Role of Artificial Intelligence & Analytics in Banking

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Introduction

Banks and financial institutions in India are serving their customers through multiple platforms. Introduction of Internet Banking and Mobile banking platforms, paved a way for digital transactions in gaining significant traction and the result is "footfall in branches" experiencing gradual downfall. Now, customer expects seamless experience across all platforms and highly personalized services are the need of the hour. But interacting and understanding the unique requirements of these customers located in various geographical locations have become a major challenge for all the Banks in India.

Artificial Intelligence & Analytics have dominated all the new technologies/ inventions in the past few years. They together solved many of the problems that Banks face in today's digital world. They can pull out good information quickly and easily from Bank's database and convert it into meaningful benefits for themselves and their customers.

They help banks in following aspects:

1. Understanding, segmenting and profiling of customers
2. Targeting, acquiring and retaining of customers
3. Spending pattern of customers
4. Product selling and cross selling
5. Maintaining and growing a profitable customer base
6. Regulatory compliance Management
7. Risk management
8. Security and Financial crime management
9. Becoming more operationally efficient and much more

These technologies extract actionable insights and quantifiable predictions which help the Banks to understand customer behavior in account opening/ closing, default, fraud, and customer departure. With a capacity to garner a good number of benefits, these technologies are the future of financial institutions. Almost all Banks have adopted or are in the process of adopting these technologies in every process of Banking.

Artificial Intelligence

A name that needs no introduction in the current times. It probably may become the most important thing that humanity has ever worked on. It is something more profound than a mobile, computer, wheel, electricity or fire. It has set foot into our lives in all sorts of ways from medicine to transportation to voice interfaces in homes to financial services etc. thus making us more efficient. If properly harnessed, it can generate enormous prosperity, opportunities for people and can cure diseases that we haven't seen before. It can make us safer by eliminating inherent human errors in a lot of work. Its rate of improvement is really dramatic, and we have to figure out a way to ensure that the advent of digital super intelligence is one which is symbiotic with humanity and can be considered a boon based on how we use it and to what extent we take in the AI technologies to our daily life.

Analytics

Now a days, we are frequently listening to the phrases "Data is new Oil" or "Data is new Gold" etc.

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These statements underline the importance of data and its analysis. This is where data analysts come into picture. So, what do these data analysts do? They combine information technology with statistics and business. Tons & tons of data which include text in black & white, huge intricate databases, or unprocessed sensor data are extracted, categorized and transformed into a useful and manageable formats. Then various statistical and machine learning techniques are employed to analyze the new data. A thriving data analytics initiative will help us in understanding:

1. What happened?
2. Why things happened?
3. What may happen in future?
4. What should be done?

These insights will be shared with the stakeholders to make predictions and to make effective and informed decision making. This helps executives and managers in optimizing efficiency, improving performance and in succeeding in these competitive environments. All these have transformed every organization into a data-driven organization.

Banking in India

Banking services have been expanded to every nook and corner of the country. Many people came into banking, thousands of Bank branches were opened across the length and breadth of the country and millions of job opportunities were created.

Sr. No	Type of the Bank	Branches - As on March 2020				
		Rural	Semi-urban	Urban	Metropolitan	Total
1	Public Sector Banks	28,921	24,586	17,030	17,355	87,892
2	Private Sector Banks	7232	10,990	7,336	9,236	34,794
3	Foreign Banks	15	8	40	245	308
	Total Branches	36,168	35,584	24,406	26,836	122,994

**Source: www.rbi.org.in*

Banking is one of the sectors that is committed to the national goals to eradicate poverty and to ensure a reasonable standard of living of the people of this country. It has remarkable contribution in extension of schemes sponsored by governments, and in financial inclusion of a huge un-banked population and in inculcating saving habits in people of the country. Let us have a look on deposits with scheduled commercial Banks as on March 2020 which reflects saving habits of Indians:

Table No. 2.2 -Deposits of Scheduled Commercial Banks According to Bank Group-As on March 2020

(no of Accounts in Thousand and Amount in ₹ Crore

BANK GROUP	No Of Offices	Current		Saving		Term		Total	
		No. Of Accounts	Amount	No. Of Accounts	Amount	No. Of Accounts	Amount	No. Of Accounts	Amount
PUBLIC SECTOR BANKS	91498	6084	536792	1225427	3018696	183610	5020532	146988	857602
FOREIGN BANKS	312	868	212781	5486	69984	1000	82023	7354	64788
REGIONAL RURAL BANKS	22130	304	9442	47129	44475	17317	213505	267495	467422
PRIVATE SECTOR BANKS	34973	20965	512503	38045	172420	49479	2292834	308489	3977757
SMALL FINANCE BANK	4189	275	2238	3513	10284	2034	50145	15823	62667
ALL-INDIA SCB's	**153102**	**86007**	**1273756**	**172960**	**4515859**	**253441**	**7959040**	**2069047**	**13748655**

**Source : www.rbi.org.in*

Banking sector has extended credit facilities all over the country and is singularly responsible for the success of the nation in the field of Agriculture, Industry and Commerce. Let us have a look at credit of scheduled commercial banks as on March 2020.

