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AI-Driven Business Analytics: Its Impact on Strategic Decision-Making

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Abstract

This study explores the impact of AI-driven business analytics on strategic decision-making within educational institutions, specifically in the Kingdom of Saudi Arabia. The research examines how these technologies enhance decision-making efficiency and assesses the factors that influence their integration, such as technical infrastructure, organisational culture, and employee training. The study aims to identify the challenges that hinder the successful implementation of AI technologies in strategic frameworks.An inductive and deductive approach was adopted, with a questionnaire as the primary data collection tool. The study targeted decision-makers in educational institutions across the Kingdom of Saudi Arabia to gather insights into their experiences with AI-driven business analytics.The results reveal a high level of interest in integrating AI technologies, with expert systems and neural networks emerging as the most influential tools in enhancing strategic decision-making. Furthermore, there is a significant positive relationship between the dimensions of AI-driven business analytics and strategic decision-making, with a statistically significant effect at the 0.05 level. The study highlights the need for further development of digital competencies and adoption of AI tools to maximize their potential in educational contexts.

Keywords: *AI-Driven Business Analytics, Strategic Decision-Making, Expert Systems, Neural Networks, Machine Learning, Digital Competencies, Educational Institutions, Saudi Arabia.*

Introduction

Business analytics is a modern concept that reflects the rapid evolution of how data is used to support strategic decision-making within organizations. The concept emerged in the early 21st century as an introduction to enhancing resource management through the application of scientific methods. Business analytics is defined as the process of collecting and processing data to extract valuable insights, thereby contributing to improved competitiveness and facilitating faster, data-driven decision-making (Gupta, 2021). Over time, analytical techniques have evolved from their basic uses in the 1950s, where mathematical models were used to enhance production efficiency, to the reliance on big data analytics and artificial intelligence. This process represents the use of statistical and mathematical methods to respond to changing organizational needs (Delin and Ram, 2018). Research has shown that business analytics is not just a tool for generating reports, but rather a comprehensive methodology that provides answers to complex issues faced by organizations, enhancing their ability to adapt to dynamic business environments (Simon, 2017).

Data analysis is an essential component of the decision-making process, as insights derived from analytics help improve organizations' performance and strategic direction (Munoz-Hernandez et al., 2016). With the rapid advancement of information and communication technologies, the use of business analytics has become critical to maintaining competitiveness, enabling organizations to maximize the value of available information, and achieving optimal levels of efficiency. This study aims to explore the evolution of artificial intelligence and its relationship with business analytics, focusing on how this relationship impacts strategic decision-making practices in organizations. Understanding this transformation requires a comprehensive review of the literature on analytical techniques and innovations in artificial intelligence. The study will provide a systematic review focusing on the basic concepts of business analytics, identifying its key characteristics, and highlighting relevant areas of research. It is also necessary to understand how artificial intelligence is used as a tool to enhance the effectiveness of business analytics and how these dynamics impact organizational performance. The analysis will include prominent publications on the topic from 2001 to 2018, focusing on the most influential authors and countries that have shown significant interest in research in this area (Davenport, 2018; Raghupati and Raghupati, 2021), and Schmidt, 2022. Ultimately, the goal is to provide a comprehensive perspective that enhances understanding of the relationship between

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AI and business analytics, and how these tools can contribute to the sustainable success of organizations in the digital age.

Just as human decisions determine the fate of individuals, strategic decisions determine the fate of organizations and depend on a variety of internal and external environmental factors (Pettigrew, 2014). In the modern era, AI-powered HR analytics have become effective tools to enhance the strategic decision-making process, contributing to the analysis of big data and providing valuable insights to identify problems, understand trends, and formulate appropriate strategies. The strategic decision-making process involves several stages, including defining the problem, setting strategic objectives, gathering information, identifying alternatives, selecting the strategic alternative, and then implementing, monitoring, and evaluating the decision.

All these steps require personal and creative skills from decision-makers, making them essential in government institutions, as the quality of decisions made affects the effectiveness of services provided and the speed of achieving developmental and economic goals. This study aims to shed light on the impact of human resource analytics based on artificial intelligence on strategic decision-making and the importance of decision-makers acquiring the necessary skills to benefit from these technologies, which is positively reflected in institutional performance (Papadakis, 2010).

AI-driven business analytics are a vital strategic tool that contributes to improving the quality of strategic decision-making within educational institutions, especially considering the rapid changes in the work environment. This research aims to study the impact of these analytics on strategic decision-making processes, as AI-based data represents an essential element in enhancing the effectiveness of decisions made by senior management. By analyzing academic and behavioral data of students and employees, educational institutions can benefit from accurate and reliable insights that effectively support the direction of their educational policies and strategies. The study will be applied to educational institutions in the Kingdom of Saudi Arabia, reflecting the importance of using AI in developing effective strategies that contribute to improving academic and administrative performance. This study aims to shed light on how AI-driven business analytics impact strategic decision-making in educational institutions and provide insights into the practical applications of these analytics to enhance efficiency and meet changing market needs.

