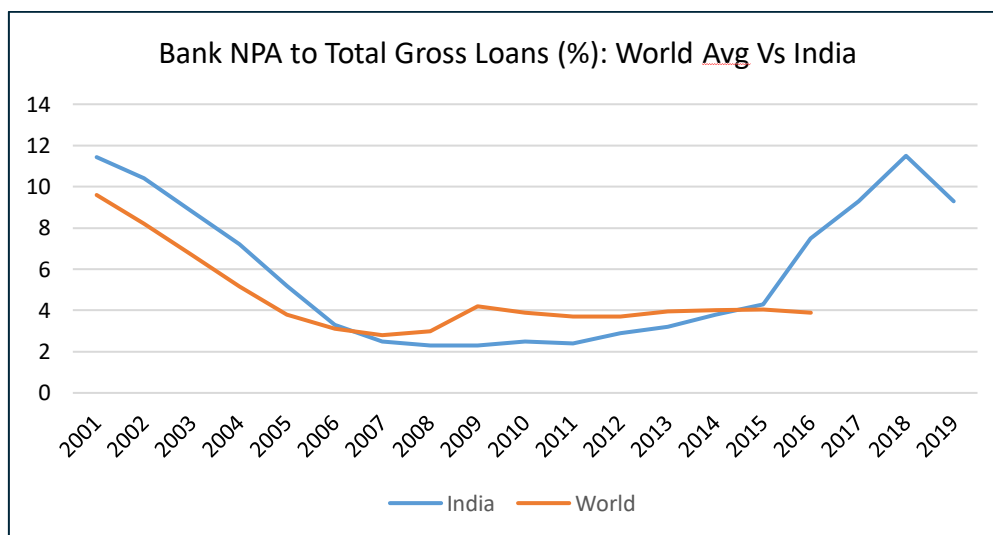
Collaborative approach for identifying and acting on proactive early warning signals in Banks

– Risk management as a value add



Challenges in the Banking sector

To stem the spurt of bad loans, Reserve Bank of India (RBI) had introduced multitude of measures through out the last decade. Schemes like Corporate and Strategic debt restructuring, Sustainable Structuring of Stressed Assets (S4A), Insolvency and Bankruptcy Code (IBC) 2016 and Prudential Norms on Income Recognition, Asset Classification (IRAC) norms have been introduced to ensure recovering bad loans or minimizing exposure. Formation of National Company Law Tribunal (NCLT) under section 408 of the Companies Act, 2013 (18 of 2013) by Central Government of India also assisted Banks in cases of insolvency. Despite such commendable measures both by RBI and Central Government, there has been an increase in non-performing assets (NPA). This is particularly worrisome, as during the same period the global average remained stable (Picture 1¹).

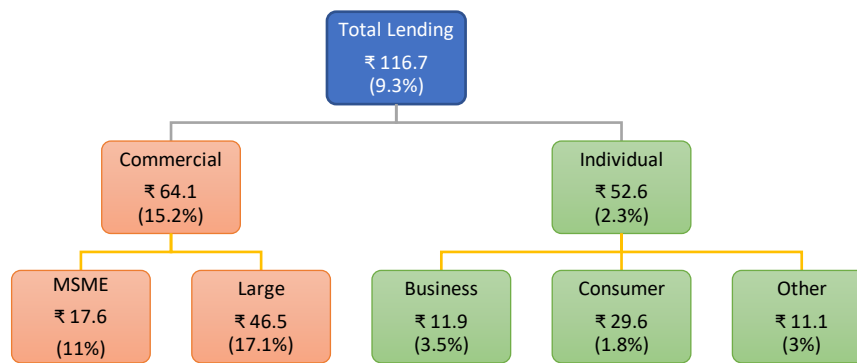


Picture 1: Bank NPA as % of total loans (India vs Global)

One of the major reasons for growth in NPA despite sleuth of action from regulators and government is due to the fact, most of the measures are reactive in nature. Keeping this in mind, RBI came up with the guidelines for Early Warning Signal (EWS) in 2016 to proactively monitor loan portfolios and predict delinquencies. RBI stipulated Banks to implement the framework based on 42 Early Warning Signals with both the purpose of early indicators of frauds as well predicting delinquent accounts.

