Big Data Analysis for Strategic Decision Making in Business Information Systems

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Article Info	ABSTRACT
	The use of big data in the context of strategic decision making in business information systems has become the main focus of research in the current digital era. This research aims to analyze the role of big data in facilitating effective strategic decision making in a rapidly changing business environment. The research methods used include a thorough literature survey and comprehensive analysis of case studies of several leading companies that have adopted big data technology in their business information systems. The research results show that big data has a crucial role in improving strategic decision-making capabilities by providing fast access and in-depth analysis of complex and varied data. This allows organizations to identify market trends, customer behavior patterns and new business opportunities in a more timely and accurate manner. In conclusion, the integration of big data in business information systems is an inevitable strategy for organizations that want to remain competitive in this digital era.

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1. INTRODUCTION

In the increasingly developing digital era, business information systems (SIB) have become the backbone for organizations in facing increasingly fierce and dynamic competition. As the main foundation for managing data and information, SIB not only functions as an operational support tool, but also as a strategic resource in the decision-making process [1]. However, with the rapid growth in the volume, velocity and diversity of data generated by various digital platforms, the biggest challenge facing organizations today is how to effectively manage and leverage big data to support strategic decision making.

This research aims to investigate the important role of big data in improving strategic decision-making capabilities in the context of SIBs. By referring to a broad theoretical framework from related literature, this research will analyze how big data can be used to identify hidden patterns, trends and relationships in business data, which in turn can provide valuable insights for management in making better strategic decisions. appropriate and evidence-based.

Through a holistic analytical approach, this research will present case studies that highlight the implementation of big data in SIBs from several leading organizations. Thus, this research is expected to not only provide a better understanding of current concepts and practices in big data analysis for strategic decision making, but also provide practical guidance for organizations in effectively adopting big data technologies in the context of their SIBs [2].

2. THEORETICAL BASIS

1. Big Data Concept
Big data refers to the large volume, high velocity, and diversity of data generated by various digital sources such as sensors, social media, and business systems. It includes concepts such as the 3Vs (Volume, Velocity, Variety), which highlight the challenges of managing and analyzing data at scale.

2. Strategic Decision Making
Strategic decision making is the process of choosing the steps that management will take to achieve the organization's long-term goals. Theories such as rational and behavioral decision making models, as well as strategic theories such as SWOT analysis and PESTEL analysis, are the basis for strategic decision making.

3. Business Information System (SIB)
SIB is a system that integrates information technology with business processes to provide information that is useful for decision making. This theoretical framework includes concepts such as information cycles, transaction processing, and decision support systems.

4. Big Data Analysis
Big data analysis involves techniques such as data mining, machine learning, and statistical analysis to uncover patterns, trends, and insights contained in big data. It involves stages such as data collection, storage, cleaning, analysis, and interpretation.

5. Application of Big Data in Business Information Systems
The integration of big data in SIB allows organizations to utilize greater and more varied information in making strategic decisions. It involves implementing technologies such as cloud technology, distributed databases, and data analysis algorithms to improve the efficiency and effectiveness of business processes.

By understanding and applying these concepts holistically, organizations can harness the enormous potential of big data to improve their performance and competitiveness in an ever-evolving business environment.

3. RESEARCH METHODOLOGY

Types of Research Approaches:
This research uses a qualitative approach with integrated quantitative elements [3]. This approach allows to gain a deep understanding of the use of big data in strategic decision making in Business Information Systems (SIB), while also enabling statistical analysis to support qualitative findings.

Development Method:
This research involved initial concept development based on a comprehensive literature review on big data analytics, strategic decision making, and SIB. Next, this approach will be tested through case studies from several leading organizations that have adopted big data technology in their SIB.

Variable Type:
Variables in this research include the use of big data in SIB as an independent variable and its impact on strategic decision making as a dependent variable. Additionally, control variables such as organizational size, industry, and level of technology adoption will also be considered.

How to Collect Data:
Data will be collected through a variety of sources, including interviews with senior managers and data analysts in the organizations involved, direct observation of strategic decision-making processes, and analysis of documents such as financial reports and business strategies. In addition, secondary data from scientific literature, industry reports and public databases will also be utilized.

Data Processing and Verification Techniques:
Qualitative data will be analyzed using thematic analysis techniques to identify main patterns and themes. Meanwhile, quantitative data will be analyzed using descriptive and inferential statistical methods, such as regression and analysis of variance, to test the relationship between variables [4]. Data verification was carried out through data triangulation, by comparing findings from various sources and data collection methods to ensure the validity and reliability of research results.

4. RESULTS AND DISCUSSION

Results:

This study reveals that the use of big data analysis in Business Information Systems (SIB) has a significant impact on organizational strategic decision making [5]. Through analysis of several case studies from various industrial sectors, it was found that organizations that adopted big data technology were able to increase the speed, accuracy and precision in their strategic decision making.

The application of big data in SIB allows organizations to identify hidden patterns and trends in their business data. For example, by analyzing sales data, customer behavior patterns can be identified more accurately, allowing companies to organize more effective marketing strategies and optimize their supply chains. In addition, big data also allows organizations to carry out deeper risk analysis by integrating data from various sources such as social media, sensors and financial transactions.

The better understanding of the business environment and customer behavior resulting from big data analysis allows management to make more informed and evidence-based strategic decisions. This helps organizations anticipate market changes, capture new opportunities, and reduce risks.

Discussion:

These results support related literature that highlights the important role of big data analysis in strategic decision making. The integration of big data in SIB not only allows organizations to optimize their operational performance, but also provides a competitive advantage in an increasingly complex and dynamic market [6].

However, the implementation of big data in SIBs also presents certain challenges, including data privacy and security issues, as well as difficulties in building appropriate infrastructure and managing large and varied data. Therefore, it is important for organizations to adopt an integrated and sustainable approach in the development of their SIBs, taking into account aspects such as regulatory compliance and investment in human resources skilled in big data analysis.

Overall, these results and discussion confirm that big data analysis is an invaluable tool in supporting strategic decision making in SIBs [7]. By understanding and effectively leveraging the potential of big data, organizations can gain a significant competitive advantage in an increasingly changing and competitive marketplace.

5. CLOSURE

In a turbulent digital era, strategic decision making in Business Information Systems (SIB) requires a careful and adaptive approach to face increasingly complex challenges. This research has shown that big data analysis is a vital basis for providing in-depth insight for strategic decision making amidst uncertainty and market dynamics.

Through a review of the literature and organizational case studies, this research confirms that the integration of big data in SIBs not only improves the quality of decision making, but also expands an organization's ability to anticipate market changes, capture new opportunities, and manage risks. Big data analytics allows organizations to explore hidden patterns and trends in data, providing a deeper understanding of customer behavior, and opening up opportunities for innovation.

However, it is important to remember that the application of big data in SIBs also brings challenges that cannot be ignored, such as privacy issues, data security and technical complexity. Therefore, organizations need to adopt a holistic and integrated approach in managing big data, taking into account aspects of compliance, security and infrastructure capacity.

Thus, this research confirms that big data analysis is an important and necessary tool in supporting strategic decision making in SIB. It is hoped that the results of this research can provide valuable guidance for practitioners and academics in developing effective

strategies to exploit the potential of big data in improving organizational performance and competitiveness in a rapidly changing global market.

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