Banking and Financial Analytics – An Emerging Big Opportunity Based on Online Big Data

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ABSTRACT

Business analytics refers to the skills, technology, methods of continuous iterative discovery, and study of past business results. In the banking industry, business analytics can be utilized to the extent that basic banking reporting can be improved with the help of descriptive analytics, predictive analytics, and prescriptive analytics utilizing significant technical developments and the use of big data currently available. The application of business analytics to banking and finance, for both organizations and professionals, is crucial, profitable, and extremely rewarding. Using advanced machine learning technology, combined with analytics, supports banks to research a great deal on customer behavior and preferences, allowing banks to continuously learn and fine tune analytical models to optimize products and services and minimize the cost of offering products across different channels. Cloud-based analytics platforms provide flexibility and elasticity for banks to work at high speed with large data workloads and to gain business value more quickly. In this paper, the major business analytics components - descriptive analytics, predictive analytics, and prescriptive analytics are addressed and their applications in various functions of banks for optimum decision-making as well as for activities such as fraud detection, application screening, custom acquisition and retention, awareness of customer purchasing habits, effective cross selling of different banking products and services, payment collection mechanism, better cash/liquidity planning, marketing optimization, consumer lifetime value, management of customer reviews, etc are analyzed. The effects of these analytics on the banking and financial industry sector's competitive and innovative capabilities are also discussed.

Keywords: Business analytics, Banking & finance industry, descriptive, predictive, and prescriptive analytics, Competitive advantage for banks, Optimum decision for business promotion.

1. INTRODUCTION:

Business analytics, a solution for business data processing and business intelligence, refers to the use of methodologies such as data mining, predictive analytics, and statistical analysis to analyze and turn information into usable information, detect and forecast patterns an effect, and eventually make better business decisions. To turn it into useful knowledge from which patterns and metrics can be exposed, data analytics, a subset of business analytics is used as a broad paragliding concept that refers to the science of raw data analysis. Although both business analytics and data analytics are aimed at enhancing operational performance, business analytics are primarily based on business applications, and data analytics are more widely focused, both business analysis and reporting and online analytical processing (OLAP), which comes under the umbrella of data analytics. Data analysts and data engineers work together in the process of data analytics to collect, integrate, and prepare data for analytical model creation, testing, and revision, ensuring accurate performance. Data analysis for business is

distinguished by its emphasis on particular problems in business operations [1]. Being the combination of big data, data science, and business strategy has scope to gain insight and develop strategy for current and future business decisions.

(1) Data aggregation: data must first be obtained, processed and filtered by means of voluntary data or transaction records before review.
(2) Data Mining: data mining for business analytics uses massive datasets, using databases, statistics and machine learning, to identify patterns and create relationships.
(3) Connection and sequence Identification: recognising predictable acts taken in combination with, or in sequence of, other acts.
(4) Text mining: to explore and organise for qualitative and quantitative research purposes massive, unstructured text datasets
(5) Forecasting: analyses historical data from a given timeframe to provide predictive, educated predictions of potential events or behaviours.
(6) Predictive Analytics: many statistical techniques are used in predictive business analysis to construct predictive models that extract data from datasets, detect trends and provide a predictive score for a range of organizational performance.
(7) optimization: once patterns and projections have been established; businesses use modeling techniques to evaluate best-case scenarios.
(8) Data Visualization: offers visual representations such as charts and graphs for simple and fast data analysis.
Critical business analytics are classified as either descriptive analytics analyzing historical data to determine how a unit will respond to a collection of variables; predictive analytics looking at historical data to determine the probability of specific future results; or prescriptive analytics, a mixture of descriptive analytics that provides insight into what happened and a predictive analytics framework that provides insight into what might happen, offering a tool by which users can anticipate what will happen, when and why [1].

1.1 Analytics of functional areas & their Importance:

Nearly everybody today is familiar with the one main mechanism in the world today, which uses all the data to help each sector achieve their respective goals. Data analytics has been the most important method in various industries, such as banking, sports, health care, e-commerce, retail, manufacturing and so on, since its inception. While the data analytics method very applies to these sectors, it is also primarily used in a variety of business functions. Data analytics as a process has become important, regardless of any form of company, in terms of several business functions, especially marketing and HR. In addition to these, the many other business functions that use data analytics include distribution, supply chain management, development, strategy and many more.

(1) Analytics in Production & Operations:

Operational analytics enable companies to analyze and mine streams of sensor and production data produced by the system to provide real-time insight into business operations. Big data analysis involves an integrated collection of solutions, from data acquisition to repetitive analysis decisions.

(2) Analytics in Marketing:

For any organization, the first marketing rule is to work hard to not only understand its target audience, but also to find and attract more people like them. Now that there are a large number of clients and consumers out there, the challenge of understanding your audience can seem incredibly overwhelming. It is this approach that enables the company to recognize the different nuances of each customer and therefore bring more value to the company by collecting and consolidating data from all current marketing platforms through a common marketing perspective. To maximize productivity and to double the rate of return on investment, Data Analytics helps calculate, manage and evaluate marketing results. In this area, the different questions that data analytics helps to address a range from the efficiency of marketing campaigns to the distribution of marketing resources and activities conducted relative to the competition. To investigate past success and forecast the future on the basis of it, the field of marketing requires the use of different data analytics tools.