Table No. 1.1 - Bank Group-Wise Outstanding Credit of Scheduled Commercial Banks as on March 2020

BANK GROUP	No. of Offices	Credit	
		No. of Accounts	Amount Outstanding
	1	2	3
PUBLIC SECTOR BANKS	87576 (59.7)	92738274 (34.0)	6069991 (57.7)
FOREIGN BANKS	275 (0.2)	6815203 (2.5)	440334 (4.2)
REGIONAL RURAL BANKS	21827 (14.9)	25426814 (9.3)	301051 (2.9)
PRIVATE SECTOR BANKS	33464 (22.8)	127083740 (46.6)	3612994 (34.3)
SMALL FINANCE BANKS	3669 (2.5)	20456152 (7.5)	94441 (0.9)
ALL SCHEDULED COMMERCIAL BANKS	146811 (100.0)	272520183 (100.0)	10518812 (100.0)

**Source: www.rbi.org.in*

However, the Banking industry has not remained static and is currently in a state of change, with the advent of electronic banking and reduced in-branch service. The Information Technology has brought

ATMs, online & mobile banking, speedy processing, easy marketing, wider networking and better centralized control over branches thus ensuring comprehensive customer service. The following table depicts the ATMs position of Public sector, Private sector and Foreign Banks.

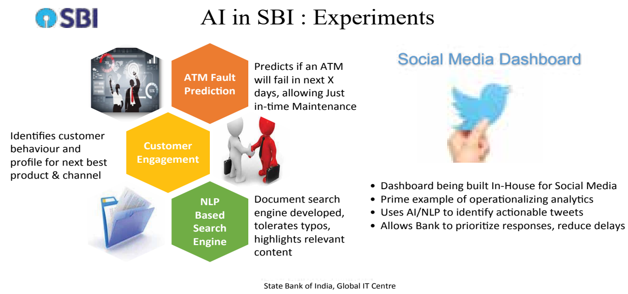
Sr. No	Type of the Bank	ATMs - As on March 2020		
		On-site	Off-site	Total
1	Public Sector Banks	78,484	56,379	134863
2	Private Sector Banks	32,690	40,362	73,052
3	Foreign Banks	225	678	903
	Total ATMs	111,399	97,419	208,818

Source: www.rbi.org.in

Artificial Intelligence in Banking

Banking & Financial sector are upgrading their technologies to give better service to its customers and help them plan their investments properly. Banks are able to know about customer usage patterns and use those insights to develop more precise and customer centric applications, products and services. This sector is showing a lot of progress in AI kind of usage models in both front end and back end. Front end being the channels viz., Branches, Internet Banking, Mobile Banking. These are the gateways to deliver AI to the customers. These channels are getting better and better over the course of time. We can have a chatbot on our mobile device understanding what products or services we want without us even knowing it. It allows the user smarter ways to invest, spend and save the money. At the back end, it is the processes which are getting transformed very quickly with newer technologies like process automation which gets done a one-hour work in a minute.

Artificial Intelligence has helped the industry in multiple finance related roles like accounts, credit decisions, detecting frauds, investing, trading, advisory services, risk management etc. AI helps to retrieve data faster and manage data more efficiently. State Bank of India has successfully experimented usage of Artificial Intelligence technologies in various fields and tasted resounding success. Following figure gives us the fields where SBI has experimented.



Source: SBI, Global IT Centre

Analytics in Banking

Banking & Financial services is a vertical with quality information and a lot of data. Data analytics plays a pretty important role here. With rapid digitization, data analytics has become extremely essential with its ability to create value and address issues across various functions in Banks. Analytics not only address issues but also provide solutions and automate the processes. This sector being the earliest adopters, use data analytics in assessing and reducing credit risk, improving efficiency and also in forecasting market trends.

Some important areas where Analytics has already set its foot are:

1. Pre-Approved Personal Loans: Existing customers who are eligible are informed through SMS/email. Accordingly, instant loans will be sanctioned through internet/mobile banking without need for documentation and even without visiting the branch.

2. Pre-Approved Business Loans: Debit & Credit transactions in existing current accounts are scrutinized using advanced applications developed based on various parameters. Eligible customers will be identified and preapproved offer will be sent through internet banking. If the customer accepts the offer, loan will be approved after minimal documentation.

3. Early warning System: Stress signals in standard account are identified and alerts will be sent to operating staff. So that bank can take corrective action and can prevent slippage thus mitigating credit risk.

4. Credit Scores: Credit score has made the credit decision easy for the bankers. So a bank can lend to a right customer, reduce NPA, mitigate credit risk and increase profitability. These scores have become so integrated in our lives, that one should maintain a healthy score in order to get even a basic personal loan.

5. Marketing & Sales: Can understand customer's spending patterns and can devise & suggest products which suit the customers. So that bank can maximize sales at minimum cost thus optimizing revenue. This also results in increased customer loyalty and reduced attrition.

6. Fraud detection: With increase in digital transactions, number of frauds also increased significantly. Fraud detection involves user activity monitoring and analysis to find any unusual or malicious pattern. The faster a bank detects fraud, the sooner it can limit account activity to curtail loses. etc.