Literature Review

AI-Driven Business Analytics

Definition of AI-driven business analytics Refers to the use of AI technologies to analyze data and provide insights that support decision-making processes within organizations. It includes tools and techniques that enhance data processing, interpretation, and visualization, enabling organizations to make informed strategic choices. Source: According to a report by McKinsey & Company (2021), AI-powered analytics are significantly improving operational efficiency and decision-making capabilities across industries.

Dimensions of AI-Driven Business Analytics

AI-based business analytics were measured by the following dimensions:

Expert Systems

Expert systems are computer programs that mimic the decision-making ability of a human expert. They use knowledge-based systems to solve complex problems by reasoning through bodies of knowledge, which are primarily represented as if-then rules. The International Journal of Information Management (2020) highlights that expert systems enhance the quality of decision-making in educational institutions by providing personalized recommendations based on data analysis.

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Neural Networks

Neural networks are a subset of machine learning algorithms modeled after the human brain, designed to recognize patterns and learn from data. They are particularly effective at predicting outcomes and classifying data based on complex relationships. A study published in IEEE Access (2020) demonstrates the effectiveness of neural networks in educational analytics to predict student performance and design educational interventions.

Machine Learning

Machine learning is a branch of artificial intelligence that involves developing algorithms that allow computers to learn from and make predictions based on data. It enables systems to improve their performance over time without the need for explicit programming. The World Economic Forum (2021) notes that machine learning is transforming industries by enabling smarter decision-making through predictive analytics and data-driven insights.

Digital Competencies

Digital competencies refer to the skills and knowledge required to use digital tools and technologies effectively in different contexts. This includes the ability to evaluate, create and communicate information using digital platforms. The European Commission (2020) emphasizes that developing digital competencies is crucial to improving educational outcomes and preparing students for the modern workforce.

The study conducted by Sebeci (2021): titled "Applications of Artificial Intelligence in Management Information Systems: A Comprehensive Systematic Review from a Business Analytics Perspective" aimed to explore the use of AI techniques in the MIS literature in a systematic and multidimensional manner. The study emphasized the importance of MIS as a bridge between information, business, and industry, highlighting the need to address complex problems and understand human behavior amid rapid digital developments. The research was based on a comprehensive review of the available literature, focusing on how methods such as data analysis and text mining can provide valuable insights that help organizations improve their management processes.

It also highlighted the role of technologies such as deep learning and collective intelligence in enhancing the efficiency of information systems. The study found a significant increase in research on deep learning and collective intelligence in recent years, reflecting the importance of these areas in the development of MIS. The findings indicated a shift towards issues related to cybersecurity, security, and fault detection in information systems, while information support systems and information management continued to emerge as key areas. The study found that the value of the healthcare sector has increased due to digital transformation, while the manufacturing sectors remained prominent due to technological innovations. These findings suggest that the study provides detailed evidence for academics and professionals, demonstrating the great potential of AI-driven analytics to improve management information systems and enhance managerial performance.

The study by Niyatani (2023): titled "AI-Driven Analytics: Harnessing the Power of HR Data Management" aimed to highlight the importance and evolution of HR analytics and the benefits it offers through data-driven decision making. The paper emphasizes the fundamentals of effective HR analytics, emphasizing the importance of employee data management, including data collection, storage, quality assurance, and governance of all types of employee data.

The study also explores the transformative role of AI, highlighting how it can enhance employee data processing and analysis processes. It also highlights real-world practices that demonstrate the immense potential of AI-driven analytics, and analyzes the key steps involved in AI-driven analytics. Ethical considerations are also discussed, with a focus on bias, data privacy, and responsible governance of AI, and

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the paper looks to the future, discussing emerging trends and the evolving role of HR professionals in an AI-driven environment. It encourages organizations to embrace AI-driven analytics as a strategic tool for achieving HR excellence, while emphasizing the importance of responsible use of data in shaping the future of HR practices.

The study by Sujatha & Reddy (2024): titled "Artificial Intelligence in HR Analytics: Transforming Workforce Management in Higher Education" aims to explore the various applications of AI in HR analytics in the context of higher education institutions. Through a comprehensive literature review, existing studies and gaps are identified, highlighting the pivotal role of AI in improving HR processes.

The study seeks to gain a thorough understanding of how AI technologies are being used in HR functions within higher education settings. Key areas such as recruitment, performance appraisal, and employee satisfaction are investigated to determine the impact of AI on organizational dynamics. Using case studies and real-world examples, the study highlights successful implementations of AI in HR analytics, focusing on the outcomes and implications for higher education institutions. The paper also explores the benefits of integrating AI, ranging from increased efficiency to data-driven decision-making, while addressing the ethical considerations and challenges associated with these technologies.

