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BIG DATA ANALYTICS: A REVIEW

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ABSTRACT

Big data is now a ubiquitous term in the business world, describing the large and complex data sets produced by firms. As businesses collect and store more data, they are searching for methods to transform the data into valuable insights and make better decisions. In this review paper, we examine the effect of BDA on businesses and explore how organizations are leveraging BDA to improve their performance. The paper reviews the existing literature on the topic, spanning a range of industries and sectors, and identifies common themes and patterns in putting big data in use and concludes by highlighting the key trends and future directions in the area of big data analysis, and the implications for businesses seeking to leverage this powerful technology to attain a competitive advantage.

Keywords: Big data, Data transformation, Marketing, Strategies.

INTRODUCTION

In today's data-driven world, the ability to collect, process, and analyze vast amounts of data has become a critical determinant of business success. With the proliferation of digital technologies, the amount of data being generated by businesses has exploded, and the need for sophisticated tools and techniques to make sense of that data. In this rapidly evolving business landscape, Big data has become a significant influence on modern businesses and their performance, providing organizations with the opportunity to gain valuable insights into their operations, customers, and market trends. By leveraging BDA, businesses can gain a competitive advantage by improving their operational efficiency, enhancing customer experiences, and driving innovation. Initially, businesses struggled to make sense of this data and often relied on traditional methods of data analysis that were slow, expensive, and error-prone. However, with the advent of BDA, businesses were able to analyze large datasets in real-time, identify patterns, and gain valuable insights that could be used to improve their operations. One of the main drivers behind the adoption of BDA is the need to remain competitive in an increasingly data-driven world. Businesses that are able to analyze and leverage their data have a significant advantage over their competitors.

WHAT IS BDA?

BDA (BDA) is the process of examining large and complex data sets to uncover hidden patterns, correlations, and insights that can inform decision-making. BDA involves using advanced data analytics techniques and tools to process, store, and analyze massive volumes of data that traditional data analysis methods cannot handle.

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The main goal of BDA is to help organizations make better, data-driven decisions. By analyzing large datasets, organizations can identify patterns and trends that would otherwise go unnoticed, which can help them optimize their operations, improve customer experiences, and develop new products and services.

In addition to providing insights, BDA can also help organizations to improve their data management processes, ensuring that data is accurate, reliable, and secure. With the right BDA tools and techniques, organizations can gain a competitive advantage in their respective markets by leveraging the power of data.

APPLICATIONS OF BDA[7][8][9]10]

1. **Marketing and Customer Analytics**: BDA is widely used for marketing and customer analytics. Companies use BDA to analyze customer behavior, preferences, and sentiment, in order to optimize marketing campaigns, target customers more effectively, and improve customer engagement.
2. **Healthcare**: BDA is used to analyze electronic health records (EHRs), clinical trial data, medical imaging, and other patient-related data to identify patterns and improve patient outcomes. BDA is also used for predictive modeling and disease surveillance.
3. **Financial Services**: BDA is used in financial services to detect fraud, assess risk, and improve customer experience. Banks and financial institutions use BDA to analyze transactional data, customer behavior, and market trends.
4. **Manufacturing and Supply Chain Management**: BDA is used to optimize manufacturing and supply chain processes. Companies use BDA to analyze production data, supply chain data, and customer data to identify inefficiencies and improve processes.
5. **Transportation**: BDA is used in transportation to optimize route planning, reduce congestion, and improve safety. Transportation companies use BDA to analyze traffic patterns, GPS data, and weather patterns to improve service delivery.
6. **Energy and Utilities**: BDA is used to optimize energy usage and reduce waste. Energy companies use BDA to analyze energy usage patterns, identify areas of inefficiency, and optimize energy production and distribution.
7. **Sports:** BDA is used in sports to optimize player performance, improve team strategies, and enhance fan engagement. Sports teams use BDA to analyze player performance data, game statistics, and social media data to optimize their game strategies and improve the fan experience.

ADVANTAGES OF BDA FOR BUSINESSES [5][6]

1. Improved Decision Making
2. Increased Efficiency
3. Competitive Advantage

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4. Improved Customer Experience
5. Better Risk Management
6. Innovation

LITERATURE REVIEW

Jiwat Ram et al[1] : Big data Analytics offers a broad variety of choices for boosting company value and productivity. Big Data analytics is widely used in business intelligence to improve staff productivity and efficiency as well as decision-making speed, understanding of customer needs, and strategies for the introduction of new products and services. Other major uses of big data analytics include market research and inventory management.

