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MANAGERIAL DECISION MAKING IN THE ERA OF BIG DATA INSIGHTS FROM THE FINANCIAL SECTOR

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ABSTRACT

Big data's arrival has transformed managerial decision-making in many different sectors, most notably the financial one. Big data's era has produced notable changes in financial sector managerial decision-making. Among the main advantages are improved risk management, more data-driven decision-making, and closer consumer insights. To properly leverage big data, though, financial organizations must negotiate issues with data privacy, security, and organizational transformation. Big data's importance in management decision-making is predicted to become even more evident as technology develops, therefore promoting financial industry innovation and efficiency. This study shows how big data shapes managerial decisions in finance, therefore stressing the transforming effects on operations, risk management, customer service, and strategic planning.

Keywords: Managerial Decision, Big Data, Financial Sector, Organizational Transformation

INTRODUCTION

Big data has emerged as a prominent force in the intricate realm of finance and banking, where numerical data holds the key to achieving success. Big data has the ability to transform unprocessed data into valuable insights, akin to a crystal ball that uncovers concealed realities. This essay delves into the enigmatic role of big data in financial decision-making, where data-driven decisions reign supreme in an unpredictable world (Singh, et.al., 2017). An astonishing surge in data generation has resulted in 90 percent of all data being generated in the previous few years. Every day, an astonishing amount of 2.5 quintillion bytes of data is generated, commonly known as big data. The rapid growth in data storage offers unparalleled possibilities for collecting, manipulating, and examining both organized and unorganized data.

Revealing the Potential of Big Data

Big data, a vast repository of extensive and diverse information, surpasses the limitations of traditional analysis. The keys to understanding market problems and unraveling mysterious trends are found inside this extensive realm. Financial institutions can uncover concealed patterns and relationships that impact the fundamental framework of the financial industry by employing big data technology and employing advanced analytics.

Financial institutions were not naturally suited for the digital context, which prompted them to undertake a significant reform process. This revolution necessitated a modification in conduct and advancements in technology. The finance sector has witnessed significant technological developments in big data integration, leading to the development of practical, personalized, and secure solutions. The utilization of big data analytics has significantly revolutionized the operations of individual companies and the financial services sector.

Harnessing the vast potential of big data is akin to opening Pandora's box of information. Uncovering the various levels of information with the expertise of a competent investigator on a focused mission, this powerful collaboration embarks on a daring expedition with data analytics as its reliable ally. They collaborate to navigate vast data oceans, transforming chaos into meaningful patterns and illuminating the most obscure areas of ambiguity (I Sandhi, et.al., 2017). Big Data and data analytics empower firms to make precise decisions by leveraging algorithms and statistical models.

Big data analytics is an intricate and captivating exploration into the expansive realm of big data, unraveling its enigmas to offer invaluable insights. This innovative procedure involves analyzing vast datasets, detecting concealed patterns, determining correlations, finding market trends, and interpreting clients' elusive preferences. By extracting relevant information from data, organizations are able to make well-informed business decisions (Nigar, et.al., 2018). Data analytics tools and methodologies, when combined with sophisticated business intelligence (BI) queries, provide valuable insights into the intricate workings of corporate operations and performance. Big data analytics represents the pinnacle of advanced analytics, harnessing the power of statistical algorithms, what-if analysis, and predictive models, all powered by cutting-edge analytics platforms.

The Role of Big Data in Financial Decision Making

Big data refers to the extensive amounts of organized and unstructured data that are produced from a variety of sources, such as transactions, social media, market feeds, and others. Big data in the financial sector empowers managers to make well-informed decisions by offering complete insights into market trends, client behaviors, and operational efficiencies. JPMorgan Chase employs big data analytics to improve fraud detection (L., 2021). Through real-time analysis of transaction patterns and customer habits, the bank can enhance its ability to detect suspicious actions and efficiently mitigate fraud. Goldman Sachs also use big data to enhance and refine its trading techniques. The company conducts comprehensive analysis of market data, news sentiment, and economic indicators in order to make well-informed trading decisions and

effectively manage risks. Citibank utilizes big data to gain valuable customer insights. The bank enhances customer satisfaction by utilizing data from social media interactions, transaction history, and consumer feedback to provide personalized services.

Obstacles to Overcome When Implementing Solutions for Big Data

The use of big data solutions in the financial sector presents a number of problems, despite the enormous benefits those solutions offer:

1. The Value of Data and Its Integration: It is of the utmost importance to guarantee the correctness and uniformity of data obtained from a variety of sources. In order to preserve the integrity of their data, financial institutions are required to make investments in data cleaning and integration processes.

