



## EXPLORING NEW DIRECTION IN ANALYTICS WITH REFERENCE TO BANKS

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### **Abstract**

Financial sector in India is growing substantially but banks are still exploring ways to handle various challenges and outperform year on year. It is quite evident that the Indian banking sector is heading towards a new direction that promises opportunities for a sustainable growth. Analytics is being adopted to drive decision-making pertaining to banking affairs and the outcome is visible and promising. The purpose of this paper is to through lights on various applications of analytics that can be used in banks and also to discuss the opportunities and challenges of implementing analytics in banks. The researcher has used secondary sources of data such as research papers, journals, RBI reports and analytics related reports. It is found that banks are able to make data driven decision-making by performing descriptive, diagnostic, predictive and prescriptive analytics. The results revealed that banks are using analytics to arrive at benefits such as personalized product offerings, fraud detection, risk assessment and predicting cash-flows. The paper concludes with the challenges such as skill shortage, tech infrastructure, data management, customer privacy and costly affair hindering the integration of analytics in banks.

**Keywords:** *Analytics, Big data, Predictive analytics, Banking analytics and Analytics challenges.*

### **Introduction**

After the financial crisis of 2008, the financial sector has been under pressure to revamp the whole financial system (Das et al., 2018). Banks are also struggling to explore new avenues to increase the customer base by providing quality of services. As a result, FinTech start-ups are proposing new business models that yield delivery of quality services to the customers (Gomber et al., 2018). In the similar way, banks are also incorporating new business models to deliver the right product to the right customer. Banks have the readily available data about each customer and such data can be used to derive utility from bank activities such as product cross selling, compliance management, and risk management (Srivastava et al., 2015). Banks are exploring new directions to leverage the analytics and thereby enhance the customer experiences and achieve good returns on each quarter. Out of all other financial institutions, banks can be claimed to be the early adopters of analytics to derive the utilities. This is so because banks have understood to remain competitive by capturing the data of all stakeholders and strategize accordingly.

### **Analytics in Banking**

Analytics is the process of discovering, interpreting and communicating the patterns in the data. It is used to make more informed decisions that help the banks to achieve increased progress. Banks are able to generate numerous data from sources such as digital process and social media platforms. The data is also transmitted by systems, sensors and mobile devices (Sun N et al., 2014). Banks can also monitor the activities of the customer such as transaction history, credit card transactions, loan information, etc and produce the data out of it (Srivastava et al., 2017). Data can be obtained from internal sources or external sources and similarly it could be in structured or unstructured format.

In the traditional setting, the decision-making in banks was based on the information, but at the present time, banks are relying on analytics tools which can help the banks to capture larger quantity of information and produce patterns for aiding decision-making. Analytics is needed because the datasets are large, complex and traditional tools are insufficient to process these datasets (Srivastava et al., 2017).



## Types of Analytics

Analytics is considered to be the most valuable tool to increase revenue by retaining customers and offer the most profitable products to the prospective customers of the bank. Analytics can be studied under four types which are detailed as below:

**1. Descriptive Analytics in Bank:** When banks wish to know what something has happened, it can make use of descriptive analytics. It is considered to be the first layer of information that is collected. The advantage of descriptive analytics is not just too building reports based on the data, but to produce actionable insights. Banks are actively involved in analyzing the data of customers who visit the website or mobile application of the bank and to trace whether web traffic is increasing or decreasing. Each customer viewing the web pages, banks can use it for decision-making.

**2. Diagnostic Analytics in Bank:** Diagnostic analytics helps to understand the significance that caused the events (Krishnamurthy, et al, 2016). Analytics. It is used by banks to trace why did something happen. Banks can use diagnostic analytics to understand the drop in customer base or drop in opening of bank accounts. Data can be used to trace the trends or correlation between any events.

**3. Predictive Analytics in Bank:** Based on the available data derived using descriptive and diagnostic analytics, banks can feed the data into the model and perform predictive analytics. Banks are extensively using predictive analytics to capture the customer behavior and respond accordingly. Predictive analytics methods such as linear regression, time series analysis, model goodness measures and optimization methods are used by banks to make strong predictions (Wu and Coggeshall, 2012). Predictive analytics uses various algorithms to discover different patterns (Indriasari, et al., 2019).

**4. Prescriptive Analytics in Bank:** Selvaraj, et al (2016), huge volume and variety of data is needed to carry out prescriptive analytics because detailed and timely information can be obtained if data size is large. Dmour (2021) identified that organizational factors such as top management support and business strategy are important predictors to predict and also the practices of big data analytics application have a positive impact on the bank's performance.

## Opportunities/Benefits of Analytics in Bank

Banks are using analytics to produce innovative solutions and to build models that help banks to foresee the growth opportunities. It is quite evident that banking sector has evolved from traditional banking to analytics driven banking sector today.

## Personalized Product Offering

Modern day banks are talking about customer analytics, which can be used to capture complete data of customers and offer streamlined products and services to the customers. Customer analytics helps banks to attract prospective customers and also to retain the existing customers. Based on the customer footprints such as spending patterns, credit card usage, frequency of deposits and withdrawals, banks can offer more personalized products and services to the customer. The advantage of customer analytics is not just limited to offer personalized products and services to the customers, but also to predict whether the customer is capable to repay the loan if provided, whether bank can make use of the collateral attached to any loan product, etc. Most commonly used analytics tools are Power BI and Tableau to run the data of customers to arrive at the results.

