

Banking & Big Data Analytics

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Abstract: The Indian Banking sector is undergoing huge reforms post-demonetisation and digitalisation; they have a huge burden of managing of data every day. A majority of the banks have failed to utilize the information within their own databases. The evolution called Big data analytics possessing beneficial characteristics like volume, velocity and variety of data. It will improve quality by strengthening risk management, optimizing HR by providing new insights for fraud detection, customer segmentation and monitoring client behaviour in real time. The Indian Banking Sector along with its new policies and application of new technological trends paved a way for the efficient use of Big data Analytics.

Objective: To study the role of Big Data Analytics in Banking Sector.

Key words: Big data, Analytics, Risk management, Technology, Consumer benefit.

I. Introduction:

'Bank is a financial institution which collects money in current or savings or fixed deposit accounts ,collects cheques as deposits and pays money from the depositors' account through cheques'- Sir John Pagette.

Big data analytics

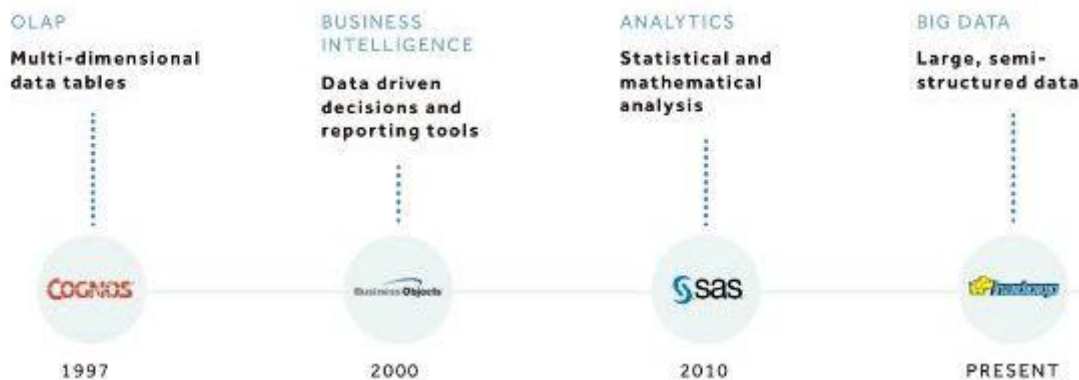
Big data analytics is the analysis of large and varied sets of data to uncover hidden patterns, markets demands and trends, unknown correlations, customer preferences and other useful information which helps in reaching major marketing goals.

The data acquired ranges from structured, semi-structured to unstructured and also meta data like data from internet channels (click stream data), data from social media content, web browser history survey responses and machine data from Internet Of Things sensors.

Developing scenario of big data analytics in banking:

Evolution of big data technology

Firstly OLAP(Online analytical Processing)used for multidimensional analysis. Then, Business Intelligence analyses data and decides on that basis. Thirdly, Analytics is used for statistical and mathematical derivations. Recently, Big Data for analytics of tremendous size and unstructured data.



Picture taken from: <http://www.bbc.com/storyworks/banking-on-innovation/bigdata-improve-banking-experience>

Need for Big Data

What do the customers want from their bank?

45% want their bank to give discounts on purchases.41% want added convenience simplified home buying process.40% want personalized services.63% want to be informed

The traditional tools are no longer sufficient to process the data for all types of decision making,insights, behaviour. Hence, big data was born out of the necessity to handle the tremendously growing data from various sources, which if utilized properly can bring exemplary growth.

Benefits of Big Data

Organizations can use outside insight while taking choices : Access to social information from web search tools and locales like facebook, twitter are empowering associations to tweak their business techniques.

Enhanced client benefit : Conventional client input frameworks are getting supplanted by new frameworks planned with 'Enormous Information' advances. In these new frameworks, Enormous Information and regular dialect preparing advancements are being utilized to peruse and assess purchaser reactions.

Early distinguishing proof of hazard to the item/administrations, assuming any .

Better operational productivity :'Enormous Information' advancements can be utilized for making arranging territory or landing zone for new information before distinguishing what information ought to be moved to the information stockroom. Furthermore, such incorporation of 'Huge Information' innovations and information distribution center encourages association to offload rarely got to information.

II. Literature Review

In the review, “Penetrating the Fog: Analytics in Learning and Education. *EDUCAUSE Review*, 46(5), 30–32” (2011), Siemens, G., & Long.P defines big data as datasets whose size is beyond the ability of typical database software tools to capture, store, manage and analyze.

In a report, “TDWI Best Practices Report: Big Data Analytics (Best Practices) (pp. 1–35). The Data Warehouse Institute (TDWI)” (2011), Russom P. writes that for data to be classified as big data it must possess the three Vs: Volume, Variety, and Velocity. Many people assume that big data simply has volume, but Russom clarifies that the other two Vs are just as essential. Big data is not just large, but it is varied. It comes in many formats and can be organized in a structured or non-structured way. Velocity refers to the speed at which it is generated. One of the reasons we build larger and larger stores of data is that we can generate it much more quickly. And Russom explains that volume doesn't have to refer to terabytes or petabytes. He suggests that other ways to measure volume of data could be number of files, records, transactions, etc.

In the glossary of Gartner. Inc. , they defined big data as high-volume, high-velocity and high-variety information assets that demand cost-effective, innovative forms of information processing for enhanced insight and decision making.