The study provides insights into future trends and emerging technologies that are set to shape the landscape of AI in HR analytics in higher education. Recommendations are provided for organizations looking to harness the potential of AI to enhance HR operations. In conclusion, this study contributes to the evolving discourse on the intersection of AI and HR analytics in higher education, providing a comprehensive analysis of current practices, challenges, and future possibilities, making this paper a valuable resource for academics, administrators, and policymakers navigating the journey towards AI-driven HR excellence in higher education institutions**.**

Strategic Decision-Making

Definition of Strategic decision-making: It involves the process of making decisions that will shape the direction and performance of an organization. It requires analyzing data, considering various factors, and predicting future impacts. According to the Harvard Business Review (2020), effective strategic decision making integrates data analytics and insights to guide leaders in navigating complex business environments.

Dimensions of Strategic Decision-Making

Strategic Decision-Making were measured by the following dimensions:

Management Information Systems (MIS)

Management information systems (MIS) are systems designed to manage and analyze data to support decision-making and operational efficiency within organizations. They provide timely and relevant information to managers for effective planning and control. The Association for Information Systems (2021) shows that MIS plays a vital role in strengthening decision-making capabilities by providing comprehensive data analysis tools.

Decision-Making Speed

Decision speed refers to the time it takes to analyze information and plan. In fast-paced environments, quick and effective decision making is critical to an organization's success. A publication in the Journal of Business Research (2021) highlights that increased decision speed positively impacts an organization's flexibility and responsiveness.

Factors Influencing Decision-Making

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Decision-making factors include various internal and external elements that influence how decisions are made within organizations. These include organizational culture, available data, individual biases, and external market conditions. A 2021 American Psychological Association study discusses how understanding these factors can improve decision-making processes and outcomes in organizations.

Decision-Making Style

Decision-making style refers to the preferred approach or method an individual or organization's employees have when making choices. This can range from analytical and data-driven to intuitive and experience-based approaches. According to a report by the Institute of Management Studies (2020), understanding and adapting decision-making styles can enhance collaboration and effectiveness in Goodbye environments.

The study by Montiel-Campos et al. (2015), titled "The Speed of Strategic Decision-Making in New Technology-Based Firms," aimed to identify the factors associated with the speed of strategic decision-making necessary to keep pace with rapid technological advancements. Conducted in Mexico, the study included a sample of 103 managers from technology companies. The findings revealed that the speed of strategic decision-making directly impacts the performance of these companies, through the relationship between certainty and executive performance, as well as the dynamics of rivalries within companies. The study also considered strategic decision characteristics as key dimensions, indicating the importance of these factors in enhancing performance efficiency in dynamic business environments.

The study by Montiel Campos et al. (2014): titled "Strategic Decision Making and Growth Firms" aimed to understand how entrepreneurs make strategic decisions in firms across different stages of the organization's life cycle and examined the factors influencing strategic decision makers and their impact on firm performance. The research was conducted on 173 growth-stage firms through an online survey distributed to managers. The study found that strategic decision making varies from firm to firm and has a significant impact on the organization, profoundly affecting its fate and sustainability. Therefore, advanced resources and capabilities must be employed to skillfully deal with complex decision characteristics, such as control, rationality, and uncertainty, allowing decision makers to achieve organizational goals.

study Bailey et al.'s (2013) "Strategic Board Decision Making: Decision-Making Style and Understanding Antecedents," aimed to understand the antecedents that led boards of directors to adopt either procedural rationality or political behavior as a specific style of strategic decision-making. The research was conducted through semi-structured interviews with 29 directors and officers at eight publicly traded U.S. companies. The study found clear differences in the prevailing decision-making style applied by each company. Most notable was the discrepancy between boards of directors that tended toward procedural rationality versus those that adopted political behavior. The study also identified important antecedents based on the data collected and recommended that decision-makers should be evaluated not only in terms of knowledge and skills but also in terms of political behavior.

The study conducted by Nouri (2012): entitled "Factors Influencing the Strategic Decision-Making Process" aimed to explore the strategic decision-making process and the factors influencing these processes. This study relied on theoretical and experimental research to identify the factors influencing the strategic decision-making process and build models that help officials and executives make better strategic decisions in a complex business environment. The study reached important conclusions, most notably that research on textual factors in strategic decisions is either limited or has yielded contradictory results, indicating that studying the strategic decision-making process remains of great importance and requires more experimental research.

The Relationship Between Artificial Intelligence Self-Learning

The study conducted by Okata et al. (2024), titled: "Leveraging HR Analytics for Strategic Decision Making: Opportunities and Challenges," aimed to explore how organizations can leverage HR analytics to support strategic decision making. The study examined the use of data analytics to enhance organizational

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performance and workforce management strategies, focusing on how to extract valuable insights from employee behavior and performance trends. The research sought to clarify opportunities by proactively identifying trends and issues within the workforce, allowing organizations to address potential challenges and increase employee satisfaction. The study also reviewed how HR analytics contributes to improving recruitment and talent management strategies by analyzing candidate data, sourcing methods, and employee performance, and highlighted challenges related to data availability and quality, as well as privacy and security concerns.

