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THE IMPACT OF APPLYING BIG DATA TECHNOLOGY IN DIGITAL BUSINESS MANAGEMENT

Camelia Safitri *[1]
Universitas Muhammadiyah , Indonesia
E-mail: cameliasafitri2408@uhamka.ac.id

Dwi Aris Nurohman
Sekolah Cinta Kasih Tzu Chi, Indonesia
E-mail: dwi.aris@cintakasihtzuchi.sch.id

Burhanuddin
Universitas Papua Madani Jayapura, Indonesia
E-mail: kirimhasil2020@gmail.com

Abstract

Big data plays a role in controlling the reputation of your online business. The tools in big data can carry out sentiment analysis, so business people will be able to see how much feedback there is about who has given the company a response. The final role is that big data will be able to understand customers well. Big data will be able to find out what customers want and provide the best service to them. Big Data-based implementation involves selecting and using appropriate Big Data technologies and platforms, such as distributed storage and processing systems, advanced data analysis algorithms, data visualization techniques, and machine learning methods. By effectively leveraging big data, companies can improve their understanding of consumers, design more effective marketing strategies, and provide a more personalized shopping experience. By leveraging Big Data technology and infrastructure, organizations can collect, manage and analyze data on a large scale. This enables them to identify new patterns, relationships and insights that support strategic decision making, development of customer understanding and optimization of business processes.

Keywords: Application, Technology, Big Data, Digital Business

INTRODUCTION

In the business world, implementing big data is very important because the data that enters this business is unstructured so that with the role of big data, this unstructured data can be used for operations and business development. Increasingly tight business competition in the current digital era

[1] Correspondence author.

means that business people who cannot adopt technology or utilize this technology will be left behind (May, 2024).

Big data itself is closely related to large volumes of data, both structured and unstructured. Basically, in business, data is available every day. What you have to think about is not the quantity of data but rather the management of that data which can be useful for business development (Zhang, 2023).

The role of Indonesian big data is important in the business world because it has high-volume, high-variety and high-velocity properties, which means that the existing data is very abundant, very varied, can be obtained in real-time, and a lot of information can be obtained. from big data. The role of big data in the business world is to understand market conditions. Market conditions will easily change at any time, so with big data it is hoped that we will be able to see changes in market trends quickly (Sutriana, 2023). The thing that makes this market trend change is because consumer purchasing behavior changes. In the big data business, it is also possible to find out which products are sold the most and can produce products in the future that are in line with trends.

Big data plays a role in controlling the reputation of your online business. The tools in this big data can carry out sentiment analysis, so business people will be able to see how much feedback there is about who has provided the company's response. The final role is that big data will be able to understand customers well. Big data will be able to find out what customers want and provide the best service to them (Wu, 2023). By using this big data, companies will be able to minimize customer complaints and concerns.

Some of the benefits of Big Data that have been felt, especially for the business world, include knowing the public's response to products released through sentiment analysis on social media; help companies make more precise and accurate decisions based on data; help improve the company's image in the eyes of customers; for business planning by knowing customer behavior, such as in telecommunications and banking companies; and knowing market trends and consumer desires (Xiang et al., 2022).

Apart from being useful for business analysis, Big Data technology can also be widely used in government. Several opportunities for using Big Data in the public sector include getting feedback and public responses from government service information systems and from social media, as a basis for formulating policies and improving public services to find solutions to existing

problems based on data, for example by analyzing weather information and level soil fertility, the government can determine or recommend the types of crop varieties planted by farmers in certain areas and times as well as assist in the management and supervision of state finances. Referring to the large benefits that Big Data technology trends can offer, especially in the public sector, it is interesting to research as far as where Big Data technology has been used in several government institutions in Indonesia, and what challenges arise in its application (Deng & Yang, 2022).

Big data is very useful for companies and organizations who want to look for patterns and trends from the data they have. For example, an e-commerce company can use big data to find out customer preferences and suggest products that customers might want to buy. Apart from that, big data is also useful for governments and non-governmental organizations in making wise decisions (Han, 2022).

In identifying successes and challenges in applying big data technology in digital marketing, we also need to consider important issues such as data privacy and information security. With greater access to consumer data comes greater responsibility in protecting individual privacy and maintaining the security of sensitive information (Buluswa, 2022). Therefore, this research will also pay attention to ethical and legal aspects related to the use of big data in the context of digital marketing in Indonesia.

RESEARCH METHOD

The study in this research is qualitative with literature. The literature study research method is a research approach that involves the analysis and synthesis of information from various literature sources that are relevant to a particular research topic. Documents taken from literature research are journals, books and references related to the discussion you want to research (Earley, M.A. 2014; Snyder, H. 2019).

RESULT AND DISCUSSION

Understanding Big Data in Information Systems

A. Data, Information and Knowledge

Data is raw material that can later be processed further into something more meaningful. This data will later be stored in a database (Abdallah et al., 2023).