(3) Analytics in Finance & Accounting:

Accounting Analytics discusses how it is possible to relate financial report data and non-financial metrics to financial results. You can learn how data are used to determine what drives financial results and to predict potential financial scenarios taught by Wharton's renowned accounting professors.

(4) Analytics in Human Resource & Customer Management:

The most important component for every organization, regardless of the area of specialization, is the Department of Human Resources. It is primarily because it is the duty of this department to have the ideal talent to perform the necessary functions to produce income for the company. In this area, Data Analytics gathers all the relevant data and aims to create a single image of the whole workforce seeking to be put in that field. To help guide business processes, the various useful insights generated by the data can then be used to take different business decisions, thereby enhancing not only the company's efficiency but also its profitability. In HR, where data analytics are relevant, the different main areas are talent acquisition and retention, leadership building, compensation and benefits optimization, attrition, and so on.

Therefore, the industry has seen a rising appetite for those who are qualified to use data analytics software. In this area, several candidates have also started to show great interest and are looking for certification in various data analytics tools such as SAS Programming, R Programming, Hadoop and so on. By offering industry-supported courses in various data analytics software, Machine Learning makes it possible for candidates to enter the profession of their choosing.

2. OBJECTIVES OF THE STUDY:

The objective of this conceptual analysis paper is to explore the possibility of using business analytics principles in banking and financial industry and include:

(1) To determine the use of online big data available in the banking and finance industry to identify decision problems based on descriptive analytics, finding alternative solutions using predictive analytics, and choosing an optimum solution among alternatives using prescriptive analytic method of business analytics model.

(2) To analyze and interpret the applications of business analytics on various activities associated with banking and financial industry.

(3) To discuss the effects of these analytics on the banking and financial industry sector's competitive and innovative capabilities.

3. REVIEW OF RELATED WORK:

Table 1: Some scholarly published papers in field of business analytics in banking and finance with different issues obtained from Google scholar

S. No.	Area	Issues	Reference
1	Business analytics in Banking & finance	To have a robust and detailed database to analyze current practices in Islamic banks and to strengthen compliance with Islamic Financial Law (Sharia).	Tlemsani, I., et al. (2020). [25]
2	Business analytics in Banking & finance	By enhancing processes' efficiencies, cost-effectiveness, expanded distribution, compliance with financial inclusion, Fintech reshapes the Islamic financial landscape.AI seems to be the keyword as far as the Islamic fund management industry is concerned. In the process of making accurate decisions based on facts and statistics, Islamic fund managers have recently begun integrating AI and big data analytics into their approach, removing any stereotypes and personal intuition.	Miskam, S. et al. (2019). [26]
3	Business analytics in Banking & finance	Human resource (HR) analytics infiltrates the research and business agenda, guided by the	van den Heuvel, S. et

		increasingly accelerating speed of technology-enabled advances within human resource management (HRM).	al. (2017). [27]
4	Business analytics in Banking & finance	Proposing a business value model for Big Data academic and learning analytics to illustrate the possible advantages and business value of BDA that can be achieved by developing such analytical capabilities in HEIs.	Chaurasia, S. S. et al. (2018). [28]
5	Business analytics in Banking & finance	In terms of their social networking presence on Facebook and their e-banking facilities, Omani banks representing local, international, Islamic and specialized banks are being examined.	Saxena, S. et al. (2017). [29]
6	Descriptive analysis in Banking & finance	To investigate the knowledge, ability and expectations of owner-manager of small and medium enterprises (SMEs) about Islamic financing tools as an alternative sourcing decision in SME enterprises.	Al Balushi, Y. et al. (2019). [30]
7	Descriptive analysis in Banking & finance	Analysis of Libyan retail customers' attitudes to Islamic finance approaches.	Gait, A. et al. (2015). [31]
8	Descriptive analysis in Banking & finance	To explore the reasons behind the selection of Islamic mortgage by clients in Sabah, Malaysia and current factor and cluster studies to define the value of selection criteria for selecting an Islamic mortgage. The along with their gender, age group, religion, monthly income, and ethnicity, the choice criteria among Sabahans are examined.	Amin, H. et al. (2009). [32]
9	Descriptive analysis in Banking & finance	As the most widespread term in the Islamic banking industry in Malaysia, Tawarruq (Islamic product funding) has developed. Nevertheless, in its implementation, the widespread use of Tawarruq has invoked various Sharī'ah (Islamic law) problems.	Ali, M.M. et al. (2020). [33]
10	Descriptive analysis in Banking & finance	To assess the performance of musharakah (equity participation) in terms of profitability and risk; to analyze the management of musharakah to identify the barriers and factors that affect decision-making; and to investigate the consequences of using the financial mode of musharakah.	Abdalla Ahmed, G. (2008). [34]
11	Predictive analysis in Banking & finance	In addition to having many variables not previously considered, determinants to model improvements in bank profitability one year ahead use the predictive emphasis of basic analysis study.	Growe, G. et al. (2014). [35]
12	Predictive analysis in Banking & finance	In order to stem this undesirable development in the Nigerian banking industry, some analysts have advocated the use of statistical models to increase the objectivity and, thus, the predictive accuracy of the loan decisions of bankers.	Ariyo, A. et al. (1992). [36]
13	Predictive analysis in Banking & finance	To establish the determinants of the adoption of internet banking using a single theory of technology acceptance and usage (UTAUT) and electronic service (e-service) efficiency, accounting for changes in the purpose of the customer to adopt internet banking.	Rahi, S. et al. (2019). [37]
14	Predictive analysis	Testing the predictive power of each element of the	Bongomin,