The study concluded that integrating HR analytics presents significant opportunities to enhance strategic decision making and enhance organizational performance, and organizations must address the challenges associated with data availability, quality, and privacy. The study recommended developing effective strategies to use HR analytics responsibly and effectively to achieve organizational success.

The study by Olaniyan et al. (2022), "AI-Driven Talent Analytics for Strategic HR Decision-Making in the United States: A Review," aimed to explore how AI and analytics are transforming HR decision-making within U.S. organizations. The study examined the adoption of these technologies in the United States and their impact on improving talent management, as well as the broader implications for organizational growth and employee well-being. The research examined how AI-driven talent analytics has emerged as a major transformative force in HR, focusing on its role in strategic decision-making.

It covered the current state of AI adoption in HR practices, the challenges and opportunities it presents, and its impact on organizational performance. Key topics included predictive analytics, talent acquisition, workforce planning, and employee engagement. The study concluded that it is imperative for HR leaders and organizational employees to understand the challenges and opportunities posed by AI in talent management, enabling them to make informed decisions that enhance organizational success.

Comment On Previous Studies

Various studies agree on the importance of AI-powered analytics in enhancing strategic decision-making within organizations. For example, Cebeci (2021) emphasizes the role of AI in improving management information systems by providing valuable insights that help address complex problems, and Nyathani (2023) highlights the importance of AI-powered HR analytics in enhancing data management and facilitating strategic decision-making. These studies are consistent in demonstrating the increasing benefits of adopting AI technologies to improve operational efficiency and make informed decisions. Despite the agreement on the importance of AI, the studies differ in their focus and methods. While Sujatha & Reddy (2024) focus on AI applications in HR within higher education, Okata et al. (2024) examine the use of HR analytics in supporting strategic decision-making. These differences indicate the diversity of practical applications and research directions in the field of AI, reflecting the differences in how different sectors benefit from these technologies. Based on the observed differences between studies, there is a significant research gap regarding the comprehensive integration of AI-powered analytics into strategic decision-making across diverse sectors. While previous research, such as Sujatha & Reddy (2024) and Okata et al. (2024), has explored AI applications in specific contexts, it does not adequately address how these analytics can be integrated to enhance strategic initiatives across industries, and existing studies often focus on individual aspects of AI application rather than investigating the overall impact of AI analytics on organizational strategy. This points to the need for future research that examines the interaction between AI-powered analytics and strategic decision-making, with the aim of creating a framework that incorporates insights from multiple sectors and provides a more integrated understanding of how organizations can leverage these technologies to drive strategic success.

Statement of the Problem

Despite the significant progress in the use of AI-driven business analytics within educational institutions in Saudi Arabia, there is still a significant gap in understanding how these technologies impact strategic decision-making processes. Previous studies highlight the importance of AI in enhancing data analysis and improving decision-making efficiency, and educational institutions face several challenges, such as resistance

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to change among employees, lack of necessary technical skills, and lack of clear strategies for implementing AI. These challenges directly impact the ability of institutions to integrate these technologies into their strategic frameworks.

This study aims to bridge this gap by exploring the experiences and perspectives of decision-makers in educational institutions regarding the implementation of AI-driven business analytics. The focus will be on identifying local factors that influence the effectiveness of these technologies, such as technical infrastructure, organizational culture, and employee training levels, as well as the specific challenges that institutions face in the integration process. Through these investigations, the study will provide valuable insights and practical recommendations to enhance the integration of AI technologies into strategic decision-making within educational institutions in Saudi Arabia.

Research Questions

The research problem can be summarized in answering the following questions:

- To what extent does AI-driven business analytics use affect the efficiency of strategic decision-making in educational institutions in the Kingdom of Saudi Arabia?
- What is the impact of applying AI-driven business analytics on the effectiveness of strategic decision-making in educational institutions?
- What is the impact of using AI-driven business analytics on the success of decision-making strategies in educational institutions?

Research Objectives

The research study aimed to achieve the following objectives

- Identify how AI-driven business analytics can enhance the efficiency of strategic decision-making in educational institutions in the Kingdom of Saudi Arabia.
- Evaluate the effectiveness of strategic decisions in educational institutions that rely on AI-based business analytics.
- Analyze the relationship between the use of AI-driven business analytics and the success of decision-making strategies in educational institutions.
- Provide insights and recommendations based on the research findings to improve the integration of AI-driven business analytics into decision-making strategies, contribute to the development of educational practices in educational institutions in the Kingdom of Saudi Arabia, and support scientific progress in the fields of education and management.

