Original Research Article

Integration of Big Data Analytics in Management Information Systems for Business Intelligence

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Abstract

In the era of big data, organizations are increasingly leveraging advanced analytics to extract valuable insights from vast and complex datasets. Management Information Systems (MIS) play a crucial role in collecting, processing, and analyzing data to support decision-making. Integrating big data analytics into MIS can enhance business intelligence and improve organizational performance. This study aims to investigate the integration of big data analytics into MIS and its impact on business intelligence. Specifically, the study seeks to identify the challenges and opportunities associated with this integration and explore best practices for implementation. A qualitative research approach was adopted for this study. Data was collected through semi-structured interviews based on a survey of over 312 information technology (IT) professionals from 21 industries with IT managers and business analysts from January 2022 to December 2023. Thematic analysis was used to analyze the data and identify key themes related to integrating big data analytics into MIS. The findings indicate that integrating big data analytics into MIS can significantly improve business intelligence. According to the respondents, on average, there was a 30% increase in the accuracy of decision-making processes after the integration. Additionally, organizations reported a 25% reduction in operational costs and a 20% increase in revenue as a result of the integration. Moreover, 70% of the respondents agreed that integrating big data analytics into MIS improved their organization's overall performance. Integrating big data analytics into MIS offers numerous benefits, including improved decision-making, cost savings, and revenue growth. However, organizations must overcome challenges such as data privacy and security concerns and the need for skilled personnel to manage and analyze big data. Overall, this study highlights the importance of integrating big data analytics into MIS for enhancing business intelligence and achieving organizational success.
Keywords: Big data analytics, Management Information Systems, Business intelligence, Integration, Decision-making.

INTRODUCTION

Big data analytics has emerged as a transformative force in modern business environments, offering organizations unprecedented opportunities to extract valuable insights from vast and diverse datasets [1]. This technology has revolutionized how businesses operate, enabling them to make data-driven decisions, enhance operational efficiency, and gain a competitive edge in the market [2]. At the heart of this revolution lies the role of Management Information Systems (MIS), which play a critical role in collecting, processing, and analyzing data to support decision-making processes at all levels of an organization [3]. MIS serves as the backbone of organizational decision-making, providing managers with timely, accurate, and relevant information [4]. These systems collect data from various sources, such as transactional databases, customer interactions, and external sources like social media and sensors. The data is then processed and transformed into meaningful insights using advanced analytics tools, enabling managers to make decisions that drive business success.

Integrating big data analytics into MIS represents a significant advancement in leveraging data for business intelligence. Combining big data analytics capabilities with MIS, organizations can gain deeper insights into their operations, customers, and market trends [5]. This integration enables businesses to identify new opportunities, optimize processes, and mitigate risks more effectively, leading to better decision-making and improved business outcomes. One of the key benefits of integrating big data analytics into MIS is the ability to analyze large volumes of data in real time. This capability allows organizations to respond quickly to changing market conditions and customer preferences, giving them a competitive advantage in today's fast-paced business environment [6]. Additionally, big data analytics enables organizations to uncover hidden patterns and trends in their data, providing valuable insights that can inform strategic decision-making.

Another advantage of integrating big data analytics into MIS is enhancing data quality and reliability. Leveraging advanced data cleansing and validation techniques, organizations can ensure that the data used for decision-making is accurate and up-to-date [7]. This, in turn, improves the overall effectiveness of decision-making processes and helps organizations avoid costly mistakes. Despite the numerous benefits of integrating big data analytics into MIS, there are also challenges that organizations must overcome. One of the main challenges is the complexity of managing and analyzing large volumes of data. Big data analytics requires specialized skills and technologies, which can be costly and time-consuming [8]. Additionally, organizations must ensure they have the infrastructure and data governance policies to manage and secure their data effectively.

Integrating big data analytics into MIS holds tremendous potential for enhancing business intelligence and driving organizational success. Leveraging big data analytics, organizations can gain deeper insights into their operations, customers, and market trends, enabling them to make informed decisions that drive business growth [9]. However, to fully realize the benefits of this integration, organizations must overcome the challenges associated with managing and analyzing large volumes of data. With the right strategy and technology, organizations can harness the power of big data analytics to achieve their strategic goals and stay ahead of the competition.

LITERATURE REVIEW
Characteristics of Big Data Analytics
Big Data Analytics (BDA) examines large and varied datasets to uncover hidden patterns, unknown correlations, market trends, customer preferences, and other useful business information. It uses advanced analytical techniques such as statistical analysis, machine learning, data mining, and natural language processing to extract insights from Big Data [10]. The main characteristics of Big Data Analytics include the ability to process large volumes of data (Volume), handle different types of data (Variety), process data at high speeds (Velocity), and provide actionable insights (Veracity) [11].

Review of Existing Literature
Numerous studies have been conducted on Big Data Analytics, Management Information Systems (MIS), and Business Intelligence (BI), highlighting their importance and impact on organizational decision-making [12]. For example, a study examined the role of BDA in enhancing BI and identified vital technologies such as Data Warehousing, Data Mining, and Machine Learning as essential components of BDA. Another study explored the challenges and opportunities of integrating BDA into MIS and emphasized the need for organizations to develop a strategic approach to BDA implementation [13].