Data Privacy and Security: As the volume of data continues to grow, it is of the utmost importance to safeguard sensitive information pertaining to customers. The implementation of effective cybersecurity measures is necessary for financial institutions in order to protect data from being compromised and to comply with privacy requirements.

3. Capabilities and Abilities: In order to make efficient use of big data, it is necessary to have experienced people who are knowledgeable in the fields of data science, analytics, and financial modeling. Financial institutions are required to make investments in the training and hiring of qualified individuals.

4. Compliance with requirements: It is necessary to maintain compliance with data protection and financial requirements, and this can be accomplished by successfully navigating the complicated regulatory landscape. Managers are required to be current on any changes to regulatory requirements and to adjust their data strategies accordingly.

Ethical Considerations Big Data in Financial Decision

The utilization of big data in financial decision-making also gives rise to ethical considerations:

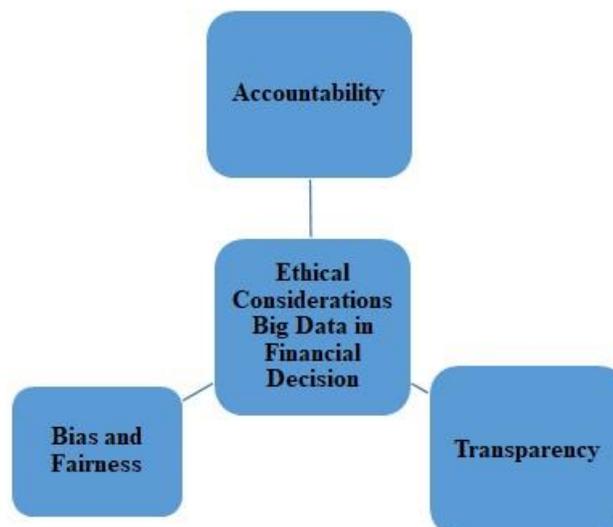


Figure 1: Ethical Considerations Big Data in Financial Decision

1. Algorithms have the potential to perpetuate biases that already exist in the data, resulting in the unfair treatment of specific customer groups. Financial institutions are obligated to guarantee that their models are both transparent and equitable.
2. Customers possess the entitlement to be informed about the manner in which their data is being utilized. Financial organizations must to ensure transparency regarding their data practices and acquire explicit consent from clients.
3. Managers must assume responsibility for the decisions taken based on the insights derived from big data. Creating explicit governance frameworks and ethical principles is crucial in order to uphold confidence.

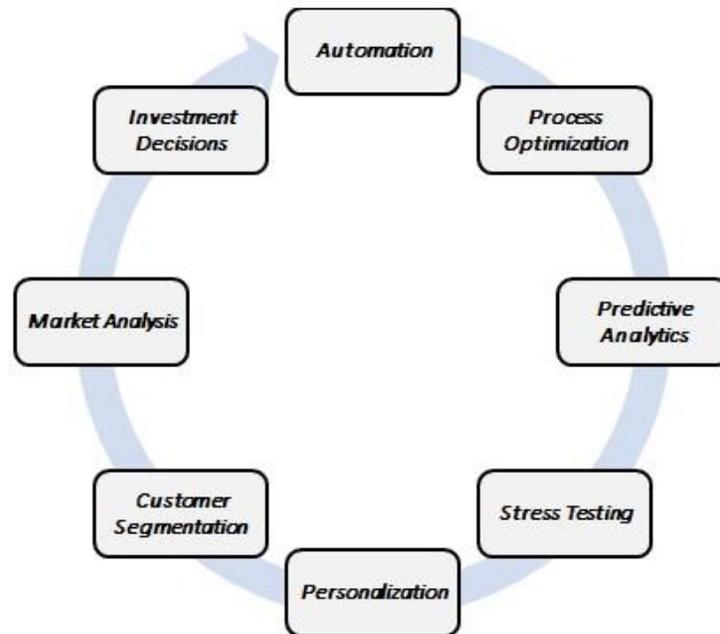


Figure 2: Determinants Impacted by Big Data in Finance

REVIEW LITERATURE

The financial sector has greatly benefited from the revolutionary impact of big data in several industries over the past decade. The implementation of big data analytics has revolutionized the way managers make decisions, allowing for more knowledgeable, strategic, and prompt choices. This literature review investigates the influence of big data on the process of making decisions by managers in the financial sector. It examines important topics such as decision-making based on data, managing risks, understanding customer behavior, and improvements in technology. Davenport and Harris (2017) argue that data-driven decision-making has become an essential aspect of strategic management in the financial sector. This approach enables managers to make decisions based on empirical evidence rather than relying on intuition or personal experience. Big data analytics has radically revolutionized the processes of managerial decision-making. Financial organizations utilize large quantities of organized and unorganized data to obtain practical and useful information. Multiple studies emphasize the advantages of making decisions based on data. According to a survey by KPMG (2019), 85% of financial institutions that incorporated big data