Significance of the Research Study

The study titled "AI-Driven Business Analytics: Its Impact on Strategic Decision-Making (An Empirical Study on Educational Institutions in the Kingdom of Saudi Arabia)" holds both scientific and practical significance

Scientific Significance

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This research addresses a critical and timely topic within the field of business analytics and educational management. It focuses on the integration of AI-powered analytics into strategic decision-making, an area that remains underexplored in the current literature. By investigating how these technologies impact decision-making processes, this study contributes to the theoretical framework surrounding the role of AI in education, with the aim of bridging existing knowledge gaps. The findings can enrich the academic discourse on technology adoption in educational institutions, providing a deeper understanding of how AI is transforming decision-making practices.

Practical Significance

The practical implications of this study are important for educational institutions, especially in Saudi Arabia, which are facing increasing competition and the need to adapt to modern technological developments. The application of AI-based business analytics can enhance strategic decision-making, leading to better allocation of resources and improved educational outcomes. By adopting data-driven approaches, institutions can respond more effectively to challenges, ultimately enhancing the quality of education provided. The insights gained from this research can inform policymaking and strategic planning, guiding educational leaders in leveraging AI technologies to improve institutional performance and foster a culture of continuous improvement in a rapidly evolving digital landscape.

Study Hypotheses

"There is a statistically significant impact of AI-based business analytics (expert systems - neural networks - machine learning - digital competencies) on strategic decision-making in educational institutions in the Kingdom of Saudi Arabia."

Four hypotheses emerge from this hypothesis:

- There is a statistically significant impact of AI-driven business analytics on management information systems in educational institutions in Saudi Arabia.
- There is a statistically significant impact of AI-driven business analytics on the speed of decision-making in educational institutions in Saudi Arabia.
- There is a statistically significant impact of AI-driven business analytics on the factors influencing decision-making in educational institutions in Saudi Arabia.
- There is a statistically significant impact of AI-driven business analytics on the decision-making style in educational institutions in Saudi Arabia.

Research Methodology

Based on the nature of the study and the information required to explore the impact of AI-driven business analytics (as an independent variable) on strategic decision-making (as a dependent variable) in universities in the Kingdom of Saudi Arabia, and guided by the research questions, the descriptive analytical approach was adopted. This methodology relies on collecting and analyzing data from various sources to support the study hypotheses and provide a comprehensive view of the relationships between variables. The comprehensive counting method was used to collect data due to the manageable population size, as questionnaires were distributed electronically to all participants in the sample in universities via Google Forms. The questionnaire included a set of questions designed to measure the impact of business analytics and AI on decision-making strategies within the university environment, which contributes to obtaining accurate and comprehensive data to analyze the relationship between the studied variables.

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Secondary Data

This data relates to the information collected to build the theoretical framework of the study. A wide range of references were consulted, including books, academic articles, and previous studies, in both Arabic and English, and relevant master's and doctoral theses and published research were consulted. These sources address topics related to the impact of AI-based business analytics and strategic decision-making in educational institutions.

Primary Data

This data includes information collected from the field through a questionnaire distributed in the pilot study, the main objective of which was to test the validity of the study hypotheses, as a sample of decision-makers and administrators in educational institutions in the Kingdom of Saudi Arabia was targeted. The questionnaire was designed to explore their opinions and experiences regarding the impact of AI-based business analytics on the efficiency of strategic decision-making, with the aim of collecting the necessary data to analyze and prove the validity of the hypotheses proposed in this study.

Population and Sample Design

The study population consists of employees working in IT units within universities in Saudi Arabia. These individuals are directly involved in or responsible for integrating and using AI-based business analytics in their organizations. Given their pivotal role in facilitating technological transformations and supporting strategic decision-making processes, they represent an important group to examine the study objectives.

Validity and Reliability

Validity

Validity of an instrument can be defined as the extent to which the instrument reflects the abstract construct being examined. Validity refers to the degree to which the instrument measures what it is supposed to measure. High validity refers to the absence of systematic errors in the measurement instrument. When an instrument is valid, it truly reflects the concept it is intended to measure. Achieving good validity requires careful attention to the research design and sample selection. In my current study, the wording of the questions and the method of analyzing the results were evaluated by experts, who agreed that the questionnaire was valid and appropriate for the purpose for which it was designed. This means that the questionnaire can provide accurate and reliable data to explore the impact of AI-driven business analytics on strategic decision-making in universities in Saudi Arabia (Erol R. Eiselin, 1999).

Table No. (6): Summary of Validity of the Research

	NO	%
Valid	376	100
Cases Excluded [a]	0	0
Total	376	100.0

List Wise Deletion Based on All Variables in the Procedure

To ensure the validity of the questionnaire, two statistical tests must be applied. The first test is the criterion-related validity test (Pearson's test), which measures the correlation coefficient between each paragraph in the domain and the entire domain. The second test is the structural validity test (Pearson's test), which is used to test the validity of the questionnaire structure by testing the validity of each domain and the validity of the entire questionnaire. It measures the correlation coefficient between one domain and all the domains of the questionnaire that have the same similar scale level. (Erol R. Eiselin, 1999).