Outcome of usage of Artificial Intelligence & Analytics in State Bank of India

Team Analytics in State Bank of India, began as a small dedicated unit for excel-based reporting in 2013, but has since evolved into a pioneering department which leverages the latest tools and techniques to deliver value. It has come out with 40 + AI and ML based models in all the areas under the purview of the Bank. These models of State Bank of India have given huge growth to business, reduced risk and increased operational efficiency.

Some examples are:

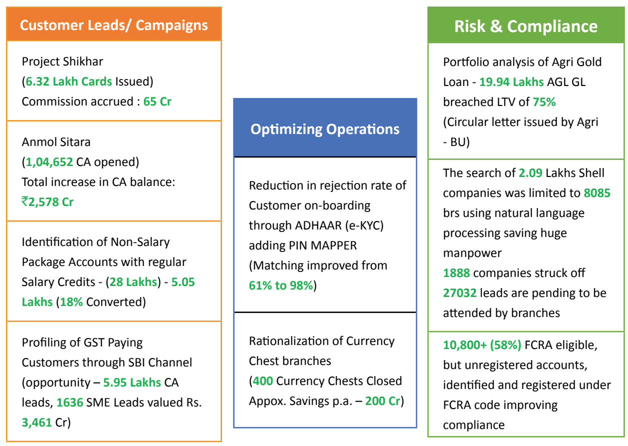
Model Name	Total Business Booked as on 30.11.2020
PAPL	Rs.28,860 Crs. Total 20.88 lakh loans sanctioned
PABL	Rs.47 Crs @ 11% Conversion rate
Gold Loan- P Segment	Rs.3,651 Crs
Home Loan Topup	Rs.165 Crs
Home Loan Takeover	Rs.100 Crs
Gold Loan- Agri Segment	Rs.681 Crs

Income Leakage for Processing Fee and Facility Fee	Processing Fee Recovered : FY 18-19 Rs.58.00 Crs FY 19-20- Rs.24.00 Crs Facility Fee Recovered : FY 18-19 Rs.14.00 Crs FY 19-20 Rs.9.00 Crs
Project Shikhar	Total 28.90 lakh cards issued since Sept' 2017
Charges Analysis	Misclassification of Capital Expenditure identified during FY 2018-20 ~Rs 500.00 Cr
Footfall Reduction Tool	~22% reduction in branch share of transactions
Fraud Prone branches	Risk rating of 1355(32%) risky branches have improved over last four quarters

**Source: State Bank of India, Analytics Department*

Few other examples of "Analytics & Artificial Intelligence" journey in State Bank of India creating value to the organization.

Few Examples of Such Journey Creating Value to the Organization



**Source: State Bank of India, Analytics Department*

These examples prove that how useful/helpful both Analytics/Artificial Intelligence are in enhancing business leads, reducing income leakage, optimizing day to day business operations, in mitigating risk and ensuring compliance.

Intelligent Banking: The Future of Banking

With its ability to help mankind innovate, Artificial Intelligence has set foot into our lives in all sorts of ways from electronic trading platforms to medicine, transportation, voice interfaces in homes, entertainment, education, Banking services etc. In future, it may impact entire Banking value chain.

Some of the expected changes are:

1. AI probably becomes the most important thing that humanity has ever worked on. Something more profound than a computer, mobile, electricity or fire.
2. AI makes possible giving top notch service to all the customers which banks can't afford currently. Instead of customer giving a request for a service, virtual agent analyses data, predicts the customer requirement & proposes the services personalized to the customer needs.
3. Conversational UI (User Interface) to help customers more seamlessly with normal enquiries in natural language, via natural language processing. That means users can ask questions and receive an answer in natural language thus giving a better experience for the customer.
4. AI analyses customer's data and helps banks to have insight into his creditworthiness. Pre-approved loans will be given to a large range of customers without documentation and without even visiting the branches thus making physical branches redundant.
5. Robo or an artificial agent helps you in better managing money across whole banking life.
6. An autobot will analyze legal documents, agreements, contracts etc. in seconds thus saving lot of human hours. JP Morgan Chase has already introduced a bot by name "COIN". These bots will become a common thing across all banks.
7. AI will be of much help in detecting every instance of Money Laundering in much lesser time at much lesser cost which in today's times is a complex task.
8. Totally, AI changes the banking scenario and gives banks and financial institutions fresh avenues of business and previously untapped savings, margins and profit.
9. Finally, AI will be our friend, providing conversation and comfort to the lonely, will be our assistant and will help you to cut down our work.

Conclusion

With ever increasing digital transaction, there will be a large data trail from opening of accounts to day to day credit/debit/wallet transactions. Banks need to adapt to latest technologies to store and manage this unstructured data in real time. To gain competitive edge, banks must analyze this data, extracting valuable insights which in turn add a significant business value.

To conclude, Artificial Intelligence and Analytics together provide much more strength and helps banks to boost organizational success and in achieving their main goals viz., Performance, Profitability, Compliance, Competitiveness and Risk Reduction. They are the game changers & can help banks distinguish themselves and remain competitive in the future data driven world.

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