¹ https://rbidocs.rbi.org.in/rdocs/Publications/PDFs/ORTP2018_FE9E97E7AF7024A4B94321734CD76DD4F.PDF

Though there has been a recent dip in overall NPA in 2019, recent events like Punjab & Maharashtra Co-operative Bank Limited (PMC) fraud case or some of the major banks under reporting NPA numbers hints that not all is well with the Banking domain in India. The same has been witnessed in shareholders confidence as Bank share prices go down for the fear of broader credit issues in the economy as well as frustration on lack of speed in identifying bad loans. Specifically, the Banks are concerned on their corporate portfolios, where despite multiple interventions the NPA remains much higher than retail (illustrated in picture 2²)



Advances (NPA%), Amount in Lakh Crores INR

Picture 2: Breakdown of NPA between corporate and retail

Significance of Early Warning Signal

EWS systems are meant to identify probable risks at a nascent stage of the credit life cycle. Banks and FIs who use full-fledged early warning signals and have sound credit monitoring policies in place have a better regulation of cash, healthier loan portfolio, good capital yield and high Return on Equity (ROE). Strong EWS systems are supposed to limit the chance of borrower default, assist in correct loan disbursement decisions and prevent exposure to borrowers who has higher probability of default. Through a comprehensive early warning framework that includes identifying the right customer segment,

² CIBIL-Transunion & SIDBI MSME Pulse Report, June 2019

understanding the data landscape, formulating early warning triggers and creating a risk mitigation plan, banks have seen a 15-20% reduction in their NPA³.

Challenges Banks are facing while implementing EWS

Based on RBI guidelines, banks have taken either of the two strategies – upgrading their own risk solutions or implementing specific solution with the help of external consultants. However, there has been significant challenges faced by the Bank while implementing early warning signals on their own.

Firstly, most of the Banks are yet to use their internal data efficiently. 360-degree view of their own customers, portfolios, industry view are available only partially making it difficult to use the data for determining the right early warning scores.

Traditionally, Banks have only worked on their internal data. However, EWS requires significant amount of external data, which are both costly and not available easily. The Banks are not being able to procure data which can be easily integrated with their internal data and be used efficiently to determine early warning signals.

Also, implementing a system of early warning signals depends on the digital maturity of an organisation. The key lies not in just integrating the systems but to generate the early warning signal based on the triggers defined and conveying it to the concerned person and monitoring the action that has been taken⁴.

Operational issues like bandwidth and overheads and lack of continuous monitoring are also impacting the implementation budget and quality. The selection of traditional and non-traditional data sources and mapping them to the Banks portfolio has proven to be time consuming and with lower yield in terms of gaining a better control on the loan book.

³ <https://economictimes.indiatimes.com/opinion/et-commentary/effective-early-warning-crucial-in-preventing-banks-exposure-to-npas/articleshow/32366993.cms?from=mdr>

⁴ <https://www.bloomberquint.com/law-and-policy/patchwork-approach-to-early-warning-signals-may-do-little-to-prevent-bank-frauds>

The other challenge is that a silo implementation of an EWS system in a bank does not reveal some of the critical interdependent information like:

- Evergreening of the loans in other banks
- New loans taken in one bank to pay of commitments in other banks
- Sharing of cross collateral information across banks can help in identifying overall leverage on the collateral
- Insights into exposure and loan servicing of the related or group of companies
- Promoter behaviour and exposure across all the banks



Picture 3: Challenges to implement an EWS system

Hence, even after a full-fledged implementation of EWS solution, the Banks will find it difficult to reduce NPA more than 15-20% as only partial data is available to the Banks. The Banks need to look into a completely different approach while trying to accurately predict the early warning signals.