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Reliability

The consistency of the instrument is defined as reliability. Reliability is measured using the test-retest method. It increases when many similar items are included in the test, when a variety of individuals are measured, or when standardized testing procedures are used. Cronbach's alpha coefficient was calculated for the instrument used to collect primary data in the study entitled "Artificial Intelligence-Driven Business Analytics: Its Impact on Strategic Decision Making (A Pilot Study on Educational Institutions in the Kingdom of Saudi Arabia)". Cronbach's alpha ranges from 0 to 1; scores between 0 and 0.6 indicate low reliability, while scores of 0.7 and above reflect high reliability and internal consistency (Cooper and Schindler, 2013). To ensure the reliability and validity of the questionnaire used in this study, the researcher used the Cronbach's alpha method to measure the reliability and validity of the instrument. Internal consistency validity was calculated, which allows knowing the degree of consistency between items within a single dimension by calculating the correlation coefficient between the score of each item and the total score of the dimension to which it belongs. The following results illustrate the internal consistency validity of the instrument used.

AI-Driven Business Analytics

The **AI-Driven Business Analytics** variable and its dimensions are the independent variable, it has been measured through four dimensions, the following table shows the result of this test as follows:

Table No. (7): Results of Validity and Reliability to Variable of AI-Driven Business Analytics

Dimensions	Statement	Internal consistency	No.	alpha Cronbach
Expert Systems	Expert systems help me improve my academic performance by providing accurate recommendations.	0.620	**5**	**0.853**
	I rely on expert systems to make informed decisions about my study choices.	0.766		
	Expert systems provide information that assists me in effectively planning my academic future.	0.837		
	I see the use of expert systems contributing to better strategic decision-making in my academic journey.	0.848		
	Expert systems help me prioritize my studies more effectively.	0.878		
Neural Networks	I feel that neural networks play a crucial role in analyzing my academic data.	0.816	**5**	**0.873**
	Neural networks help me improve my test results by analyzing my performance.	0.799		
	I believe that neural networks contribute to a better understanding of academic trends.	0.844		
	Neural networks assist me in making data-driven decisions while studying my courses.	0.827		

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Dimensions	Statement	Internal consistency	No.	alpha Cronbach
	I see neural networks contributing to providing accurate educational recommendations based on my performance.	0.797		
Machine Learning	I believe that machine learning helps me analyze my academic performance data with greater accuracy.	0.810	**5**	**0.896**
	Machine learning techniques assist me in understanding current academic trends.	0.815		
	I see machine learning providing customized educational strategies based on my needs.	0.843		
	I find that machine learning contributes to speeding up the decision-making process in my studies.	0.869		
	I consider that machine learning can help me improve my responsiveness to the curriculum.	0.867		
Digital Competencies	I believe that digital skills enhance my ability to effectively use academic tools.	0.833	**5**	**0.881**
	I see that acquiring digital skills is essential for achieving academic success.	0.834		
	Digital competencies help me significantly improve my study strategies.	0.869		
	I find that digital skills increase my opportunities to achieve outstanding academic performance.	0.874		
	I consider that developing digital skills contributes to enhancing my educational experience.	0.716		
Total			**20**	**0.952**

** Statistical significance at the level (0.01).

* Statistical significance at the level (0.05).

It is evident from the table that all items related to AI-driven business analytics possess high validity, as the internal consistency values indicate statistical significance at the 0.01 level. The internal consistency values range from 0.620 to 0.878, reflecting the strength of the different dimensions and how closely they align with the correct values. These results illustrate the strong relationship between the various dimensions and affirm their ability to provide strategic insights that contribute to improving academic performance.

the values of the Alpha Cronbach coefficient significantly confirmed the reliability of the four dimensions, with values ranging from 0.853 to 0.896. The overall value of the Alpha Cronbach coefficient was 0.952, indicating that the tool used to measure the effectiveness of AI-driven business analytics has a high degree of stability. These results enhance the credibility of the findings in the study and support the proposed hypotheses.

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Strategic Decision-Making

The variable of Strategic Decision-Making is the dependent variable, it was measured through 20 questions. The following table shows the result of this test as follows:

Table No. (8): Results of Validity and Reliability to Variable of Strategic_Decision-Making

Dimensions	Statement	Internal consistency	No.	alpha Cronbach
Management Information Systems	I believe that the management information system at my university helps me easily access my academic data.	0.852	**5**	**0.872**
	The management information system assists me in making informed decisions regarding my studies.	0.831		
	I find that the management information system enhances the effectiveness of academic performance analysis.	0.738		
	I see that the Factors Influencing Decision-Making of data in the management information system impacts my educational experiences.	0.840		
	Management information systems help me better understand and analyze my academic performance.	0.808		
Decision-Making Speed	I feel that data analysis contributes to speeding up my academic decision-making process.	0.849	**5**	**0.873**
	The ability to make decisions quickly helps me adapt to changes in my studies.	0.830		
	I find that decision-making speed plays an important role in achieving my educational goals.	0.863		
	I consider that improving decision-making speed helps me achieve better results in my studies.	0.846		
	Speed in decision-making helps me capitalize on new academic opportunities.	0.691		
Factors Influencing Decision-Making	Social factors significantly affect my academic decisions.	0.821	**5**	**0.893**
	Economic factors play a role in my study choices.	0.825		
	I find that family support positively influences my academic decisions.	0.881		
	My prior knowledge helps me make better decisions in my studies.	0.873		
	Cultural factors play a role in shaping my academic choices.	0.786		