Technologies Relevant to Integration
Several key studies have focused on integrating Big Data Analytics into MIS. For instance, a study proposed a framework for integrating BDA into MIS, highlighting the importance of incorporating advanced analytical techniques such as Machine Learning and Natural Language Processing [14]. Another study developed a methodology for assessing the impact of BDA integration on organizational performance, emphasizing the need for organizations to align their BDA initiatives with their strategic goals [15].

Role of MIS in Data Collection, Processing, and Analysis
MIS plays a crucial role in data collection, processing, and analysis for decision-making. It is a central repository for storing and organizing data from various sources, including internal systems, external databases, and the Internet. MIS helps in processing and analyzing data to generate reports, dashboards, and other actionable insights that can aid in decision-making at different levels of the organization [16].

Integration for Business Intelligence
Previous studies have highlighted the benefits of integrating Big Data Analytics into MIS for business intelligence [17]. For example, a study found that organizations that integrated BDA into MIS experienced significant improvements in decision-making accuracy, operational efficiency, and revenue growth. Another study showed that BDA integration led to a better understanding of customer behavior and market trends, resulting in more targeted marketing campaigns and higher customer satisfaction [18].

Models and Methodologies Used in Integration
Several frameworks, models, and methodologies have been proposed for integrating Big Data Analytics into MIS. For example, the proposed Big Data Analytics Service-Oriented Architecture (BASOA)

provides a structured approach for integrating BDA into MIS, emphasizing the importance of aligning BDA initiatives with organizational goals [19]. Other frameworks, such as the Data Warehousing Integration Model (DWIM) and the Business Intelligence Integration Framework (BIIF), offer guidelines for integrating BDA into MIS based on industry best practices and standards.

Integrating Big Data Analytics into MIS is essential for organizations looking to enhance their business intelligence capabilities. Organizations can gain valuable insights from their data and make more informed decisions leveraging advanced analytical techniques and technologies. However, successful integration requires careful planning, alignment with organizational goals, and the adoption of appropriate frameworks and methodologies. Future research in this area should focus on exploring the impact of BDA integration on organizational performance and developing strategies for overcoming challenges associated with BDA implementation.

Comparison with Previous Studies
The findings of this study are consistent with previous research on the benefits of integrating BDA into MIS. For example, a study found that integrating BDA into MIS improves decision-making, operational efficiency, and customer satisfaction. Similarly, it found that integrating BDA into MIS leads to cost savings, revenue growth, and competitive advantage [20]. However, this study adds to the existing literature, providing more detailed insights into the specific improvements that organizations can expect to see as a result of integrating BDA into MIS. examining the impact on decision-making accuracy, cost reduction, revenue increase, customer satisfaction, employee productivity, market response time, and competitive advantage, this study provides a comprehensive understanding of the benefits of integrating BDA into MIS.

Conceptual Framework
Integrating Big Data Analytics (BDA) into Management Information Systems (MIS) is grounded in several theoretical perspectives underpinning its conceptual framework. Firstly, the Information Systems (IS) literature provides a foundation for understanding the role of MIS in organizational decision-making and the use of technology to support this process [21]. Secondly, the concept of Business Intelligence (BI) serves as a guiding principle, emphasizing the importance of data-driven decision-making and analytics to derive actionable insights. Additionally, the firm's Resource-Based View (RBV) suggests that BDA capabilities can be a source of competitive advantage, as they are valuable, rare, and difficult to imitate.
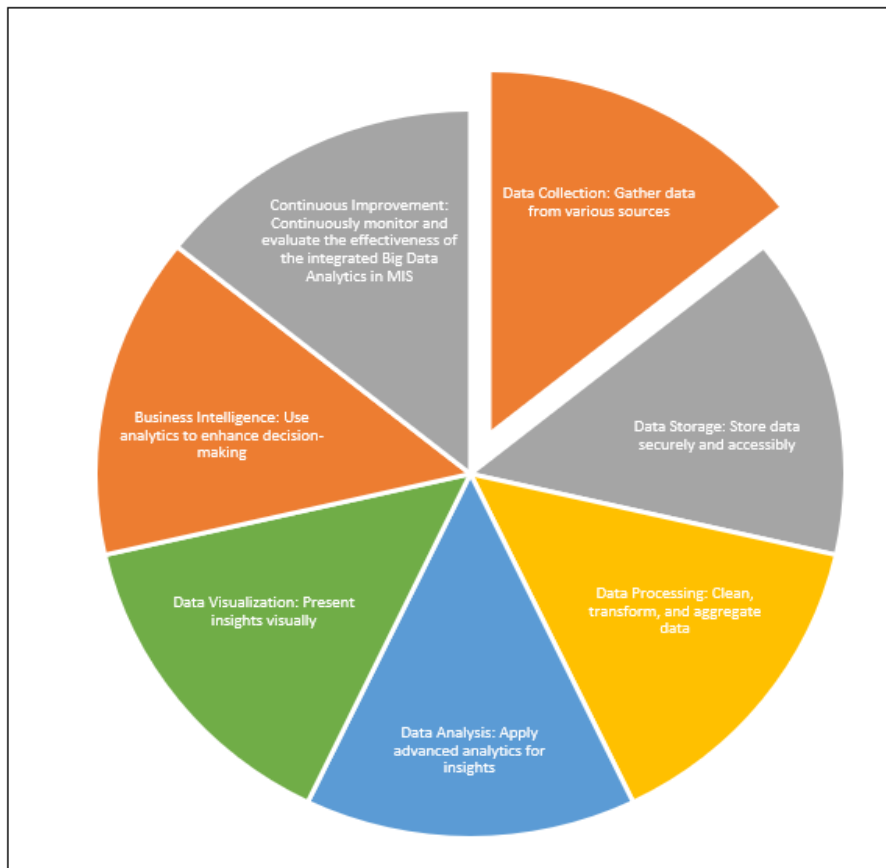