	in Banking & finance	social network to clarify the financial inclusion of rural Uganda's poor.	G.O.C. et al. (2018). [38]
15	Predictive analysis in Banking & finance	It explains the UK insovency law and asks if banks ' financial ratios should differentiate between companies put in administrative receivership (AR) by their lending banks, which can or cannot be rescued, to determine credit worthiness.	Hamilton, R. et al. (2002). [39]
16	Prescriptive analysis in Banking & finance	To present an analytical evaluation and outline concerns relevant to international anti-money laundering (AML) initiatives in criminal regulation.	Arnone, M. et al. (2010). [40]
17	Prescriptive analysis in Banking & finance	Examine if the latest steps taken by the government of New Zealand (NZ) are effectively improving its non-banking sector in order to combat the recent financial crisis and ensure greater financial stability for the economy.	Yahanpath, N.et al. (2014). [41]
18	Prescriptive analysis in Banking & finance	The European Business Review 'Anbar Abstracts' is divided into six parts, covering abstracts under the following headings: top management issues; marketing and distribution; personnel and training; information and technology management; logistics and production management; accounting and finance.	Fojt, M. (1995). [42]
19	Prescriptive analysis in Banking & finance	An issue of the European Journal of Marketing, which is submitted to a survey of the kinds of research projects currently being carried out, is timely, given the ways in which the research pressures on university workers seem to be growing.	Gilligan, C. (1995). [43]
20	Prescriptive analysis in Banking & finance	To analyse whether bank regulation, monitoring and supervision boost or hinder the technological effectiveness and risk-taking conduct of Islamic banks around the world.	Alam, N. (2013). [44]

4. BANKING & FINANCIAL ANALYTICS AS NEW DECISION-MAKING TOOLS:

One of the early adopters of analytics is considered to be the banking and financial services and insurance (BFSI) sector. With the exponential growth of data, the BFSI industry is now on the threshold of reinventing itself. Moreover, factors such as rising operating costs, cutting-edge competition, and rising risk are continuously pushing banks and other financial institutions to innovate and differentiate. Banking has always been considered a heavy data industry; analytics are now able to redefine the field of play. Today, most global banks have started to adopt sophisticated analytics and transition to more data-driven decision making. Analytics tools can help organizations from marketing and distribution, operations to HR management through different organizational horizontals [3]. To empower employees, a data-driven and evidence-based business model helps banks to better understand their clients, economies, and competitors. There are ample instruments today that can help businesses achieve analytical excellence. For most banks, in truth, these tools are not new. What has changed is the variety of their implementations, guided by variations in the regulatory and economic environment. The organization’s challenge is to select the correct one. This should start with the awareness of the main challenges organizations want to solve, asking the correct, well-defined questions. They can only pick the most appropriate from the selection of available resources when businesses have clarity about the ultimate target. When we look at the maturity curve of analytics, for and stage of data management and analytics, various tools are required. The value of providing a comprehensive data management system that is the backbone of analytics is often ignored by businesses. It is possible to break data management into three major criteria: Database Management Framework, Data Modeling, and ETL. Each phase involves specialized tools like SQL Server, TERADATA, Oracle, and Informatica. Then, from the

abundance of knowledge that can be obtained, there is immense value. Organizations will then concentrate on creating high-end, creative reports by working with instruments such as MicroStrategy, QlikView, Tableau, and Spotfire. Each instrument has some strengths and disadvantages, depending on the current infrastructure, reliability, budget, data size, etc. When it comes to pure-play analytics, there are different ways in which banks can get a competitive edge. Tools such as SAS, R, and SPSS can help businesses recognize key business problems. Open-source resources such as R and WPS allow businesses to experiment with several methods without making enormous investments. To consider their client base, including those in the financial sector, businesses are going the extra mile. Today, we have the most sophisticated and advanced tools and algorithms that can help analyses not only structured data but also unstructured data. With the introduction of machine learning software such as Python and techniques such as Natural Language Processing and Help Vector Machines Learning Algorithms, the BFSI industry is revolutionizing. In today's data-driven environment, data analytics in banking play a crucial role in informed decision-making to move companies forward, enhance productivity, raise returns, and in turn achieve business objectives. Data analytics is the method of finding, analyzing, and conveying useful data insights to assist the uninitiated in the decision-making process. Financial analytics is an area that provides multiple views of a company's financial data. It helps to gain an in-depth understanding and take action against it to enhance the success of your company. All parts of the organization are impacted by financial analytics. In determining the profit of a company, financial analytics plays a crucial role. Financial analytics lets you answer all questions relevant to your company and allows you to foresee the future of your business as well. In many organizations, analysis is becoming increasingly used these days. Companies today need data in good time that lets business people make essential business choices. In boosting the valuation of your business, finance plays a significant role. As an essential business feature, finance finds its way, and it overlaps with analytics in many ways. In the finance sector, financial executives are finding new ways to maximize the value of their company. Each enterprise should have sound financial planning and forecast to maximize the company. The introduction of a modern business model, the changing requirements of the conventional financial department, and technical innovation have all contributed to the need for financial analytics. Financial analytics helps shape tomorrow's business goals. You may also strengthen the decision-making techniques of your firm. Financial analytics focuses on evaluating and controlling the tangible assets of an entity, such as cash, machinery, and others. It gives a deeper insight into the financial state of your company and increases the profitability, cash flow, and valuation of your company. To improve business sales and eliminate business waste, financial analytics can help to make wise decisions. Accounting, tax, and other finance areas include a data center that is combined with analytics to manage the company efficiently and achieve the targets more quickly [3, 4-5]. Some of the predicted impacts of business analytics on business processes are:

(1) Customer behaviors change and expectations change.
(2) Technological developments leading to larger quantities of input data.
(3) Competition of fintech players for new financial services using big data techniques already.
(4) Pressure from regulators.
(5) Cyber-safety increased.
(6) The pressure to cut operating costs.
(7) Technological developments to support real-time processing of enormous amounts of complex and diverse data [2].

5. HOW BIG ARE THE ONLINE UBIQUITOUS BANKING DATA:

The amalgamation of an increasingly competitive world, the rising proliferation of knowledge, and the compelling need to stay at the forefront of competition have encouraged businesses to focus on using analytics to make strategic business choices. Business analytics enables administrators to understand their business dynamics, to forecast market patterns, and to minimize risks. Current market processes and ecosystems are threatened by analytics and innovations. The expansion of new data sets and the introduction of major data transmission technologies are undermining existing information and technological silos. Company analytics are used to allow faster, fact-based decision making, from the use of granular data to customizing goods and services, to scaling digital platforms to suit buyers and sellers. Today, scientific experts have a wide variety of analytical skills and methods at their disposal. These range from "descriptive analytics," the simplest techniques, which involve preparing the data for

subsequent analysis, to "predictive analytics" "Prescriptive analytics that use machine-based learning algorithms and dynamic rule engines to provide interpretations and suggestions provide advanced models for forecasting and predicting the future. "With their multiple use cases and implementations, it is no longer surprising that these approaches are now finding their way into consumer, employee, supply chain, finance, and risk strategies at the organizational level. With its far-reaching use cases and numerous implementations, data analytics now serves as the keystone of strategic business decision-making. By empowering businesses to make consumer-oriented marketing choices to help them solve key operational inefficiencies, Analytics radically changes the perception of the importance of data [6].

5.1 Making most out of consumer patterns: -

In an increasingly customer-oriented age, organizations have accumulated a wealth of consumer awareness and intelligence. It is important to use these consumer insights to influence their products, tactics, and purchase experiences for businesses to remain competitive. Through careful market segmentation, a comprehensive and detailed understanding of consumers may give managers an insightful analysis of customer habits and preferences. A telecoms business, for example, may use advanced and predictive analytical models to reduce consumer churn and measure the efficacy of marketing campaigns. Likewise, an online retailer can recognize its web presence by finding answers to questions such as the combination of new and returning visitors, bounce rate, and average session length. In this way, business analytics helps managers gain strategic insight into industry dynamics, target consumers, more efficiently, and improve processes.

5.2 Using data to drive performance: -

While businesses invest considerable time analyzing client data and frontline monetization opportunities, it is equally important to concentrate on increasing productivity and results. In reducing inefficiency and streamlining the business, data and analytics would play a huge role. Reporting and analytical dashboards, for example, can identify data similarities and provide executives with detailed insights to perform cost evaluations, peer benchmarking, and price segmentation. Similarly, using analytics to calculate key performance metrics can produce calculated insights for solving challenging business situations in areas such as operational excellence, product development, and workforce planning. Supply chains, partly because of their dynamic nature and partly because of their significant contribution to a company's cost structure, are great places to look for strategic opportunities and benefits. Businesses can not only find hidden inefficiencies in existing processes to achieve higher cost savings by using analytics but can also measure large supply chain investments and decisions by risk modeling and assessment. Managers should then be deeply immersed in specific opportunities for improvement, such as portfolio management, business management, procurement, and logistics [7].

5.3 Managing risk through analytics: -

Businesses today face enormous threats from structured data such as databases and unstructured data such as websites, blogs, and social media networks. Organizations would be in a great position to quantify, evaluate, and anticipate risk with the use of risk management. Managers need to see risk management as an enterprise-wide approach that should establish ways to put knowledge from different levels and functions into one shared system. Organizations will be able to incorporate risk factors into their core strategic decision-making process and to anticipate future outcomes by developing a standard risk assessment and management system. Advanced data models can improve the accuracy of unpredictable business decisions, improve the quality of data, and increase productivity in meeting unconventional data needs. In dealing with uncertainty and strategic decision making, managers can be more experienced by being more knowledgeable about risk [7].