Data is the most basic element, is discrete, and has not been processed, so it does not have meaning. Examples: numbers, words, codes, tables, and databases (Shen, 2022).

Based on the definition above, data are facts that are still raw and must still be processed so that they can be understood and used by other people so that they can form information.

Information boils down to data that has been processed so as to provide added value or knowledge for those who use it. Data that has been processed or processed into information can be used to produce decisions, both short-term and long-term decisions (Balmakhtar & Mensch, 2022).

Based on the definition above, information is data that has been processed in such a way that it can be useful for increasing knowledge for the recipient.

Knowledge is a property of the contents of the mind. So knowledge is the result of the process of human efforts to know. The knowledge gained is information captured by the five human senses (Selmy et al., 2024).

According to (Darwish, 2024) Knowledge consists of data or information that has been organized and processes to provide understanding, experience and learning, as well as expertise regarding the business problems being faced.

Based on the definition above, knowledge is a series of information received and used to identify, create or explain something and an understanding of facts, truth or information obtained through experience or learning.

B. Big Data

Big Data is data that has a large volume so that it cannot be processed using ordinary traditional tools and must use new methods and tools to get value from this data (Prasad & Prawal, 2024).

Meanwhile, Big Data according to Gartner (Tang et al., 2022) is defined as data that has extreme size (volume), speed (velocity) and/or variety, which demands fast and innovative information processing to support decision making. and process automation.

According to the understanding of the experts above, it can be concluded that Big Data is data that has a large volume and is very complex so that it cannot be processed or analyzed using ordinary traditional tools and must use new methods and tools to obtain the content and value of this Big Data.

Technological developments are increasingly rapid and there is technological competition between countries. Technological developments require the younger generation to develop their own abilities so that they do not feel left behind by technological developments that occur, so that human abilities are not replaced by technological machines that are increasingly developing and can replace humans in the country's economic process (Xiao & Fan, 2022).

Technological developments have created many features that are used to exchange ideas, social sites to find and find friends from various different regions, as well as looking for contacts for work and so on. The development of this technology means that the site must accommodate more and more data (Durugkar, 2024). Before the advent of increasingly sophisticated technology, data processing was always the job of a programmer and this processing took a long time.

Collections of data that are very large in size are called big data. Big data is a technological development that includes the world of business and technology. Big data has 5V, namely having a large size (volume), speed (velocity), variety, having a certain value (value), and coming from an accurate source (veracity) (Moraes et al., 2023).

The existence of big data aims so that in the world of business, organizations, or individuals can process data in order to obtain clearer and deeper information (insights) that can make decisions fairly (decision making) with correct actions for the common good (action) (Wang , 2022).

Blasiak (Gupta & Dwivedi, 2023), believes that the characteristics of big data consist of three parts, namely:

1. Volume, big data which has a data capacity that is so large that processing to manage the data requires very large storage media and requires specific and detailed analysis.
2. Velocity, big data must have a process for managing data that is fast and in real time.
3. Variety, big data must have a variety of structured and unstructured data and must always be sourced from data sources.

The characteristic of big data is that it has a very large data capacity that can exceed a certain amount and the data itself will increase every day. The data size range can reach 100 TB or even more and can be stored without repair (Pan, 2023).

Benefits of Big Data in Business Development

Utilizing Big Data in business development can provide a number of significant benefits. The main benefits that can be obtained from using Big Data in business include (Staegemann et al., 2022):

1. Deep Understanding of Customers: Big Data allows businesses to analyze data from various sources, including customer behavior, preferences, and interactions on social media. This helps businesses understand customers better, so they can create more effective marketing strategies, products that better match customer needs, and more satisfying customer experiences.
2. Better Decision Making: By analyzing big data in depth, businesses can make more informed and intelligent decisions. Big Data analysis helps in identifying market trends, anticipating product demand, and responding to market changes more quickly and precisely.
3. Operational Optimization: Big Data analytics can help businesses optimize their operational processes. By monitoring and analyzing data regarding supply chains, inventory, production, and logistics, businesses can identify areas that need improvement, reduce costs, and increase efficiency.
4. Product and Service Innovation: Big Data can provide insight into unmet customer needs and preferences. By analyzing this data, businesses can develop new products and services that better meet customer expectations, creating a competitive advantage.
5. Better Risk Management: By analyzing data, businesses can better identify potential risks and threats. Big Data analytics can help in understanding risk patterns, identifying weak points, and taking necessary preventive measures.
6. Targeted Marketing: Through Big Data analysis, businesses can create more effective and targeted marketing campaigns. Customer behavior data can be used to create more relevant ads and target audiences most likely to be interested in a particular product or service.
7. Discovery of New Insights: In big data, there are sometimes unexpected insights. Careful data analysis can help businesses discover relationships or trends that may not have been visible before, opening up new opportunities for growth and innovation.
8. Personalize Customer Experience: By analyzing customer data, businesses can provide customers with a more personalized experience. This can include tailored product recommendations, relevant content, and deeper interactions.