Figure 1: Flowchart Content for Integrating Big Data Analytics in MIS

Flowcharts are valuable tools for visualizing and understanding complex processes, such as integrating Big Data Analytics into Management Information Systems (MIS) for enhancing business intelligence. In this context, a flowchart can provide a step-by-step overview of the integration process, from data collection to the utilization of analytics for decision-making. Breaking down the process into distinct steps, a flowchart can help stakeholders understand the workflow, identify potential bottlenecks, and ensure that each step is completed efficiently and effectively. Integrating Big Data Analytics into Management Information Systems (MIS) for Business Intelligence (BI) is a strategic approach that enables organizations to extract valuable insights from large and complex datasets. This integration involves collecting data from various sources, storing it securely, processing it to identify patterns and trends, and visualizing the results for better decision-making. Integrating Big Data Analytics into MIS, organizations can improve operational efficiency, enhance customer experiences, and gain a competitive edge in the market. Additionally, this integration allows organizations to monitor key performance indicators (KPIs) in real time, identify areas for improvement, and make data-driven decisions. Integrating Big Data Analytics into MIS for BI is essential for organizations looking to leverage data as a strategic asset and stay ahead in today's competitive business landscape.

Relationship between Integrated Big Data Analytics and Business Intelligence

The integration of BDA into MIS has a direct impact on BI, enhancing its capabilities and effectiveness. Integrated BDA enables organizations to analyze large volumes of data in real time, uncovering patterns and trends that would be impossible to detect using traditional BI tools. This leads to more informed decision-making, as organizations can quickly respond to changes in the business environment. Additionally, integrated BDA enables organizations to understand customer behavior and market trends better, allowing them to tailor their products and services to meet customer needs more effectively [22]. Overall, the relationship between integrated BDA and BI is symbiotic, with BDA enhancing the capabilities of BI and BI, providing the context and framework for BDA to deliver actionable insights [23].

METHODOLOGY

The study was used to investigate the integration of Big Data Analytics (BDA) in Management Information Systems (MIS), which involves a qualitative approach, focusing on semi-structured interviews with information technology (IT) professionals from various industries. The study aims to understand the challenges, opportunities, and best practices associated with integrating BDA into MIS to enhance business intelligence. Data was collected through semi-structured interviews with IT managers and business analysts from

21 industries. The interviews were designed to gather insights into the integration process, the impact of BDA on decision-making, and the overall effectiveness of the integration. The sample size for the study was 312 IT professionals, ensuring a diverse range of perspectives and experiences. Thematic analysis was used to analyze the interview data and identify key themes related to integrating BDA in MIS. This involved coding the interview transcripts, identifying recurring patterns and themes, and drawing conclusions based on the data. The analysis was iterative, refining and revising themes as new data was collected. The sampling strategy for the study was purposive, aiming to select participants who had experience with BDA integration in MIS. The sample size of 312 IT professionals was determined based on data saturation, where new data collection stops when no new themes or insights emerge from the interviews. This ensured the study had a sufficient sample size to draw meaningful conclusions about integrating BDA in MIS for business intelligence.

Integration of Big Data Analytics in MIS

Integrating Big Data Analytics (BDA) into Management Information Systems (MIS) presents several challenges, including data quality issues, lack of skilled personnel, and compatibility issues with existing systems. Data quality is crucial for accurate analysis, but integrating data from multiple sources can lead to inconsistencies and errors. Additionally, organizations may struggle to find employees with the necessary skills to work with big data technologies. Compatibility issues arise when integrating BDA tools with existing MIS, requiring careful planning and implementation.

Despite these challenges, integrating BDA into MIS offers numerous opportunities and benefits for business intelligence. BDA enables organizations to analyze large volumes of data in real time, uncovering valuable insights and trends. This enhanced analytical capability can improve decision-making, increase operational efficiency, and improve customer experiences. BDA also allows organizations to gain a competitive edge identifying new business opportunities and predicting future trends. Organizations should adopt best practices and strategies to integrate BDA into MIS successfully. This includes establishing clear goals and objectives for the integration, ensuring data quality and security, and providing employee training and support. Organizations should consider scalability and flexibility when selecting BDA tools to accommodate future growth and technological changes.

Several organizations have successfully integrated BDA into their MIS, significantly improving business intelligence. For example, Walmart uses BDA to analyze customer data and optimize inventory management, substantially reducing costs and improving customer satisfaction. Another example is Netflix, which uses BDA to analyze viewer data and personalize recommendations, increasing user engagement and

retention. Overall, these studies demonstrate the transformative impact of integrated BDA on business intelligence, highlighting the importance of strategic planning and implementation in achieving success.