A consortium approach to build Early Warning Signal

13 life insurance companies in India has formed a consortium in 2018 to create a blockchain based solution, which will assist in reducing reliance on data intermediaries/aggregators, assist in medical and financial underwriting, risk assessment, fraud detection and regulatory compliance. In USA, five major financial institutions have joined hand for comprehensive third-party risk assessment by sharing information. In India, Reserve Bank of India will create a Central Payment Fraud Registry to monitor digital payments related frauds on a real-time basis and provide customers with periodic aggregated data of risks associated with individual payments operators in a bid to improve customer confidence in these channels. ISO (now Verisk) was formed through a consortium of property and casualty Insurance companies for consolidated underwriting risk management. In each case, consortium has helped organisations to identify and mitigate risks in a much more efficient, cheaper and faster way than it would have been possible to do in alone.

A consortium based integrated Early Warning Signal module will help the Bank in multitude ways like:

1. Shared and hence reduced cost of operation for building and maintaining early warning signal
2. Significantly reduce the cost of procuring third party data
3. Give an holistic understanding of their customers/board of directors/promoters and how they are operating in the Banking and Financial Services spectrum – greater insights
4. Normalisation of standards in appraising the data can lead to better benchmarking practices and predicting behavioural patterns
5. Combining the credit data provided by the banks with the declared financial data to find misrepresentations
6. Look for Inconsistencies and divergence in the data and indicators from different sources - Leading to early identification of the risk
7. A consortium-based approach will also help in identifying a fraud ring
8. Improvement in continuous monitoring and assistance to internal auditors
9. Continuous feedback to improve the credit underwriting policies of the Bank
10. Faster reduction of default rate at portfolio level

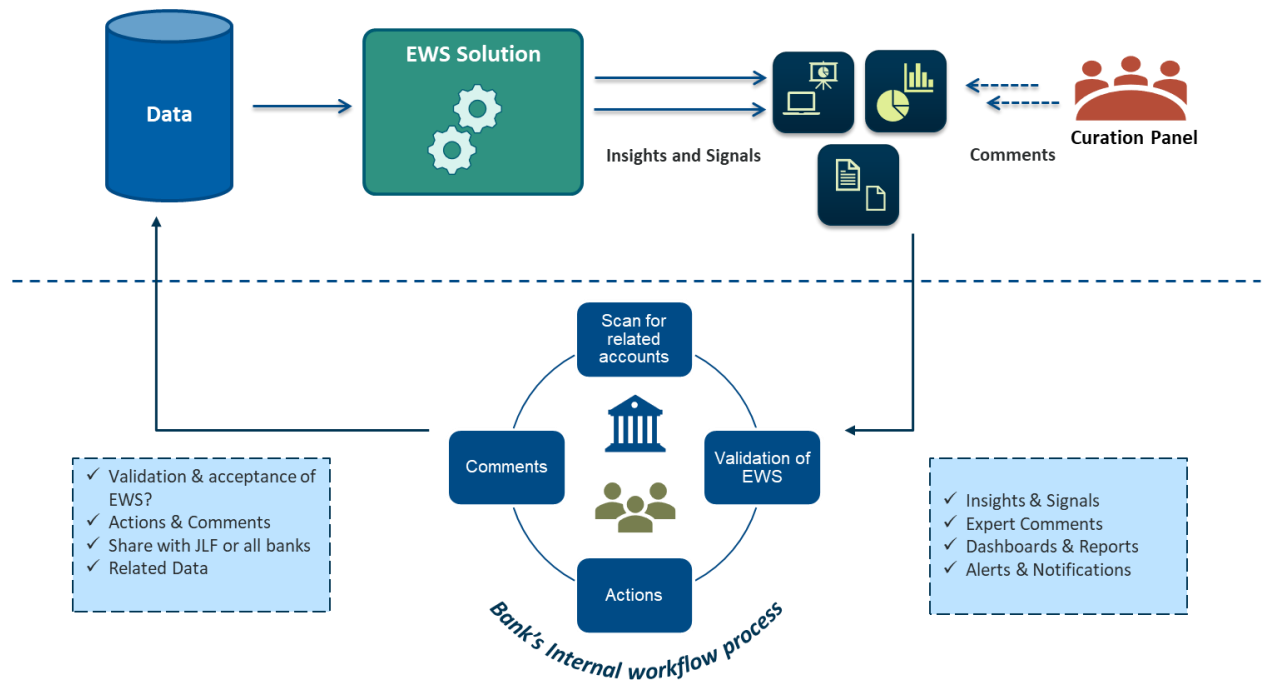
11. Using external data, new trends can be identified in different industries and banks can readjust their portfolio mix. It can even help banks to take decision on composition of their portfolio.
12. Given the consortium data will be used by other Banks, the feedback mechanism is going to help in reducing false positive and thereby increasing operational efficiency.
13. Data duplication is avoided and everything is kept at one place although with decentralized access and a higher degree of security.