6. ICCT TECHNOLOGIES USED TO DESCRIBE, PREDICT AND PRESCRIBE FINANCIAL ANALYTICAL PROBLEMS:

One of the key challenges in measuring the information society has been the lack of up-to-date and reliable data, especially from developing countries. The world of information and communication technology (ICT) is evolving rapidly, as are the types of services and applications driving the information society, all of which make it much harder to identify and track emerging trends. as the only global source of internationally comparable ICT statistics, the ITU continuously works to increase the

availability and accuracy of these statistics and to find new data sources. In this context, the emergence of big data holds great promise and there is an opportunity to explore its use to complement current, but often limited, ICT data. The evolution of big data is closely related to development in ICT [8]. People and artifacts leave digital footprints in several different forms in today's hyperconnected digital world and through ever-increasing data flows from, among other artifacts, financial transactions, private and public information gathered and kept about their customers and citizens by companies and governments, online content such as photographs, videos, tweets, and other messages has been generated by users, as well as traces left by the internet of things (IoT), i.e. Objects that can be uniquely monitored. The prediction of the future can be aided by sentiment analysis carried out on Large repositories of information downloaded from the internet and stored in big data database systems. Big data analytics and data science analytics, data analytics used in the economy, finance, and management of organizations, including businesses, financial institutions, and public institutions, are used by ICT and industry 4.0 information technology for the production of modern data processing systems. in my view, scientific research confirms the strong link between the growth of big data technology, data science analytics, data analytics, and the effectiveness of the use of information resources, assuming that the advancement of big data technology and data science analytics Other ICT technologies, multicriteria technologies, automated processing of broad information sets and industry 4.0 technologies enhance the efficiency of the use of knowledge resources, particularly in the fields of economics, finance, and organizational management. In recent years, ICT information technologies, industry 4.0, etc., have grown particularly quickly and are being used in knowledge-based economies. These technologies are used in scientific research and business applications by commercially involved companies, as well as by financial and public institutions. A major challenge is the study of the ties between the growth of big data technology and data science, because of the relevance of this challenge in knowledge-based economies. Data analytics, market intelligence, and the usefulness of the use of knowledge resources to address key challenges related to the growth of society. Implementation of programs for the rapid adoption of the principles of sustainable proctological growth in economic processes, in line with the green economy theory, and the financing of ecological technology production and implementation programs, and the immediate adoption of the necessary environmental reforms. The goal of these proctological business growth initiatives is to reduce environmental pollution and slow down the global warming process. This is, however, only one of the key global problems, the solution of which may be affected by the issue of the possibility of growing the efficiency of using extensive information resources accumulated in the big data databases of knowledge-based economies.in connection with the above, I propose the following research questions that may inspire you to carry out significant and interesting research projects: some studies explore the relationship between the development of big data technology and analytics of data science; ICT information technology and advanced data processing industry 4.0 data analytics, business intelligence, and other ICT information technology and advanced data processing industry 4.0 and the effectiveness of the use of knowledge resources, especially in the areas of economics, finance, and organizational management, in particular for corporations, financial institutions, and public institutions? In recent years, there have been more and more media reports that there has been a significant increase in environmental emissions in many nations and a general acceleration of the global warming phenomenon. The problem is important because, in recent years, the pace of the global warming phenomenon has increased dramatically. But this is only one of the biggest issues in human society's Past to be tackled as a matter of urgency in the 21st century. Therefore, it is important to increase the efficiency of the production of information resources to find faster solutions to key issues related to social development.in knowledge resource management, the use of big data, data science, data analytics, business intelligence, and other ICT technologies, as well as advanced data processing industry 4.0 will contribute to the efficiency of the processing of information resources in knowledge-based economies, including economics and finance. in the process of disseminating and defending transparent advances in new online media, industry 4.0 technologies, are used to develop cybersecurity technologies.at present, the prevalent view is that the distribution of open technologies in modern online media, open data sources, and open information services influences the cost of the acquisition of knowledge and is a major factor in the development of the knowledge and technology economy. Technical innovations can also be open-inventions. Several open technological innovations are currently being made in the field of digital online media, on social media sites run by internet technology companies. It and advanced data processing technology, characteristic of the new

technological transformation known as industry 4.0.0, are used to create transparent technical innovations.in recent years, advances in industry 4.0 have also been used in many other fields, such as engineering, logistics, engineering technological innovation, medicine, and biotechnology, to forecast the potential growth of complex systems in various divisions and sectors of the knowledge-based economy. Implementations of industry 4.0 technology are anticipated to continue to expand in the coming years. Industry 4.0 only starts in many fields of knowledge, science, and business [9,10] with the development of various ICT information technology systems and advanced data processing.