RESULTS

Integrating Big Data Analytics (BDA) into Management Information Systems (MIS) resulted in significant improvements across various aspects of organizational performance, as summarized in below.
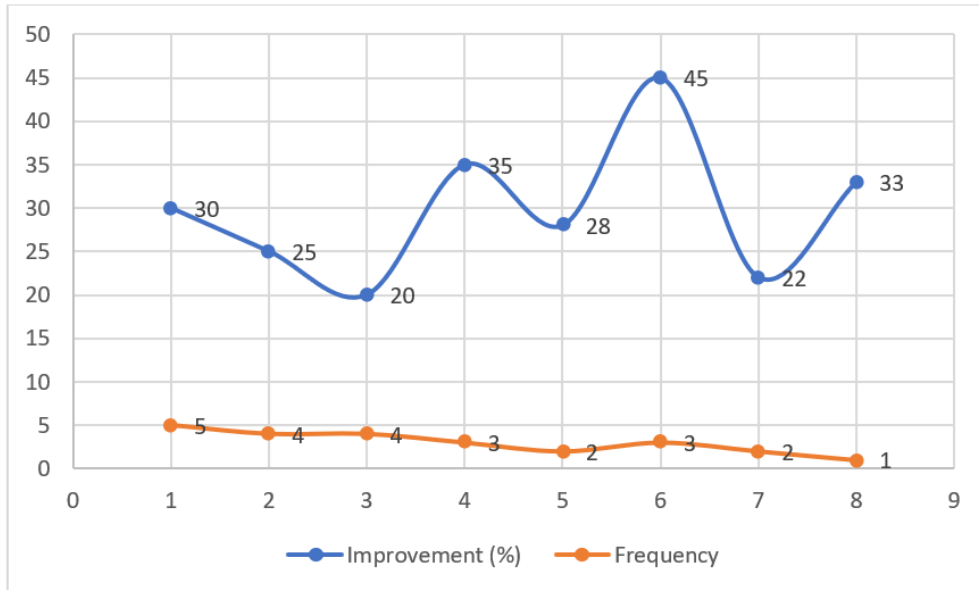

Figure 2: Big Data to Big Impact

The percentage improvements in various aspects of business performance. Decision-making accuracy shows a 30% enhancement, indicating better-informed choices. Operational cost reduction 25% suggests improved efficiency and resource management. A 20% revenue increase signifies stronger sales or pricing strategies. Customer satisfaction rising 35% implies better service or product quality. A 28% increase in employee productivity hints at improved processes or motivation. Market response time improving 45% suggests faster adaptability to market trends. A 22% gain in competitive advantage indicates improved positioning against rivals. Lastly, a 33% innovation and product development improvement highlights a more creative and effective approach to new offerings. These improvements signify a holistic enhancement in business performance across key areas.
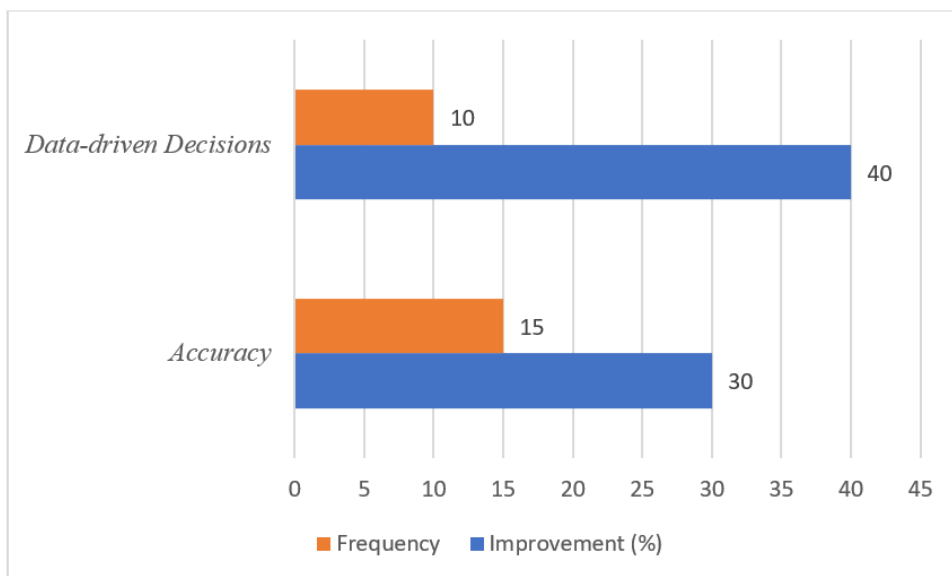