## Detection of Banking Frauds

Banks are exposed to various forms of frauds such as fake identity, credit card fraud, spear phishing, spoofing, vishing, skimming, etc. The major sources of banking frauds could be both online and offline sources like internet banking, mobile banking, mobile application of the bank, debit or credit card and physical branch. In order to keep the banking activities safe and secured, banks are now relying on analytics to foresee if any such fraud is expected to occur.



**Table No: 1: Fraud Cases Reported by RBI**

Type of Banks	No. of Fraud Cases	
	2019-20	2018-19
Public Sector Banks	4,413	3,568
Private Sector Banks	3,066	2,286
Foreign Banks	1,026	762

Source: RBI Report 2020

### **Risk Assessment**

Risk management has become a core activity of banking functions and it is proved by having Chief Risk Officer in the banks today. Banks are quantifying the various forms of risks using analytical tools. Analytics helps banks to design risk indicators which can indicate the potential occurrence of risks. In order to know the credit-worthiness, customers can be segmented based on customer analytics so that the exposure to default risk can be identified and accordingly banks can make lending decisions. Infact, analytics helps banks to design credit-risk models to gain insights on possible defaulters. But the risk management framework is dependent upon the regulatory requirements (Lackovic et al., 2016).

### **Predicting Cash-Flows**

Based on the sales data and customer transaction data, banks can predict cash-flows. Cash-flow analytics can be used to predict the possible increase or decrease in the cash and cash equivalents. The inflow and outflow details of cashflow arising from operating, investing and financing activities can be monitored to predict the cash-flows.

### **Challenges of Implementing Analytics in Bank**

Banks are using analytics to gain the competitive advantage, but the challenges to implement the analytics in banks are also to be taken into consideration. Analytics is certainly helping banks to optimize and streamline various processes, yet certain challenges are hindering the integration of analytics in the banks, that are discussed as below.

**1. Skills Shortage:** The major challenge of integrating analytics into all activities of the banks is skill-shortage. To perform analytics, not just tools are required, but the required skills are also the pre-requisites (Turner et al., 2012). Organizational should make significant investment in getting tools and skills and should also change the culture (Goasduff, 2015). Broad knowledge of IT, statistics, mathematics and orientation on quantitative analysis is needed to interpret and transform the data (Dicuonzo, et al., 2019).

**2. Tech Infrastructure:** In the integration process of analytics, banks need to invest on building a tech infrastructure to perform analytics. The challenge here is to integrate new analytical tools to the existing tech infrastructure, which is not so updated to capture all real-time data about the customers. Since analytics involves huge volume of data processing, it is a challenge to run the huge volume of data on traditional data reporting tools.

**3. Data Management:** Since different sections in the banks generate data, it is challenging to collate the data at one single point and process for analytics. Banks face big challenges such as collating data, sorting relevant and irrelevant data, data processing and data management as a whole. Often times, such analytics is performed only at the headquarters, hence, getting right data at the right time from all branches is also a challenge. The inability to connect data across department silos has been a biggest business challenge in case of banks (Turner et al., 2012).

**4. Customer Privacy:** The biggest challenge for banks is keeping the privacy of the customer data. Banks are using fraud analytics to detect the frauds by continually monitoring the spending patterns and behavior of customers, but such data should be taken to proper care. If such data gets mis-used or leaked, it will be an impediment to implement analytics in banks.



**5. Costly Affair:** In order to leverage analytics, banks are investing heavily on analytics specialists and analytics tools. Since, the cost involved is higher, it is considered to be a challenging for the banks to perform analytics. The cost is not just limited to tech infrastructure but also the maintenance and upgradation.

### Objectives of the Study

1. To study the benefits of using analytics in bank
2. To discuss the challenges in integrating analytics in bank
3. To suggest best practices to face the integration challenges of analytics in bank

### Research Methodology

In order to gain insights on analytics in banking, author has reviewed literatures from 2012 to 2021. For literature search, author has used keywords such as predictive analytics, banking analytics, analytics challenges and financial analytics. Researcher has also reviewed the reports pertaining to analytics and RBI published reports to gain deeper insights on the topic.

### Findings

After careful study, it is found that banks are able to optimize and streamline the banking operations. Post using analytics, banks are in position to offer customized products to customers, detect frauds, assess risks and predict cash-flows. Despite various benefits being reaped by banks, there are challenges to be addressed by banks in the areas such as skilled talent, tech infrastructure, data management, customer privacy and increased cost. It can be suggested for banks to have a structured team to oversee analytics activities, getting right talent on the team to perform analytics, ensuring safety of customer data and focusing on cost aspects. In order to have a streamline analytics process, banks should design a strategy at the first step and continually monitor and evaluate the impact of analytics on the functioning of the bank.

### Conclusion

Analytics has become an integral part of banking activities as it has enabled banks to achieve increased productivity and accelerated growth. It is significant to adopt analytics in banks due to various opportunities floated by analytics. At the same time, banks should also be cautious about integrating analytics with the traditional tools. It can be concluded that analytics is majorly helping banks in areas such as customer profiling, fraud detection and risk assessment. This entire process will involve the collective efforts of all the departments in the bank. The future scope of research can be focusing in large on how each of the applications of analytics can be used to optimize banking operations.

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