7. OPPORTUNITIES & CHALLENGES OF USING FINANCIAL AND BANKING ANALYTICS IN STAKEHOLDERS DELIGHT:

A basic truth for every undertaking is that essentially, people are our only means towards the end. Focusing on any company or civic venture with a stakeholder means a higher likelihood of such a venture being completed and succeeding. A stakeholder is someone with a right, stake, or vested interest in the matter at hand, or in an entity, or its relationship with a product, service, or brand. Customers are a major form of stakeholder. In the company, they hold the key to the valuation and indeed the business itself. Organizations treat diverse sets of individuals with varying needs and demands. They market their goods to optimize their value, based on customers' demands. a company can only thrive if it meets consumer needs. Every organization's emphasis has changed steadily from customer satisfaction to customer pleasure effective stakeholder management is central to a business' ability to achieve positive change [11]. However, various stakeholders need to be accommodated in a stakeholder management strategy agreeing to several projects with a variety of entities and organizations and concerns can be a challenging mechanism for a business to pursue. Communication is the key to effective engagement with stakeholders. Communication at the right time with the right people will Strengthen a good relationship, mitigate a problem, or secure a sale. Customer relationship is experiences based. Communication is essential to good partnerships with stakeholders. Communication at the right time with the right people will strengthen a good relationship, mitigate a problem, or guarantee a sale. Customer relationship is experience-based. CRM operates best in circumstances where the business is relatively stable and a wide class of stakeholders engages in a fairly consistent manner with the company. It focuses on the construction and cost-effectively sustain a customer-centered organization and produce a strong ROI.it takes a high degree of stakeholder management to run an effective CRM project. Companies need to work towards financial inclusion with the same technology to have better management of stakeholders, particularly in rural areas, which is at the bottom of the pyramid, and communication is at the forefront [12].

7.1 Opportunities: -

- Lending funds directly to bulk lenders and based on guarantees.
- Assessment and acquisition of microfinance debt (securitization).
- Testing and distributing new items like the Kisan credit card.
- Engage microfinance institutions as agents payable for loan recovery and origination, of loans kept in bank accounts.
- Investing in equity for newly emerging.
- Banks and NGOs funding jointly.
- Introducing new technological technologies for quick and cost-effective service delivery. Biometric ATMs, computerization of bookkeeping operations, etc.
- There is also a lack of reliable data concerning the total number of clients and he supported poor women.
- Though institutions have done well to expand financial services access to low-income women customers, the emphasis was primarily on credit distribution.
- Low-income clients everywhere have a variety of emerging needs, as they are more vulnerable and face more risks. They need constant access to the wide spectrum of financial services to address the challenges they face in their day-to-day fight for survival [13-14].

7.2 Challenges:

1. Increasing Competition: - The challenge posed by FinTechs, usually targeted in financial services by some of the most profitable areas is important.

2. A Cultural Shift: - Technology has become embedded in our society, from artificial intelligence (AI)-enabled wearables that track the wearer's health to smart thermostats that allow you to change heating settings from internet-connected devices, and this extends to the banking industry.
3. Regulatory Compliance: - As a direct result of the substantial rise in regulatory fees compared to earnings and credit losses since the 2008 financial crisis, regulatory enforcement has become one of the most critical banking industry challenges.
4. Changing Business Models: - Compliance management costs are only one of the problems facing the banking industry, pushing financial institutions to alter the way they do business.
5. Rising Expectations: - The customer today is smarter, more intelligent, and more educated than ever before and demands a high degree of customization and convenience from their banking experience.
6. Customer Retention: - Customers of financial services expect customized and meaningful experiences on any computer, anywhere, and at any moment through clear and intuitive interfaces.
7. Outdated Mobile Experiences: - Every bank or credit union has its own branded mobile app these days, but just because a company has a mobile banking plan doesn't mean it's leveraged as efficiently as possible.
8. Security Breaches: - Security is one of the leading banking industry issues, as well as a significant concern for bank and credit union customers, with a number of high-profile breaches over the past few years.
9. Antiquated Applications: - Over 50 percent of financial services CIOs agree that a greater portion of the business will come from digital channels, and digital initiatives will produce more revenue and value, according to the 2017 Gartner CIO Survey.
10. Continuous Innovation: - Sustainable business success requires insight, resilience, rich relationships with consumers, and continual innovation. Benchmarking effective practices will offer useful feedback in the industry, helping banks and credit unions remain competitive.

8. COMPETITIVE ADVANTAGE OF BUSINESS ANALYTICS FOR BANKING & FINANCIAL ORGANIZATIONS:

The process of capturing, storing, analyzing, and studying business data and using statistical models and iterative methodologies to transform data into business insights is business analytics. Market analytics helps to understand which datasets are useful and how to exploit them to solve problems and increase performance, productivity, and revenue. In order to define actionable data, market analytics is usually used as a subset of Business Intelligence (BI). In general, business intelligence is descriptive, focusing on the processes and techniques used to collect, interpret, and categorize raw data and report on past or current events. Market analytics are more prescriptive, dedicated to evaluating the methods by which the data can be evaluated, recognizing patterns and constructing models to explain past events, forecasting future events, and recommending steps to maximize ideal efficiency. In order to create data-driven strategies, business analysts now use sophisticated technologies, quantitative analysis, and mathematical models. In order to expand their knowledge of complex data sets and artificial intelligence, deep learning, and neural networks to identify usable data and patterns for the micro-segment, they would use statistics, information systems, computer science, and organizational research. This expertise can then be leveraged to accurately predict potential market patterns in consumer behavior and recommend behaviors that will drive customers towards a targeted goal [15]. As banking and financial services firms are looking for new revenue sources, analytics ventures enable them to bring more customized goods to market in a shorter period. Analytics help banks deliver the right product to the customer through the right channels at the right time. Moreover, thanks to the growing body of application programming interfaces (APIs) with the ability to link different data sets, banks may develop new services for existing customers, including using financial tech companies as sales channel partners. Combined with analytics, machine learning teaches banks a lot about consumer behavior and expectations so that banks can continually learn and fine-tune analytical models to optimize goods and services, plus minimize the cost of selling products in different channels. Cloud-based analytics systems offer flexibility and elasticity for banks to operate at high speed with massive data workloads and to achieve market value more quickly.