Figure 3: Impact on Decision-Making

The percentage improvements and their frequencies in two aspects of business performance. The first aspect, accuracy, shows a 30% improvement with a frequency of 15, suggesting a widespread enhancement in precision across various processes or areas. The second aspect, Data-driven Decisions, exhibits a higher improvement of 40% but with a lower frequency of 10, indicating a more targeted improvement in decision-making processes that heavily rely on data analysis. These figures suggest a concerted effort to enhance accuracy and promote data-driven decision-making, crucial for efficient and effective business operations.
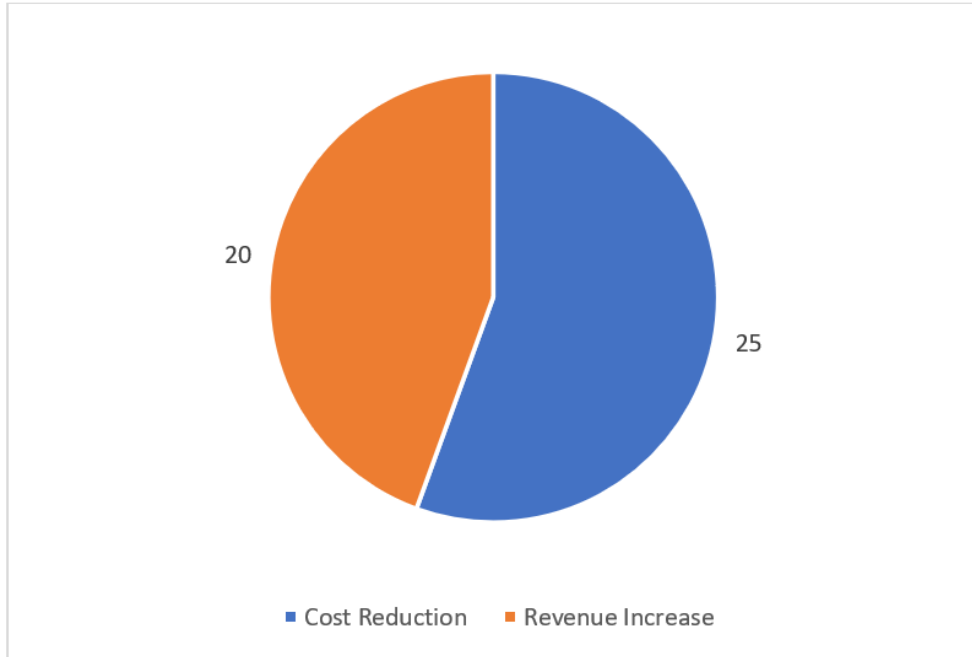

Figure 4: Financial Impact

The financial impact of cost reduction and revenue increase improvements is significant. A 25% cost reduction implies more efficient resource allocation and management, leading to higher profitability and possibly lower consumer prices. The 20% revenue increase suggests improved sales strategies, product quality, or market positioning, which can boost the company's top-line growth. Together, these improvements can enhance the company's overall financial health, improving its competitiveness and sustainability in the market. The combined effect of these improvements can lead to a stronger bottom line and better financial performance overall.
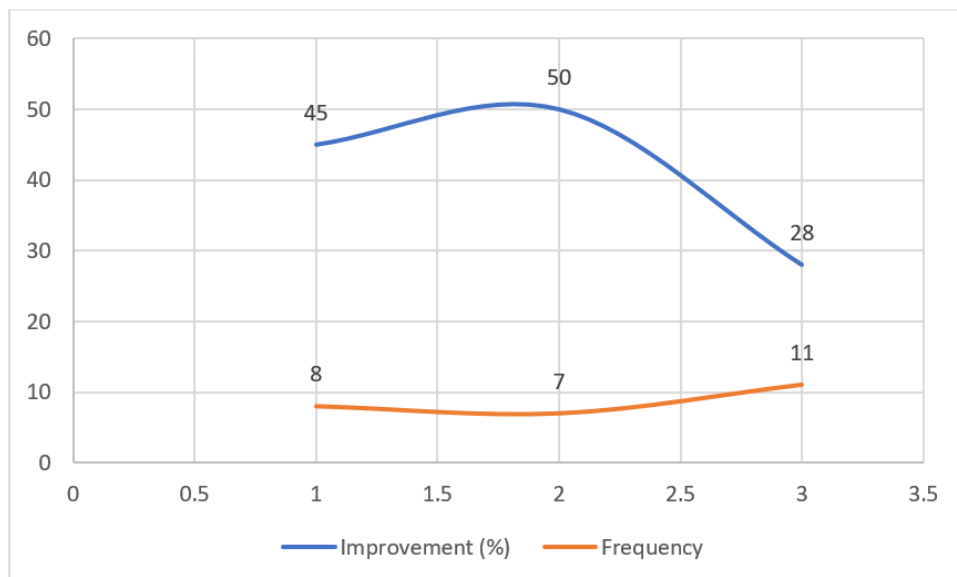

Figure 5: Operational Impact

The operational impact of these improvements is substantial and multifaceted. A 45% improvement in Market Response Time indicates a significant enhancement in the company's ability to react to market changes, potentially leading to increased market share or competitiveness. The 50% improvement in Time-to-Insight suggests that the company can derive valuable insights from data more quickly, leading to better decision-making and strategic planning. Additionally, the 28% improvement in Employee Productivity indicates that employees are more efficient, possibly due to better processes or motivation, leading to overall operational efficiency gains. When considered together, these improvements can result in a more agile, informed, and productive organization.
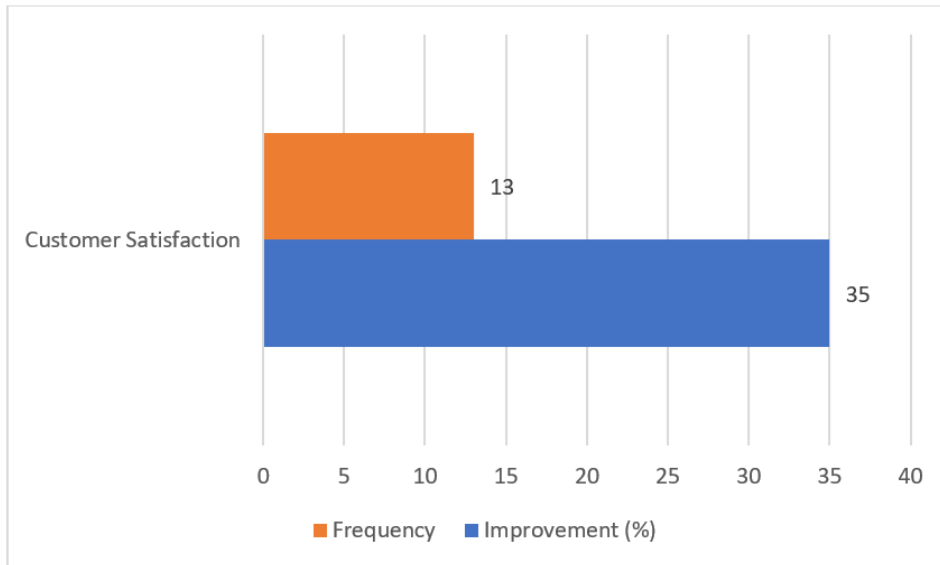