9. Cost Savings and Increased Efficiency: Big Data can help identify potential waste and cost savings opportunities. With proper analysis, businesses can reduce operational costs and increase the efficiency of resource use.
10. Keep Up with Market Trends: By analyzing market and industry data, businesses can stay abreast of trends and changes as they occur. This allows them to adapt quickly and take the right steps to stay relevant in a changing market.

Utilizing Big Data in business development requires appropriate analytical tools, expertise in data interpretation, and careful planning. By implementing the right strategy, businesses can achieve significant benefits and gain a competitive advantage (Rivera & González, 2022).

Competencies Needed in Utilizing Big Data

1. Data Analysis: Data analysis skills are very important. This involves an understanding of statistics, regression analysis, and predictive modeling techniques. Skills in using analytical tools such as Python, R, or other data analysis tools are also required.
2. Business Understanding: It is important to have a good understanding of business objectives and operational processes. This helps in directing data analysis to the most relevant and useful areas.
3. Technology Capabilities: Knowledge of the technology infrastructure used to manage Big Data, such as Hadoop, NoSQL databases, and analysis tools such as Spark, is essential.
4. Data Security: Understanding data security and privacy compliance is a must, especially when handling customer data and sensitive information.
5. Creativity and Innovation: The ability to think creatively and discover new insights from data are valuable skills in utilizing Big Data.
6. Communication Skills: The ability to articulate findings and insights from data analysis well to non-technical parties is also important.
7. Teamwork: Working in teams consisting of various disciplines (such as data analysts, data scientists, business experts, developers) is the key to successfully leveraging Big Data.
8. Learning Ability: Technology and analysis methods continue to develop. The ability to continuously learn and keep up with the latest developments is important to maintain relevance in utilizing Big Data (Huang et al., 2023).

Application of Big Data Based Management Information Systems for Business Analysis

Implementation of Big Data-Based Management Information Systems (MIS) for Business Analysis refers to the use of technology, infrastructure, and data analysis methods that utilize big data (Big Data) to collect, integrate, manage, analyze, and visualize data with the aim of gaining useful business insights. valuable (Kaewkerd & Thammakorn, 2023).

In this context, implementing Big Data-based MIS involves the use of systems and tools specifically designed to manage and analyze the large volume, high speed, and diversity of data generated by various sources such as sensors, mobile devices, social media, business transactions, and others.

The main goal of applying Big Data-based MIS for business analysis is to gain a deeper understanding of business processes, customers, markets and relevant trends (Kayyali, 2023). By analyzing Big Data effectively, organizations can identify new patterns, relationships, and insights that can be used to make strategic decisions, improve operational efficiency, optimize customer experiences, increase competitive advantage, and identify untapped business opportunities.

In this context, implementing Big Data-based MIS involves selecting and using appropriate Big Data technologies and platforms, such as distributed storage and processing systems, advanced data analysis algorithms, data visualization techniques, and machine learning methods (Herschel, 2022). This enables organizations to overcome challenges related to the volume, velocity, diversity and complexity of data encountered in business analytics, as well as harness the potential value of Big Data.

With effective implementation, implementing Big Data-based MIS for business analysis can provide significant benefits for organizations, including better decision making, better risk management, increased operational efficiency, improved product and service quality, development of more effective marketing strategies , and better business innovation (Majumdar & Mitra, 2024).

Challenges and Solutions

Even though the benefits of big data in digital marketing are enormous, e-commerce companies in Indonesia face several challenges, such as data privacy issues, the complexity of data integration, and the need for experts in data analytics (Cao, 2023). To overcome these challenges, companies need to invest resources in data security technologies, adopt best practices in data

management, and develop training programs to upskill their workforce in the big data space.

Overall, the application of big data in digital marketing has brought significant changes to the e-commerce industry in Indonesia. By effectively leveraging big data, companies can improve their understanding of consumers, design more effective marketing strategies, and provide a more personalized shopping experience. This case study shows that although there are challenges that must be overcome, the potential of big data in optimizing digital marketing and increasing customer satisfaction is enormous (Indrajaya, 2023).

CONCLUSION

Big Data and analytics have huge potential to drive business growth. By understanding and leveraging data well, companies can make better decisions, improve operational efficiency, and provide a better customer experience. Proper implementation and appropriate technology are the keys to achieving success in utilizing Big Data. By leveraging Big Data technology and infrastructure, organizations can collect, manage and analyze data on a large scale. This enables them to identify new patterns, relationships and insights that support strategic decision making, development of customer understanding and optimization of business processes. By utilizing big data technology, companies can better understand consumer behavior, optimize marketing campaigns, and manage customer relationships more effectively. This not only helps increase customer satisfaction and loyalty, but also accelerates the growth of e-commerce businesses in today's digital era.

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