EWS consortium operating model

In a consortium approach, the Banks would provide credit portfolio data, transactional data and NPA data to a common data repository. The data repository will be enriched by external data like news feeds (English and vernacular (for SME/MSME), credit bureaus, rating agencies, third party associations, government agencies, stock statements, balance sheets etc. The consortia data and external data will be processed through series of machine learning models to look for anomalies and divergence in the data and score the data at account, customer, portfolio and industry level. The scored output will be provided back to the Banks in various formats. There will be a separate team, who will monitor and curate the solution and triggers at a central level.

At the core of the consortium EWS engine, the analytical models will enable the Banks to get information on promoter/director and related company analysis, financial activities and footprint, financial discipline analysis, company performance analysis, macro and external factor analysis, collateral analysis etc.

This Consortium EWS model will be supplemented with the Banks' own EWS solution which will exchange insights with each other at a regular frequency. This will enable the Banks to have control over their own processes, people and data, as well as they would be able to benefit from the external and peer group information. The following diagram shows the details of how individual Banks would be able to operate in a consortium model:



Picture 4: Proposed operating model for banks in EWS consortium

Financial institutions have always viewed the custody and protection of their customers' data as a responsibility, rather than an asset to be commercialized. Hence, one of the common concern of Banks would be on data privacy and personal information. The Banks will also be concerned about poaching of customers by other competitors. Typically, challenger banks face distinct obstacles in protecting sensitive customer financial data in such a model. Hence, it's important for the consortia curators to protect confidential data. One of the suggested way to protect data can be as follows:

- Data from the banks to the consortia

PI (Personal identification) data attributes to be forward (one way) encrypted using the public key

Reverse encryption not possible on the consortia side

Only possible on the bank's end using the private key

- Consortia data

To combine all the data from different banks, the banks have to use the same public and private keys for encryption and decryption

- Data sourced from external sources

PI data attributes to be forward (one way) encrypted with the same public key

Best confidence algorithms can be used to match with the bank's data to aid amalgamation

- Then combined view of the data is achieved aiding in holistic analysis
- Insights/Analysis information from consortia to the banks

Encrypted PI data will be sent over to the banks

Banks can do decryption using the private key to identify PI and map to analysis/insights to the correct entities

Benefits on EWS consortium model

In a consortium model, the Banks will be able to not only use their own data, but, data from consortium partners, external data from various sources and industry body/monitoring agency data for analysis. The consortium approach will result in lower operational overheads and hence significant cost benefits. Also, this enables the Banks to do continuous monitoring of their portfolio. Lastly, advanced technologies will enable the Banks to cross validate the indicators from different sources to identify Inconsistencies/Divergence.

Overall, Banks will move from a patch work implementation of EWS with a lower ROE to a higher ROE model in a consortium approach.