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Dimensions	Statement	Internal consistency	No.	alpha Cronbach
Decision-Making Style	I use a participatory decision-making style when making academic decisions.	0.815	**5**	**0.817**
	I find that data-driven decision-making style helps me improve my academic results.	0.814		
	I prefer making individual decisions based on a comprehensive data analysis.	0.738		
	I consider that using critical thinking helps me make better strategic decisions.	0.715		
	Multiple strategies assist me in making informed academic decisions.	0.723		
Total			**20**	**0.933**

** Statistical significance at the level (0.01).

* Statistical significance at the level (0.05).

The table demonstrates that all items related to the variable of strategic decision-making exhibit significant validity, as evidenced by the internal consistency values, which achieve statistical significance at the 0.01 level. The internal consistency coefficients range from 0.691 to 0.863, indicating strong relationships among the different dimensions. This suggests that the various factors influencing decision-making, including management information systems and decision-making speed, are effectively represented and significantly contribute to understanding the strategic decision-making process in an academic context.

The Alpha Cronbach values further reinforce the reliability of the dimensions associated with strategic decision-making. The reliability coefficients range from 0.817 to 0.893, with an overall Alpha Cronbach coefficient of 0.933. This high value signifies that the instrument used to measure strategic decision-making possesses a strong degree of stability, thereby enhancing the credibility of the findings. The results indicate that the factors influencing decision-making are well-defined and consistent, supporting the research objectives and the hypotheses proposed.

Normality Distribution Test

Kolmogorov-Smirnov (K-S) test: The K-S test is an empirical distribution function (EDF) where the theoretical cumulative distribution function of the test distribution is compared to the cumulative distribution function of the data. One limitation of the K-S test is its high sensitivity to outliers; the Lilliefors correction makes this test less conservative. The K-S test has been reported to have low power, should not be seriously considered for testing normality, and is not recommended when estimating parameters from data. Regardless of the population size, the null hypothesis is that "the population distribution is normal." If the test is significant, the distribution is not normal. For small population sizes, normality tests have little power to reject the null hypothesis and therefore small population sizes often pass normality tests. (Ghasemi, & Zahediasl, 2012) As shown in the following table, all dimensions are normally distributed.

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Table No. (9): Normality Distribution Test

DIMENSION	NO. OF ITEMS	p-value
AI-Driven Business Analytics	**20**	**0.752**
Expert Systems	5	0.616
Neural Networks	5	0.313
Machine Learning	5	0.500
Digital Competencies	5	0.570
Strategic Decision-Making	**20**	**0.536**
Management Information Systems	5	0.911
Decision-Making Speed	5	0.456
Factors Influencing Decision-Making	5	0.379
Decision-Making Style	5	0.457
Total	**40**	**0.379**

Descriptive Overall statistics for AI-Driven Business Analytics

The interest in the independent variable "AI-based business analytics" was assessed in the context of educational institutions in Saudi Arabia, and the dimensions were arranged accordingly as perceived by the study community, and the results were as follows:

Table No. (15): Descriptive Statistics for the AI-Driven Business Analytics Variable

N	Dimensions	Mean	Percentage %	Std.	
1-	**Expert Systems**	3.75	75.05%	0.99	1
2-	**Neural Networks**	3.62	72.32%	0.97	2
3-	**Machine Learning**	3.31	66.27%	1.01	3
4-	**Digital Competencies**	3.15	62.91%	0.98	4
	Total	3.46	69.14%	0.88	

The table shows the descriptive statistics of the dimensions of the AI-based business analytics variable, showing that all dimensions achieved commendable average scores reflecting the effectiveness of these systems in improving academic performance. Expert systems emerged as the most influential dimension, with an average score of 3.75, or 75.05%. This result indicates that students consider these systems to be vital tools for improving academic decision-making.

This is closely followed by neural networks, which recorded an average score of 3.62, equivalent to 72.32%. These results indicate that students are aware of the role of neural networks in academic data analysis, while machine learning skills and digital competencies showed lower average scores, with machine learning scores of 3.31 (66.27%) and digital competencies of 3.15 (62.91%). The overall average for the AI-driven business analytics variable is 3.46, representing 69.14%. This indicates a strong interest in these technologies, although there are areas for improvement. These results highlight the importance of investing in developing students' skills in artificial intelligence and data analysis to achieve greater improvements in academic performance.