MahdaGarmaki et al[2] : Emphasizes on the potential of Big data that contains data sets with sizes which are greater than what can be captured, analyzed, managed, and transformed into insight by conventional IT employed methods and systems. BDA requires dynamic ability to reveal hidden patterns in data and uncover potential value. The BDA competence provides a broad assessment of the current business's capacity, allows them to manage BDA, and reduces the risk that a BDA initiative will fail.

Zhenning Xu et al[3] : The success of a new product depends on gathering a lot of data from various parties. The intricacy and speed with which a firm gathers and processes information must also rise as markets, technology, legislation, rivalry, and inputs all move more quickly and more of these factors become essential to a given product. TMA may still be effective for NPD in passive marketplaces. However, while some marketplaces might need knowledge from social media, others might need more conventional sources.

Jasmine Zakir et al[4] : Big Data is a topic of considerable interest in the modern IT world. The rapid expansion of the internet and the digital economy have increased demand for data storage and analytics, and IT teams are having a difficult time securing and handling these bigger volumes of data. Data is becoming more important to businesses than ever, so they are collecting and storing more of it. Big Data also known as unstructured data, is now being created instead of the traditional database-driven organized data, which includes content from social media, papers, pictures, music and video.

BDA VS CLASSICAL DATA ANALYSIS

BDA (BDA) and classical data analysis are two approaches to analyzing data that differ in regard to the volume, velocity, and variety of data they can handle, as well as the techniques and tools used to extract insights from the data.

Classical data analysis typically involves working with structured, small-to-medium sized datasets that are relatively easy to manage and analyze. Classical statistical methods such as hypothesis testing, regression analysis, and ANOVA (analysis of variance) are often used to extract insights from the data. This approach is still useful and widely used in many fields, but it has limitations in terms of its ability to handle large, complex, and unstructured datasets.

BDA, on the other hand, is designed to work with large, complex, and unstructured datasets, often referred to as "big data". It involves the use of advanced technologies such as Hadoop, Spark, and NoSQL databases to store and process data, as well as machine learning algorithms and other advanced analytics techniques to extract insights from the data. BDA is frequently used in industries like banking, healthcare, and e-commerce where a lot of data is produced every day. [11].

CHALLENGES FOR BUSINESSES IN PERFORMING BDA

1. **Data Quality**: Ensuring the quality and accuracy of data is a significant challenge for businesses in performing BDA. Poor quality data can lead to inaccurate analysis and faulty insights.
2. **Data Volume**: Businesses may struggle with managing and processing large volumes of data in a timely and cost-effective manner. This can require significant investment in hardware and software infrastructure, and expertise in data management.
3. **Data Variety**: Businesses may need to process data from different sources such as structured and unstructured data. This can require specialized tools and expertise to process and analyze the data.
4. **Data Privacy and Securit**y: With the increasing amount of data collected, privacy and security of data become significant concerns for businesses. Ensuring compliance with regulations and protecting sensitive data is crucial.
5. **Expertise and Resources**: Performing BDA requires specialized expertise and resources, which may be difficult to find or expensive to acquire. Businesses may need to invest in hiring or training data analysts, data scientists, and other technical staff.
6. **Data Integration**: Integrating data from different sources and systems can be a challenging task, and businesses may face difficulties in mapping and aligning data.
7. **Cost**: The cost of performing BDA can be high, particularly for smaller businesses with limited budgets. Investing in hardware, software, and specialized staff can be a significant expense.
8. **Implementation and Maintenance**: Implementing and maintaining BDA systems can be a complex and ongoing process. It requires ongoing support, monitoring, and maintenance to ensure optimal performance and reliability.

CONCLUSION

In conclusion, Business operations have been significantly impacted by big data analytics (BDA). in recent years.Large amounts of data can now be analyzed by businesses, enabling them to make data-driven choices that can improve processes and boost profitability. BDA has also revolutionized the way companies interact with their customers, allowing them to personalize their marketing efforts and provide more targeted services. However, the adoption

of BDA is not without its challenges, such as the need for specialized skills and the costs associated with implementation.

Despite these challenges, the benefits of BDA are clear, and many businesses are investing in BDA technology to stay competitive. As BDA continues to evolve, we can expect to see even more significant impacts on businesses in the future. Companies that are able to effectively leverage BDA to gain insights and make data-driven decisions will have a competitive advantage in the marketplace, and those that fail to do so may be left behind. Therefore, it is essential for companies to carefully weigh the possible advantages and difficulties of BDA and create an execution strategy that is consistent with their corporate objectives.

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