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# Micro Factor Analysis with the Development of Fintech Strategy to Reduce NPA Occurrences Using Artificial Intelligence Model for Government Sponsored Schemes



**Abstract:** - Banking is a sector which is the core business beam which balances the national economical status by providing financial assistance to strengthen the business proposals. However, it is noted that banks facing timely repayment issues leading to the increase in NPA status. Apart from this, it is necessary to model business domain specific structure of sanctioning the loan. Many similar business owners' demand loans from same geographical locations which may lead to hamper the businesses and that may lead to defaulter status with the repayment issues. Consequently, in Government sponsored schemes, NPA percentage may further increase with reason of business failures. To avoid such failures of Government sponsored schemes, it is necessary to setup automated strategically model considering the micro factors in banking. Hence, this paper presents the "Cumulative ultra age fintech Artificial Intelligence" strategy which suggests the geographical loan sanctioning process which curtails the target based lending, quick response (QR) code system for repayment and group loan and chained repayment system.

**Keywords:** NPA, PMMY, QR, Artificial Intelligence, Micro Factor Analysis

## 1. Introduction

A well-balanced, strong and advantageous banking system is the essential for attaining comprehensive development in Indian economy. The public sector banks are considerably more engaged in dealing with the public dimensions of sustainability with the aid of different micro-finance strategies, gender-specific loan programmes, society development plan, etc. For combining advantageous banking, the Indian banking sector must be more aggressive in its strategy and needs to undertake at least the proven sustainable banking code of conducts [1]. Credit deposit proportion is one other major indication to figure out the banking sector of a country. It reveals just how much of a bank core funds are being utilized for financing, the main banking activity. However, the Non Performing Asset (NPA) of public sector bank likewise took a toll on the banks' revenue as apparent from the integrated profit as well as , following cutbacks of public sector banks. The public sector banks gained a profit of 37017 crore in 2014-15 which because of the growing number of NPA felled down to a loss of 81752 crore in the year 2018-19 [2]. Furthermore, technology advancement drawn fundamental change in the operation of banks in India both in house and outwardly as it allows banks to furnish enhanced client services. Subsequent to the invasion of Technology by Indian banking sector India comes forth as one of the youngest however , very robust country of the global village and boost up the FDI from all parts of words to India. Innovation in banking likewise prospects to Re-Engineering of Business Process and so handle challenges like, just how to render best products and services to clients, how to model an ideal organizational model to completely capture the positive effects of technology, what all measures can be undertaken to transform the business approach, additionally how to use technology for deriving financial systems of scale,

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what all means are available to attain cost efficiencies and which all efforts are required to set up a client centric operation model. The key strengths of implementing Technology resolutions in the areas of banking are faster, legitimate and effective analysis data and information, accelerate the decision making process [3,4]. In addition to this, geographic variation serps in the progression of organization significance due to a boost in scale as well as extent of financial systems, gains in synergy, decline in cost as well as increased corporate governance, but, the features of economic establishments get intensely influenced because of information asymmetries, varied macro and microeconomic factors across economies [5-7]. In this circumstance, it is essential to evaluate the influence of geographical transformation on the effectiveness of Indian banking plans like PMMY. PMMY determinants are accountable for establishing recognition in vulnerable areas regarding start-ups and job creation. This plan is ideal for both banks as well as borrowers considering that this plan does not need any guarantee. Subsequently, it needs to be persisted by the Central government as it is an incredibly close alternative of the other loan schemes [8,9]. However, scheduled repayment is necessary and is major factor to reduce NPA. Ten years ago, in the event that we talked of advanced technology for the micro-finance sector, we were effectively speaking regarding management information systems (MIS), on-line financing and the usage of mobile banking. A more recent body of work in micro-finance was centering on data systems for functional superiority. Small work thought to be Artificial Intelligence (AI) deployment in dynamic information systems, apart from for a paper on a Distributed Credit Bureau System, which forecasted alterations based on dynamically founded on evolving algorithms [10-12]