analytics into their decision-making procedures had notable enhancements in both efficiency and profitability. These enhancements are ascribed to the capacity to monitor market trends, forecast client behavior, and optimize investment methods. Big data analytics is crucial for improving risk management in the financial industry. Conventional risk management methods frequently fail to adequately detect and address developing hazards. Big data enables real-time risk assessment and the creation of prediction algorithms that can anticipate future risks. The work authored by Chen et al. (2020) explores the utilization of big data analytics in enhancing the ability of financial institutions to efficiently monitor transactions and identify instances of fraudulent activities. Utilizing machine learning techniques to examine transaction patterns aids in detecting abnormalities that could potentially signify fraudulent activity. In addition, big data enables stress testing and scenario analysis, which are essential for comprehending potential dangers in unstable markets (Banerjee, 2018). Gaining a thorough comprehension of consumer requirements and preferences is of utmost importance for financial institutions seeking to improve customer satisfaction and loyalty. Big data allows for the analysis of client behavior, which in turn enables the provision of personalized services and the implementation of focused marketing initiatives.

A study conducted by McKinsey & Company in 2016 reveals that financial institutions who employ big data for customer analytics have experienced a notable 10-20% surge in sales and a substantial decrease in customer attrition rates. Managers may generate comprehensive consumer profiles and customize their products by examining data from several touchpoints, including social media, transaction history, and customer feedback. Technological improvements play a crucial role in the incorporation of big data analytics into management decision-making. Cloud computing, artificial intelligence (AI), and machine learning play a crucial role in rapidly processing and analyzing huge datasets. Deloitte (2021) emphasizes the significance of cloud computing in delivering scalable storage solutions and computational capabilities essential for big data analytics. In addition, artificial intelligence (AI) and machine learning algorithms improve the precision and efficiency of data analysis, allowing for instantaneous decision-making. Financial institutions that embrace these technologies are more strategically positioned to promptly address market fluctuations and meet client expectations. Although big data analytics offers numerous benefits, its implementation in the financial sector is not devoid of obstacles. Ensuring data privacy and security is of utmost importance, considering the sensitive nature of financial data. Managers are responsible for ensuring adherence to standards such as the General Data Protection Regulation (GDPR) and implementing strong cybersecurity measures. According to Wamba et al. (2017), personnel who are used to traditional decision-making methods often exhibit reluctance to change. Training and development programs are crucial for providing personnel with the requisite skills to efficiently utilize big data.

RESEARCH METHODOLOGY

The study is based on both primary & secondary data. Survey has been done on the basis of structured questionnaire. The research focuses on big data insights from the financial sector & managerial decision making thereon. The secondary data has been collected from various online

freely available sources. Total 65 complete filled questionnaire we had received for the purpose of analysis. SPSS has been used for results.

OBJECTIVE OF THE STUDY

- To study big data insights from the financial sector
- To examine operational efficiency, risk management, customer service, strategic planning whether impacted by big data in finance

Hypothesis of the study

Based on review studies above, the following hypothesis has been framed:

H01: Operational efficiency, risk management, customer service, strategic planning significantly impacted by big data in finance

H01: Operational efficiency, risk management, customer service, strategic planning significantly not impacted by big data in finance

Data Analysis & Interpretation

Table 1- Reliability Test Analysis (Cronbach's Alpha)

S.No	Instrument (s)	Cronbach's Alpha Value	No. of item (s)
1	Operational Efficiency	0.817	3
2	Risk Management	0.793	5
3	Customer Service	0.838	7
4	Strategic Planning	0.762	6

Table 2: Model Summary of Big Data in Finance as dependent variable

Model	R	R Square	Adjusted R Square	Std. Error of the estimate
1	0.876	0.889	0.891	1.78901
<p>a. Predictors: (Constant), Operational Efficiency, Risk Management, Customer Service, Strategic Planning</p> <p>b. Dependent Variable: Big Data</p> <p>With the help of linear regression, the link between the factors was checked.</p>				

Table 3. ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
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1	Regression	256.9184	4	7.0346	8.8971	0.000(a)
	Residual	374.3652	60	.5732		
	Total	631.2836	64			
<p>a. Predictors: (Constant), Operational Efficiency, Risk Management, Customer Service, Strategic Planning</p> <p>b. Dependent Variable: Big Data</p>						