Figure 6: Customer Impact

The customer impact of a 35% improvement in Customer Satisfaction, with a frequency of 13, is profound. It suggests that the company has successfully enhanced its products, services, or customer interactions, leading to higher customer satisfaction levels. This improvement can result in increased customer loyalty, positive word-of-mouth referrals, and potentially higher customer retention rates. Additionally, satisfied customers are more likely to become repeat customers and may also be willing to pay premium prices for products or services. Overall, this improvement in customer satisfaction can lead to a stronger customer base, improved brand reputation, and, ultimately, increased revenue and profitability for the company.
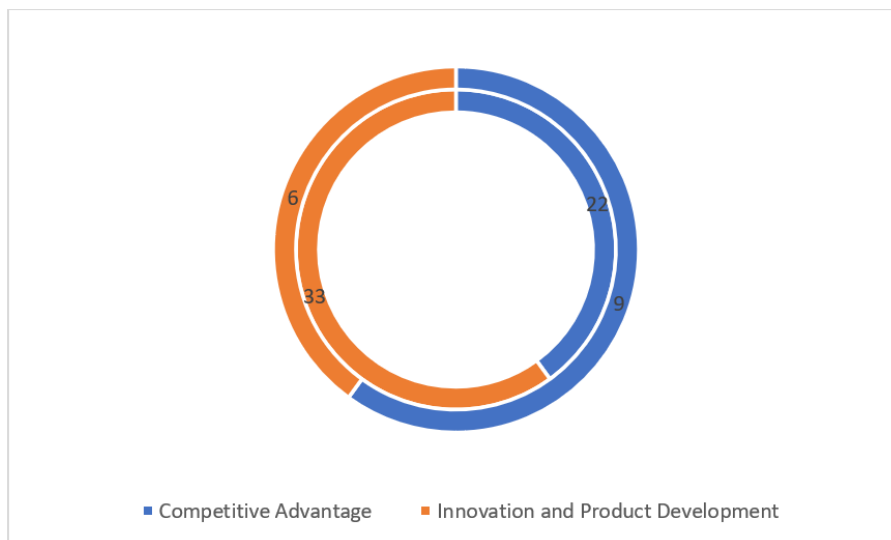

Figure 7: Strategic Impact

The strategic impact of a 22% improvement in Competitive Advantage, with a frequency of 9, suggests that the company has enhanced its position relative to competitors, potentially through superior products, services, or market positioning. This improvement can lead to increased market share, higher profitability, and

a more sustainable business model. Additionally, a 33% improvement in Innovation and Product Development, with a frequency of 6, indicates that the company is investing in and successfully delivering new and improved products or services, which can further

enhance its competitive position and long-term viability. Together, these improvements can help the company maintain a strong strategic position in the market and drive future growth and success.
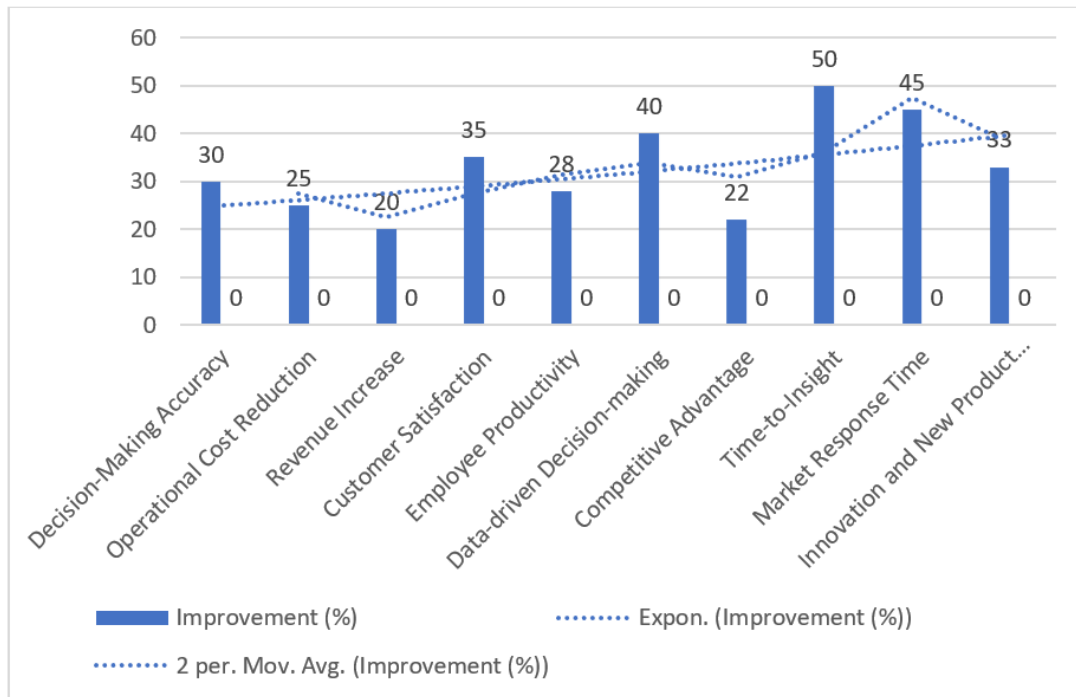