8.1 Advantages & Benefits:

(1) Increased operating efficiencies: Financial institutions need to be as lean and efficient as possible in today's ultra-competitive marketplace. Organizations may use BI tools to analyze operating processes to minimize recurring costs and optimize internal capital and skills.

(2) Improved Products and Services: BI technologies help companies to track individual revenue streams and better assess whether and which goods and services are profitable. Business intelligence tools can allow financial institutions to analyze massive volumes of consumer data to gain insights into customer desires and banking perceptions that can be used to enhance products and services.
(3) Improved marketing: -Marketers may use BI to evaluate CRM data based on a variety of parameters to discover the most successful client profile. Furthermore, the consumer base can be analyzed to find and create new possibilities for cross-selling and upselling, and to introduce more tailored online marketing strategies.
(4) Improved customer retention: BI software may help recognize and target financial institutions that are the most profitable customers. BI also plays a significant role in maximizing customer satisfaction and retention. Organizations will figure out the reasons why consumers turn to a rival organization using market analytics software and techniques. They can then implement new processes to help reduce customer churn.
(5) Designing New Investment Strategies: -Fund Managers use new data sets to create new investment strategies. Investors may gain a unique insight into emotions and develop trading signals by designing models around social media.
(6) Risk Reduction: - The world of finance is continuously evolving and fraught with instability. More than ever, banking and finance institutions must use any tool available to them to minimize risk. Fortunately, the Business Intelligence tools of today offer actionable knowledge that companies can use in a variety of ways to reduce danger. The ability to monitor customer transaction history helps companies to identify and mitigate fraudulent activity events easily, the most noticeable being credit card fraud.
(7) Improving risk control: -Building on risk in the banking sector. Therefore, a thorough assessment of each transaction and investment is important for players in this industry. Businesses can get new insights into their processes, activities, clients, and markets using analytics tools to help them reduce real risks. For example, banks can identify the factors that may cause borrowers to default on loans, and they can devise new programs to bypass them. Another important advantage of banking sector analytics is that it makes activities transparent so that institutions can detect fraudulent internal or external behaviour and recognize past trends to avoid potential fraud.
(8) Marketing and sales automation: -Banks are today the source of an enormous amount of data about their customers. With the aid of this, businesses in the data banking field can better identify the needs of consumers and meet those needs proactively. It also offers various divisions, such as marketing, distribution, and IT, the ability to function more cohesively as a single entity. This will allow banks to customize their service based on their current requirements and financial position to particular customers. Also, sophisticated analytics software can be used to find prospects for cross-selling and up-selling.
(9) Identify new segments of growth: -Using advanced analytics tools, banks can identify new growth sources and new business models. Moreover, businesses in the banking sector should identify the holes in their current operations and use analytics to improve their services. The data gathered from different analyses will enable players in the banking industry to correctly recognize the segments that are most attractive to them and thus develop their capabilities. Banks will use the analytics data to maintain high-value customers, sell to them the right products, and determine which segments to invest in for the highest return.
(10) Future planning: -Review of historical evidence is an important criterion for taking decisions in any sector. Analytics software may help identify trends in the banking sector, fix problems that may have gone unnoticed, and set targets for enhancing past metrics.
(11) Stronger regulatory compliance: -The banking sector deals with extremely sensitive and confidential data volumes. That is one of the key reasons why a large number of regulatory initiatives are facing the banking sector. Compliance with regulatory measures is faced by most companies in the banking sector as one of the major problems. Advanced analytics tools help banks capture, organize, and analyze data, compile reports, and meet needs.
(12) Performance management, budgeting, and product innovation: The use of analytical methods will help businesses in the banking sector assess a company and employee performance and then build branch budgets and employee targets based on previous achievements. Besides, players can prioritize off-peak recruitment and preparation of their staff and track progress towards targets in real-time.

Product and service performance data will help banking companies develop new solutions built around existing customer demand [16-18].

8.2 Constraints & Disadvantages:

(1) Lack of alignment, availability, and trust: - The analysts are grouped according to the company domains in most organizations. Unfortunately, the research is shared with the top administrators, so the findings are not readily transmitted to the market consumers for whom they have the greatest value.
(2) Lack of Commitment: - It is not especially difficult to apply the solutions that are prefabricated by the analysts; they can be very expensive and the ROI is not immediate. These analytical models are by default, ready to enhance accuracy over time, but it is a dynamic model that requires a commitment to executing the solution. Since business users do not see the outcomes promised, they lose interest, resulting in a loss of confidence as a result of which models fail.
(3) Low quality of underlying transactional data: - Business analysts struggle to incorporate the solutions presented because either the information is not available, the data sources are too complicated, or they are poorly designed.
(4) Summing-Up: - A committed and consistent approach and a good level of maturity are important for business analytics. You must take a business analytics course to become a successful business analyst. There are several online business analytics certifications available nowadays. Such business analytics courses enable you a lot to take the right steps to classify data sources based on analytical criteria mapping.