## 2. Specific Literature

MUDRA Plan details the insufficient access to formal credit for people from diverse social organizations, who frequently encounter troubles in gaining loans from typical banking organizations because of different factors just like lack of capital, low income, or modest credit history [13]. MUDRA Loans seeks to encourage entrepreneurship as well as create employment options by increasing financial advice to individuals from diverse social teams. MUDRA loans encourage individuals from diverse social categories, empowering them to begin or perhaps increase their own businesses and then become self-employed or employers. Over-all, MUDRA Credit is an essential and important monetary effort considered by the government that enables individuals from diverse social organizations by offering access to credit, cultivating entrepreneurship, endorsing financial growth, and then yielding to low income decline and social inclusion [14-16]. A well-known narrative regarding the sharp surge in NPAs at the time of 2010-18 is that banks struggled because of bad governance in public sector banks (PSBs). Nevertheless, the concern with this narrative is that it is not steady with the clear fall of NPAs recorded by the same banks during the period 1996-2010 [17]. Oddly enough, the terminology ‘wilful default’ is relatively specific to India. A wilful default broadly addresses the following [18]:

- a) Planned nonpayment of the payments irrespective of sufficient cash flow as well as , good net worth;
- b) Siphoning off of funds to the loss of the defaulting unit;c) Resources backed up frequently not been acquired or been distributed and proceeds have mis-utilized;
- d) Falsification of information;
- e) Disposal of investments devoid of the bank’s know-how; and
- f) Deceptive ventures by the customer.

As we know, nonperforming resources can be described as a rented asset that ceases to produce income for the bank. The subsequent circumstances have to be appeased to be able to categorize an asset (including leased assets) as non performing assets:

- Interest or principal sum has been delinquent for duration of further more than 90 days of a term loan.
- In the instance of bills acquired and marked down if the bill continues overdue for duration of more than 90 days.
- In the event of short-term crops the interest or principal amount continues to be delinquent for duration of two crop seasons and then for one crop seasons in case of long duration crops.
- In case of offshoot transactions in the event the overdue receivables continue to be outstanding for duration of more than 90 days from the anticipated time frame of payment.

### 3. Proposed Methodology

The core gaps and possible solutions identified during the proposed research are:

- It is necessary to lower the NPA status concerning government sponsored schemes.
- Geographical sanction of multiple businesses can hamper the business growth and it is necessary to control the similar businesses in same geographical locations.
- It is also necessary to monitor support businesses with customer support department for borrowers and repayment issue can be handled with QR code facility at borrower shop to get direct payment to bank facility.
- To register vendors to supply the necessary products to help to start business flawlessly. This can avoid the misuse of sanctioned funds.

We formulated and tested hypotheses with Pearson correlation based on the qualitative study parameters. The sample size of research is calculated using Yamane formula for Maharashtra region where total PMMY accounts are 5279979 (w.r.t. [www.mudra.org.in](http://www.mudra.org.in)).

$$n = N / (1 + (N \times e \times e))$$

n = Sample size for N population

N = Population

e = Variance of sample (0.05)