Table 4: Coefficients

Models	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	β	Std. Er	Beta		
(Constant)	.716	.7618		1.063	.285
Operational Efficiency	.824	.374	.503	9.832	.067
Risk Management	.225	.048	.213	3.479	.315
Customer Service	.087		.287	4.421	.000
Strategic Planning	.183	.216	-.271	3.274	.000
Dependent Variable: Big Data					

Interpretation

Table 4 shows the coefficients from a regression study looking at the effect of operational efficiency, risk management, customer service, and strategic planning—on a dependent variable, probably general organizational performance in the banking sector. Unconventional Coefficients (β): When all independent variables are zero, the constant (intercept) value is 0.716, hence determining the baseline value of the dependent variable. At the common alpha level of 0.05, this coefficient—with a Sig value of 0.285—is not statistically significant, though. Operational Efficiency ($\beta = 0.824$): Holding all other variables constant, this indicates that the dependent variable rises by 0.824 units for every unit increase in operational efficiency. Given 0.067's significance value above 0.05, this outcome—at the 5% level—is not statistically significant. Risk Management: This shows that the dependent variable rises by 0.225 units for every unit increase in risk management efficacy. Having a significance value of 0.315, this coefficient is not

statistically significant. Customer service ($\beta = 0.198$) shows that the dependent variable increases by 0.198 units every unit increase in customer service quality. With a 0.000 significance value, one indicates great statistical relevance. Strategic planning ($\beta = 0.183$) implies that every unit improvement in the efficacy of strategic planning is connected with a rise of 0.183 units in the dependent variable. Furthermore indicating great statistical relevance is the significance value of 0.000. The significance (Sig) values show if the coefficients differ statistically from zero. Operational Efficiency (Sig = 0.067): Not significant at the 0.05 level. Risk Management (Sig = 0.315): Not significant at the 0.05 level. Customer Service (Sig = 0.000): Highly significant. Strategic Planning (Sig = 0.000): Highly significant.

FINDINGS OF THE STUDY

- The use of big data analytics makes it possible to automate mundane processes, such as the processing of transactions and compliance checks, which in turn reduces the amount of manual labor required and the number of errors that occur.
- The identification of bottlenecks in operational processes is made possible by data-driven insights, which makes it possible for managers to adopt adjustments and improve overall efficiency.
- By conducting an analysis of historical data, financial organizations are able to forecast potential dangers in the future and take preventative measures. The forecasting of market trends, credit concerns, and potential fraudulent operations are all included in this.
- A complex stress testing model that simulates a variety of economic scenarios may be created with the use of big data. This model assists managers in understanding the impact that their portfolios will have and in developing ways to mitigate the impact.
- By utilizing big data, managers are able to provide individualized financial goods and services to their customers. Banks and other financial organizations are able to cater their products and services to the specific requirements of each consumer by analyzing their behavior and preferences.
- Big data makes it possible to segment customers in great depth, which enables managers to target certain groups with marketing campaigns and loyalty programs that are specially tailored to their needs.
- The use of real-time data analytics helps managers make strategic decisions by providing them with up-to-date information about the circumstances of the market, the competitive landscape, and developing trends.
- Through the examination of a wide variety of financial indicators and the forecasting of future performance, big data provides managers with the ability to evaluate investment opportunities successfully.

CONCLUSION

Big data has revolutionized financial sector managerial decisions by providing formerly unheard-of insights that support operational efficiency, risk management, and customer service enhancement. Big data solutions must be successfully implemented, though, and this calls for

resolving issues with data quality, privacy, skills, and regulatory compliance. Furthermore, ethical issues have to take front stage if we are to guarantee responsibility, equity, and clarity. Managers have to negotiate these complexity as financial institutions keep using big data to produce profit and keep confidence in the digital era. Usually depending on historical data and qualitative evaluations, financial organizations today use enormous amounts of data to provide formerly unheard-of insights and guide strategic decisions. Big data analytics' ability to collect and analyze vast amounts of data and expose previously unreachable trends and patterns helps to mostly explain this change. Focusing on important sectors where big data insights have led notable changes, this paper seeks to investigate the several effects of big data inside the financial sector. To examine financial industry big data insights. This goal entails a careful analysis of how financial organizations make use of big data to obtain insights guiding many facets of their activities. Understanding the nature of these insights helps us to value the transforming power of big data in finance. Using big data, to investigate operational efficiency, risk management, customer service, and strategic planning. This goal explores particular operational areas inside financial institutions to evaluate how big data affects customer service, risk management techniques, efficiency, and strategic planning direction. By tackling these goals, this paper aims to give a thorough knowledge of the function of big data in the financial industry, thereby stressing both the possibilities and the difficulties it offers. The results of this study will not only highlight the strategic relevance of big data but also provide insightful analysis for financial managers trying to use data analytics for improved decision-making and competitive advantage.

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