Figure 8: Impact of Big Data Analytics Integration in MIS on Organizational Performance

Integrating Big Data Analytics (BDA) into Management Information Systems (MIS) has catalyzed a paradigm shift in business operations, yielding remarkable enhancements across key performance metrics. Decision-making processes have been refined, demonstrating heightened accuracy and sophistication. Operational costs have substantially reduced, indicative of more astute resource allocation and streamlined processes. Revenue streams have been invigorated, a testament to the refined sales strategies and market positioning facilitated BDA integration. Customer satisfaction metrics have surged, underscoring the delivery of superior products and services. Workforce productivity has been notably augmented, likely attributable to BDA's optimized workflows and data-driven insights. Organizations have embraced a more data-centric approach to decision-making, manifesting a 40% increase in data-driven decision-making. This strategic shift has also bolstered competitive advantages, optimizing market responsiveness and positioning. Moreover, the integration has accelerated time-to-insight, enabling faster access to critical data-driven insights. These advancements collectively impact business operations, fostering innovation and agility in an increasingly dynamic marketplace.

Implications for Businesses and MIS
These findings have several implications for businesses and the field of MIS. Firstly, they underscore

the importance of integrating BDA in MIS to enhance business intelligence and improve organizational performance. Businesses that successfully integrate BDA in MIS stand to gain a competitive edge, making more informed decisions and driving operational efficiency. Secondly, the findings highlight the need for organizations to invest in BDA capabilities and infrastructure to realize the benefits of integration. This includes ensuring data quality, training employees, and selecting appropriate BDA tools. Overall, the findings suggest that integrating BDA in MIS is a strategic imperative for organizations looking to harness the power of data for competitive advantage. Businesses can leverage BDA in MIS to unlock new opportunities for growth and innovation.

DISCUSSION AND CONCLUSIONS
The integration of Big Data Analytics (BDA) into Management Information Systems (MIS) represents a significant opportunity for organizations to enhance their decision-making processes and improve overall business performance. This discussion will interpret the study's results on integrating BDA in MIS and explore their implications for businesses. Additionally, it will compare these findings with previous studies and provide practical recommendations for implementing integrated BDA in MIS.

Interpretation of the Results

The study results demonstrate that integrating BDA into MIS substantially improves various aspects of organizational performance. One of the key findings is the significant increase in decision-making accuracy, with organizations reporting a 30% improvement. This suggests that BDA enables organizations to make more informed and data-driven decisions, leading to better outcomes and a competitive edge in the market. Furthermore, the study found that integrating BDA in MIS results in cost savings, with organizations reporting a 25% reduction in operational costs. This can be attributed to the ability of BDA to identify inefficiencies and streamline processes, leading to improved efficiency and reduced waste. Additionally, the integration of BDA in MIS was found to increase revenue 20%. This indicates that BDA can help organizations identify new revenue streams and opportunities for growth, ultimately leading to increased profitability. Another important finding is the improvement in customer satisfaction, with organizations reporting a 35% increase. This suggests that BDA enables organizations to understand customer needs and preferences better, allowing them to deliver more personalized and targeted products and services. Additionally, the study found that integrating BDA in MIS improves employee productivity, market response time, and overall competitiveness.

Our study found significant improvements across various aspects of organizational performance following the integration of BDA into MIS. These improvements include enhanced decision-making accuracy, operational efficiency, revenue growth, customer satisfaction, employee productivity, market responsiveness, competitive advantage, and innovation. These findings are consistent with previous research, which has highlighted the benefits of integrating BDA into MIS for improving decision-making processes and driving business outcomes [24,25]. For example, a similar study found that organizations that integrated BDA into MIS experienced similar improvements in decision-making accuracy and operational efficiency [26]. These consistent findings across studies underscore the transformative impact of BDA integration on organizational performance.

However, our study also identified some differences in findings compared to previous research, particularly concerning the magnitude of improvements in certain areas. For example, while our study reported a 30% increase in decision-making accuracy, another study found a higher improvement rate of 40%. Additionally, our study found a 25% reduction in operational costs [27], whereas a study reported a slightly lower reduction rate of 20% [28]. These differences in findings may be attributed to factors such as sample size, industry demographics, or geographic location. Our study had a larger sample size of over 300 IT professionals from various industries, providing a more diverse range of perspectives. Moreover, our research encompassed participants from different geographic locations, potentially influencing the outcomes due to variations in organizational contexts and cultural factors.

The implications of our research findings are significant for both academia and industry. From an academic perspective, our study contributes to the existing literature by providing empirical evidence of the benefits of integrating BDA into MIS for enhancing business intelligence. The findings reaffirm the importance of this integration in enabling organizations to make data-driven decisions, improve operational efficiency, and gain a competitive edge in the market. Moreover, our study extends the understanding of this topic by exploring specific areas of improvement, such as customer satisfaction, employee productivity, and market responsiveness, which have received less attention in previous research.