$$n = 5279979 / (1 + (5279979 \times 0.05 \times 0.05))$$

$$n = 399.969$$

Hence, participant sample size is

$$n = 400$$

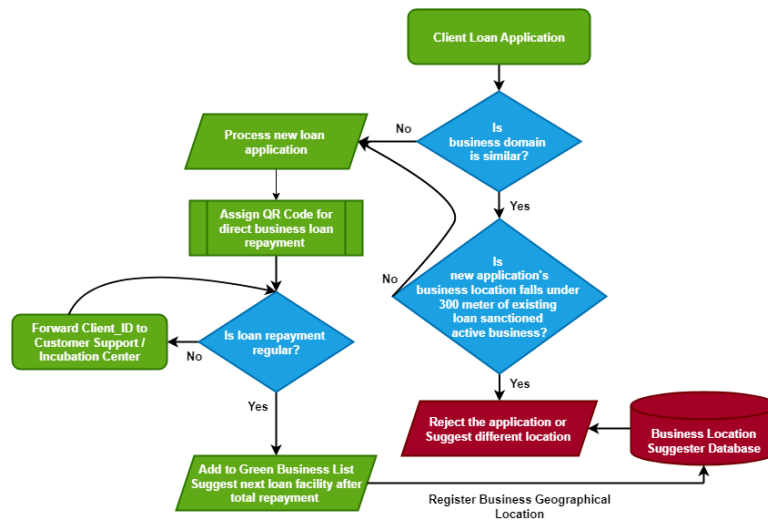


Fig. 1: Cumulative ultra age fintech Artificial Intelligence Strategy

As shown in above Fig.1, the client's (borrower's) business interest domain is scrutinized and it will be checked if similar business domain is sanctioned already for borrower within 300 meters of geographical radius. If not sanctioned, the application will be processed and QR code will be assigned for the repayment of the loan. Else the application will be rejected or new business domain will be suggested. The loan repayment will be monitored by the proposed AI model and if noticed irregular repayment then customer support as well as incubation center will interfere to identify and suggest the possible ways for business growth/development. The borrowers whose repayment is as per the schedule will be tagged as a green business and will be promoted to list of borrower who can be eligible for next level of the loan.

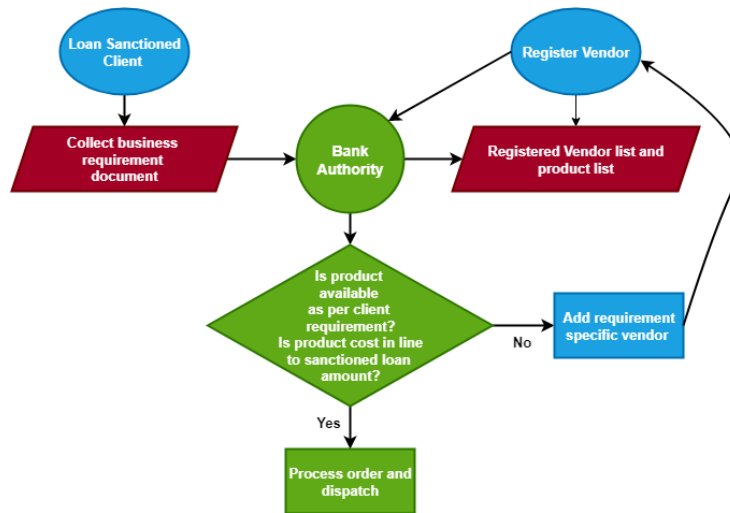


Fig. 2: Dedicated Vendor Registration for Borrower

Further to this methodology, the vendor registration can be done to avoid the misuse of funds where the material/products required for the client business can be provided instead of the cash payment. This can keep eye on loan payment usability. Also, the bulk product order makes it affordable for borrower to avail the facility. The vendor verification/billing will be monitored by bank authorities by recruitment of dedicated team for this purpose.

#### 4. Result and Analysis

Based on the proposed methodology, we tested overall 40 people (borrowers) the total sample size if 400 and we considered 10% population i.e. 40 for the study purpose. Fig. 3 shows the present situation where multiple borrowers are started business within 300 meters of radius which we identified that divides the customer base and business leading to failure.

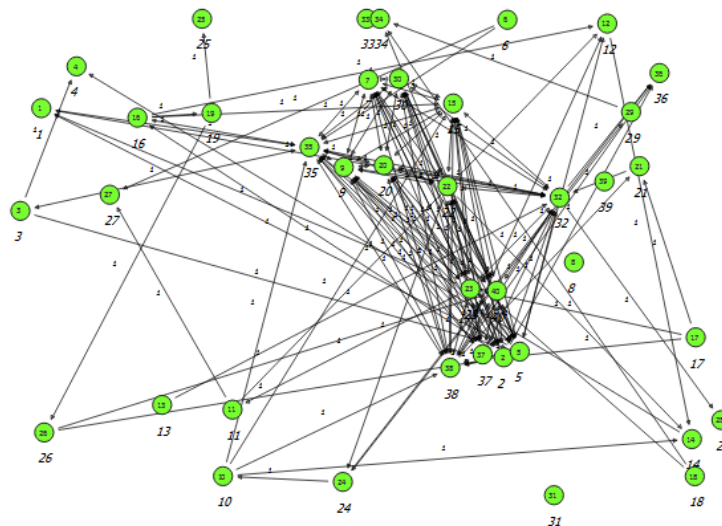


Fig. 3: Loan requests redundancy for same geographical location (n=40)

Hence, based on the proposed methodology the challenges faced due to multiple businesses within 300 meters of radius can be resolved as represented by Fig. 4 below.