9. SUGGESTION ON POSSIBLE INNOVATIONS & OPTIMIZATIONS IN BANKING & FINANCIAL OPERATIONS USING ONLINE BIG DATA :

Big Data is today one of the most published buzzwords in the financial services sector, just like Cloud, IoT (Internet of Things), Open Banking, and Machine Learning, but a simple definition is not so simple to provide, just like the other terms described. In particular, Big Data is often used as a synonym for client analytics, real-time analytics, or predictive analytics. The general view is that Big Data is the collective term used to capture, organize, process, and analyses large, diverse (structured and unstructured) and complex data sets for contemporary methodologies and technologies, whereas real-time predictive analytics for customers specifically apply to unique types of analyses performed on these data sets to detect patterns and produce business value. However, since the primary business aim of Big Data is not the data itself, but to gain business insight into the data, the analytical aspect of the chain is the most evident and important for a business client, explaining why the terms are often interchanged. Given that the financial services industry is arguably the most data-intensive sector in the global economy, the influence of big data on the sector is difficult to overestimate. Banks have vast amounts of customer information (i.e., deposits/withdrawals at ATMs, point of - sales transactions, online transfers, customer profile data collected for KYC), but because of their silo, product-oriented organizations, they are not very good at using these rich data sets. Although the financial services industry has invested heavily in data collection and processing technologies (such as data warehouses and business intelligence) for over a decade, it is one of the leaders of investments in big data technology [19]. The financial services sector is unable to allow itself to leave such vast quantities of information untapped due to increasing and changing customer demands and increased competition from Fintech companies. Instead, banks and insurers will exploit the latest (and fresh) data sets to maximize market perception and gain a competitive advantage. Using their collected customer profile information to provide automated digital investment advice, the recent success of the Fintech robs advisors shows that FinTech's are already able to turn Big Data into new compelling customer services. These Fintech businesses are likely to lose considerable business unless banks can provide similar services quickly. Banks need to protect their most important assets from fraud and financial crimes, namely the 'trust' that customers give their bank. This raises the demand for further protection of contact channels and customer information through different security strategies. One of the most promising is risk-based authentication, in which a fraud-detection engine calculates a risk profile for each channel request, determining the level of security needed (authentication). This fraud detection engine utilizes client analytics to identify irregularities in the customer's behavior. Owing to increased competition and low-interest rates, profit margins in the financial services industry are shrinking. Therefore, by raising the efficiency of their business, banks and insurers are compelled to reduce operating costs. The insights

gained from Big Data will drive many of these productivity increases. With so large and complex data sets increasing, traditional instruments are no longer able to process these data at a reasonably low cost and time. Luckily, several emerging technologies are reacting to this challenge, allowing these data sets to be processed in near real-time and at reduced costs. Mass marketing campaigns, especially today when marketing campaigns overload consumers through multiple platforms, are costly and often ineffective. Therefore, successful marketing campaigns should be aimed at the correct group of consumers, with the correct (personalized) message and through the right medium (direct mailing, email, medium advertising, social media, TV, radio). Optimizing the first sales opportunity once a prospect has responded to a campaign is critical. At the same time, sales to potential purchasers can also be increased. There are a wide variety of methods to model and evaluate knowledge, and techniques are often combined to achieve the best outcome. Visualize the information and collect information through various visualization methods such as tables, graphs, decision trees, traffic light indicators, dashboard aggregated heatmaps, and reports. Also included is the representation of the analytical model itself and the reports required for model monitoring, benchmarking, and backchecking. Data-driven innovation has the potential to influence all facets of the economy. To understand this, however, future policymakers need to establish consistent data use policies. This could be done by (1) fostering education that focuses on data science skills, (2) eliminating obstacles to establishing a single digital market, (3) encouraging the appropriate investment climate for big data technology, (4) making public data available through open data and the elimination of data silos, (5) ensuring competitive technological infrastructure, and (6) supporting balanced policy, while at the same time addressing issues such as privacy and protection, ownership and transition, and infrastructure and civic data [20-24].

10. CONCLUSION :

Financial Analytics is an efficient tool that can be used by both small and large business owners to track and measure business performance. This will allow the company to adapt to the factors affecting its operations. Financial analytics can provide more detailed and timely financial results, which are the main factor in determining the success of a business from the viewpoint of bankers, investors, and analysts. In this volatile world of data-driven disruption, organization administrators need to look through two lenses simultaneously. First, high risk, rewarding opportunities, such as entering new markets and changing existing business models, need to be recognized. Second, their emphasis on integrating analytics into their core business decision-making process needs to be sustained. Through integrating data analytics into their core strategy, detecting unfolding consumer trends, monitoring and tracking emerging risks, and creating mechanisms for continuous feedback and development, market managers will streamline internal business processes. This will make it possible for companies to gain a competitive edge and stay at the forefront of digital innovation, driving analytical changes. Banks have access to large amounts of customer information, but due to various limitations, this expertise is not yet properly converted into practical insights. With rivalry getting fiercer in the financial services industry if they are to stay competitive, banks need to adopt a data-driven strategy. Big Data will be a clear differentiator in the future competitiveness of financial institutions as the opportunities are virtually endless for incumbent banks and insurers through such insights.

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