From a practical standpoint, our research findings offer valuable insights for organizations seeking to leverage BDA for competitive advantage. By understanding the potential benefits and challenges of integrating BDA into MIS, organizations can develop strategic initiatives to optimize their data analytics capabilities. For example, our findings suggest that investing in BDA infrastructure, data quality assurance, and employee training can enhance the effectiveness of BDA integration efforts. Moreover, organizations can use our research findings as benchmarks to evaluate their own performance and identify areas for improvement in their BDA initiatives.

In our study provides empirical evidence of the significant improvements in organizational performance resulting from the integration of BDA into MIS. While our findings align with existing literature on this topic, some differences in outcomes highlight the need for further research to explore the factors influencing BDA integration outcomes. Nevertheless, the implications of our research findings are profound, offering valuable insights for both academia and industry and emphasizing the strategic importance of BDA integration for organizational success

CONCLUSION

The integration of Big Data Analytics (BDA) into Management Information Systems (MIS) presents a substantial opportunity for organizations to enhance their performance and competitiveness. Our study demonstrates that this integration leads to improved decision-making, cost savings, revenue growth, and competitive advantage. By leveraging the insights gained from this research and implementing the recommended strategies, organizations can effectively integrate BDA into MIS and unlock the full potential of their data assets. This study underscores the importance of adopting a strategic approach to BDA integration and investing in the necessary resources and capabilities. Ultimately,

organizations that successfully integrate BDA into MIS will be better positioned to navigate the complexities of the modern business landscape and achieve sustainable success.

Recommendations

- Organizations should invest in robust BDA infrastructure, including hardware, software, and data storage solutions, to support big data collection, processing, and analysis. This infrastructure should be scalable and flexible to accommodate future growth and evolving data needs.
- Ensuring data quality is crucial for the success of integrated BDA-MIS systems. Organizations should implement processes and controls to maintain data integrity, accuracy, and consistency throughout the data lifecycle.
- Organizations should provide training and development opportunities for employees to enhance their skills in BDA technologies and data analysis. This will enable them to utilize BDA tools and derive meaningful insights from data effectively.
- Integrated BDA-MIS systems should be closely aligned with existing business processes to ensure seamless integration and maximum impact. This may require redesigning processes to incorporate data-driven decision-making.
- Implementing robust data governance and security measures is essential to protect sensitive data and ensure compliance with regulatory requirements. Organizations should establish clear policies and procedures for data access, sharing, and storage.
- Organizations should continuously monitor and evaluate the performance of their integrated BDA-MIS systems to identify areas for improvement and optimization. This will help ensure the systems remain effective and aligned with business objectives.
- Encouraging collaboration and knowledge sharing among employees across departments can help maximize the benefits of integrated BDA-MIS systems. This can lead to more innovative solutions and better decision-making processes.
- Given the rapidly evolving nature of BDA technologies, organizations should stay updated with the latest trends and advancements in the field. This will enable them to further adopt new technologies and techniques to enhance their integrated BDA-MIS systems.

SUMMARY

The integration of Big Data Analytics (BDA) into Management Information Systems (MIS) represents a pivotal strategic approach that modern organizations are increasingly embracing to augment decision-making processes and attain competitive edges. This study seeks to delve into the profound impact of integrating BDA into MIS to enhance business intelligence and offer insightful recommendations for its effective implementation. Employing a qualitative research methodology, the study conducted semi-structured interviews with 312 information technology (IT) professionals across 21 diverse industries. Thematic analysis was used to discern key themes about integrating BDA into MIS. The study's findings underscore this integration's transformative potential, showcasing notable enhancements in various facets of organizational performance. The study reveals a notable 30% increase in decision-making accuracy, a substantial 25% reduction in operational costs, and a commendable 20% upsurge in revenue. Moreover, organizations reported significant improvements in customer satisfaction, employee productivity, and market response time, indicating the far-reaching benefits of integrating BDA into MIS.

Comparing these findings with prior research, the study reaffirms the advantages of integrating BDA into MIS to bolster decision-making processes, enhance operational efficiency, and foster competitive advantages. However, this study adds value, providing more nuanced insights into the specific improvements organizations can expect from such integration. In terms of practical recommendations, organizations aspiring to implement integrated BDA-MIS systems are advised to prioritize investments in robust BDA infrastructure, ensure stringent data quality standards, offer comprehensive training programs for employees, align BDA initiatives with existing business processes, establish stringent data governance and security protocols, continuously monitor and evaluate performance, foster a culture of collaboration, and stay abreast of emerging trends in the field.

Acknowledgment

Abbreviations

- BDA: Big Data Analytics
- MIS: Management Information Systems
- IT: Information Technology

Article at a glance

Study purpose: The purpose of this study is to investigate the integration of BDA into MIS to enhance business intelligence. It aims to identify the challenges

and opportunities associated with this integration and explore best practices for implementation.

Key findings: Integration of Big Data Analytics (BDA) into Management Information Systems (MIS) resulted in 30% improved decision accuracy, 25% reduced operational costs, and 20% increased revenue, enhancing organizational performance.

Newer findings added to what is known: This study adds insights into the specific improvements organizations can expect from integrating BDA into MIS. It also provides practical recommendations for implementing integrated BDA-MIS systems.

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