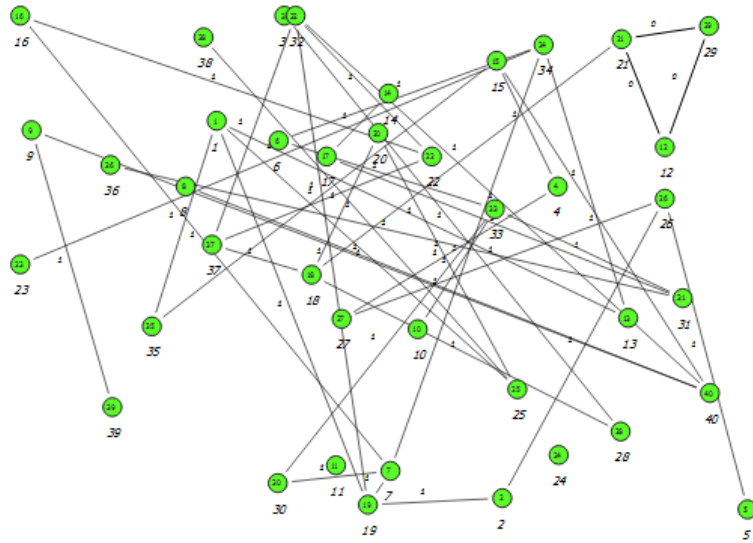


Fig. 4: Proposed methodology output (n=40)

This will provide opportunity to borrowers to support many customers which in turn will make the business sustainable and borrower's repayment issue can be resolved. Further, as depicted in Fig.5 below, the vendor registration can be extremely beneficial to avoid the misuse of provided loan. This system can be further developed with optimum supply chain management strategy. The vendor supply can be diverted through bank to track down the use of loan payment. In case of defaulter, the further supply can be stopped and customer/borrower support department can look in to the matter. We studied the vendor registration concept with 40 people where red nodes shows borrower and green nodes shows registered vendors.

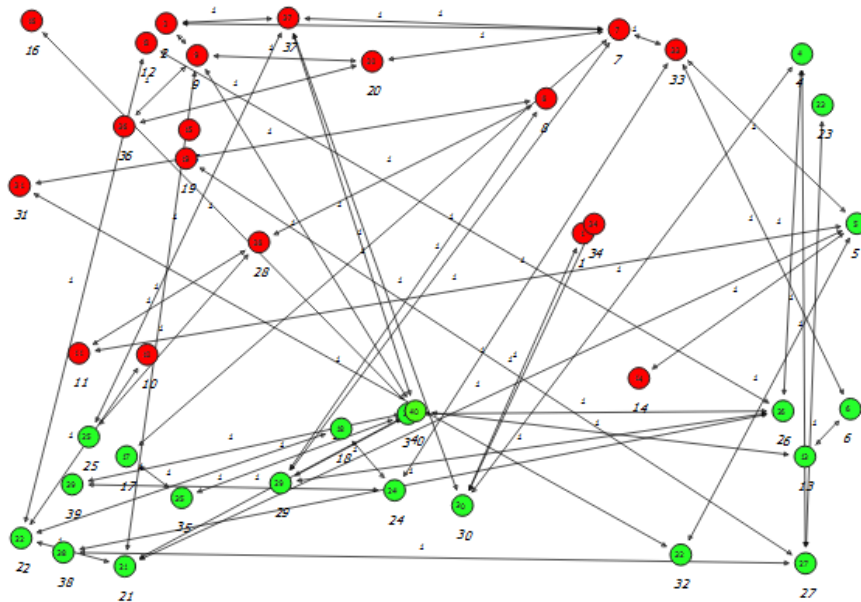


Fig. 5: Vendor registration and client support (n1=20, n2=20)

For numerous domains of businesses vendors can be registered based on the new loan application requirements.

## 5. Conclusion

In summary, the proposed AI model can be useful to mitigate the challenges discussed in this paper to lower the NPA caused by government sponsored schemes. The tracking of loan application till the business repayment by QR code facility along with vendor supply tracking can boost the real business motive. Geographical business constrain can help customers to develop their business sustainability. The customer/borrower support department can decentralize the responsibilities of bank employees. Also, the NPA loss till date can be compensated with optimum utilization of the loan amount. The future development can be in the direction of customer support development and vendor tracking systems which can be a part of supply chain management in banking domain as a next generation banking approach.

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