In the conclusion stated in “Demystifying big data: A practical guide to transforming the business of Government” (2012), TechAmerica Foundation's Federal Big Data Commission stated that Big data is a term that describes large volumes of high velocity, complex and variable data that require advanced techniques and technologies to enable the capture, storage, distribution, management, and analysis of the information.

Usage of big data analytics in banking

12% banks are in process of using big data.25% banks are expanding by implementing it.38%banks are exploring options.25% banks are experimenting further uses of it.

Sources for banks:

Credit card history: To track most used retailers.Transactions: To identify loyal customers

Branch visits: To compare e-banking and traditional banking.Web and social media interactions: For efficient marketing of plans and schemes.

Key Areas for Usage of Big Data:

To increase personalization and convenience.Expedite credit card risk checks.Faster credit and loan applications.Understand preference to interact.Other individualized service.

Characteristics of Big Data

Volume – The name 'Huge Information' itself is identified with a size which is gigantic. Size of information assumes exceptionally vital part in deciding an incentive out of information. Likewise, regardless of whether specific information can really be considered as a Major Information or not, is endless supply of information. Henceforth, 'Volume' is one trademark which should be considered while managing 'Huge Information'. Variety – The following part of 'Huge Information' is its assortment. Assortment alludes to heterogeneous sources and the idea of information, both organized and unstructured. Amid prior days, spreadsheets and databases were the main wellsprings of information considered by the greater part of the

applications. Presently days, information as messages, photographs, recordings, checking gadgets, PDFs, sound, and so on is additionally being considered in the examination applications. This assortment of unstructured information represents certain issues for capacity, mining and dissecting information. Velocity – The term 'speed' alludes to the speed of age of information. How quick the information is created and prepared to meet the requests, decides genuine potential in the information. Enormous Information Speed manages the speed at which information streams in from sources like business forms, application logs, systems and web-based social networking destinations, sensors, Cell phones, and so forth. The stream of information is huge and consistent. Variability – This alludes to the irregularity which can be appeared by the information now and again, accordingly hampering the way toward having the capacity to deal with and deal with the information successfully.

Technology Behind Big Data

Clustering: It is the automation of finding correlated and meaningful data patterns within a set of data. It is useful for identifying important data amongst noise of possible hundreds of patterns; it breaks the data into simple parts - segmentation.

Text Analytics: They rely on probability theory and rarity and occurrence of certain words which is used to predict the meanings and overall idea. Thus they assist in automatic reading and compilation to provide a summary from possible 1000s of documents. It is a classification algorithm to clearly define target field.

Neural Networks: In this algorithm nodes are activated by a signal to active other nodes. Thus a transfer function then outputs a signals based on total received signal. They assign the data to a predefined target field and it is useful for answering questions related to event a leading to action B or action C.

Link Analysis: It is a subset of mathematics and it is called the graph theory. It represents a relationship between objects. Link Analysis constitutes both direct and undirected data mining .It is useful for identifying key sources of information on the web by analysing links for findings influential customers from call patterns and to recruit new subscribers and so on.

Survival Analysis: It is called time to event analysis. It is a technique used to evaluate when you should start worrying about an event. Survival Analysis answers the following questions : when is the customer likely to leave which factors likely increase or decrease customer tenure affects of various factors time period of when the customer moves to a new customer segment .Survival analysis is calculated using survival curves and hazard probabilities

Decision Trees: They are the most powerful data mining techniques which are capable of handling diverse array of problems that can handle any data type. Decision tress spilt the data into small data cells. It aims at decreasing the overall entropy of data.

Random Trees: The difference between possible errors and noise of individual decision tree.

Aims Of banks

Acquiring Customers , Retaining customers , Developing Customers.

To meet these aims Big Data is used for the following:

Sentiment Analysis: Big Data is used to monitor the customer's opinion. For identifying key customers, To examine customer feedback, To improvise the quality of the products and services provided

Customer 360 Degree : We identify the customers profile and capability , Understanding product engagement, Detection about when the customer is about to leave ,Analysing the causes for potential loss of customers

Customer Segmentation : Customer are segmented on the basis of the potential and frequency of usage.

Customer Demographics play a vital role in this analysis ,and through promotions and marketing the banks try to target the target customers by building relationships, On the basis of segments banks decide targeted programs .They also create loyalty programs based on card usage . the pricing is optimised according to the segments .

Best offer :It is used to anticipate the financial goals of its customers .it enhances the loyalty and increases the propensity of the product, To uplift the revenue product bundling technique is used. Banks partner with famous retailers to offer discounts on products and services specifically used.

Channel Journey:It distributes relevant content in relevant channels. It records and analyzes multi channel behaviour. Measure effectiveness of that particular channel. It also guides the customers towards favourable channels.

Product Management :To identify where the customer is in the product lifecycle. This can have over whelming impact on marketing communications.

Design Targeted marketed programs : This targets the right group of potential customers This is also used for mis-regulatory and disclosure reporting. It protects the customers interest. It detects any types of fraud before its occurrence. It helps in being alert about suspicious transactions This technology also increases security of investments and accounts. Thus helps in efficient risk management.

III. Conclusion:

Big data analytics and banking uses 'insight as a service'.

It is used for: Educating- Information gathering and awareness about market observations. Exploring- Developing possible correlated strategies depending on the needs and challenges. Engaging- In plot initiatives. Executing- Uninterrupted application of advanced analytics.

Hence big data analytics helps in the full exploitation of resources if utilized to its full, has the hidden potential to anticipate unforeseen benefits and insights into the existing banks and the services provided by them.

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