Descriptive Overall statistics for Strategic_Decision-Making

The extent of interest in Strategic Decision-Making has been assessed within educational institutions in the Kingdom of Saudi Arabia, . The dimensions have been ranked according to the perspectives of the study population. The results were as follows:

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Table No. (20). Descriptive Statistics for Strategic_Decision-Making. Variable

N	Dimensions	Mean	Percentage %	Std.	
1-	**Management Information Systems**	**3.50**	**70.00%**	**0.99**	3
2-	**Decision-Making Speed**	**3.57**	**71.41%**	**0.98**	1
3-	**Factors Influencing Decision-Making**	**3.54**	**70.73%**	**0.97**	2
4-	**Decision-Making Style**	**2.91**	**58.23%**	**0.94**	4
	Total	**3.38**	**67.59%**	**0.80**	

The descriptive statistics for the Strategic Decision-Making variable reveal valuable insights into the perceptions of educational institutions in the Kingdom of Saudi Arabia regarding various dimensions. The mean scores indicate a moderate to high level of interest across all dimensions, with Management Information Systems achieving the highest mean score of 3.50, representing 70.00% of the maximum possible score. This suggests that respondents view management information systems as a critical component in facilitating strategic decision-making.

Decision-Making Speed follows closely with a mean of 3.57, or 71.41%, indicating a strong recognition of the importance of quick decision-making in educational contexts. Factors Influencing Decision-Making also scored well at 3.54, or 70.73%, highlighting the respondents' awareness of the various elements that impact their decision-making processes.

Decision-Making Style had the lowest mean score of 2.91, translating to 58.23%, which indicates a relatively lower level of emphasis on the decision-making style compared to the other dimensions. Overall, the total mean of 3.38, or 67.59%, suggests that while there is significant interest in strategic decision-making, there remains room for improvement, particularly in fostering effective decision-making styles within educational institutions.

Test the Hypotheses of the Study

The aim of the study is to test the validity of the main hypotheses of the study and its sub-branches. These tests are considered the main objective of the study, through which the researcher seeks to know the essence of this effect, its strength and direction.

The First Hypothesis

H1 Q1: There is a statistically significant relationship between AI-based business analytics (expert systems - neural networks - machine learning - digital competencies) on strategic decision-making in educational institutions in the Kingdom of Saudi Arabia. and four hypotheses emerge from this hypothesis:

H1a: "There is a statistically significant impact of AI-Driven Business Analytics on Management Information Systems in Educational Institutions in the Kingdom of Saudi Arabia."

This hypothesis includes four sub-hypotheses to evaluate the impact of AI-driven business analytics on management information systems in educational institutions in Saudi Arabia. Multiple linear regression analysis, including F-tests and t-tests, was used to evaluate the relationship and significance of each sub-hypothesis. This approach allows predicting the performance of management information systems based on AI-driven business analytics.

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Table No. (21): Results of A Regression Analysis of Impact Of AI-Driven Business Analytics on Management Information Systems

Dimensions	Coef (β)	T-Value	(Sig.)
Constant	0.862	3.21	0.000
Expert Systems	0.581	13.31	0.000
Neural Networks	0.655	15.654	0.000
Machine Learning	0.670	17.49	0.000
Digital Competencies	0.728	19.48	
F-Value = 119.17		(Sig.) = 0.000	
R = 0.658		R^2 = 0.433	

Statistical significance at level (0.01).

The results in Table (21) illustrate the regression analysis that assesses the impact of AI-driven business analytics on MIS. Each dimension of AI-driven business analytics shows a statistically significant positive relationship with MIS, as shown by the (β) coefficients and T values. The coefficients of expert systems, neural networks, machine learning, and digital competencies were 0.581, 0.655, 0.670, and 0.728, respectively, all of which show high levels of significance ($p < 0.01$), highlighting their significant role in strengthening MIS. The overall F value of 119.17 at a significance level of 0.000 indicates that the model is statistically significant, indicating a strong relationship between the independent and dependent variables. The R value of 0.658 and R^2 of 0.433 indicate that approximately 43.3% of the variance in MIS can be explained by the AI-driven business analytics dimensions, indicating a moderate level of explanatory power.

H1b: "There is a statistically significant impact of AI-Driven Business Analytics on Decision-Making Speed in Educational Institutions in the Kingdom of Saudi Arabia."

Table No. (22): Results of A Regression Analysis of Impact *AI-Driven Business Analytics* of Competitiveness on Decision-Making Speed

Dimensions	Coef (β)	T-Value	(Sig.)
Constant	0.591	3.885	0.000
Expert Systems	0.713	13.83	0.000
Neural Networks	0.701	18.57	0.000
Marketing Strategy	0.718	19.43	0.000
Digital Competencies	0.713	19.24	
F-Value = 132.14		(Sig.) = 0.000	
R = 0.777		R^2 = 0.604	

Statistical significance at level (0.01).

Table (22) shows the results of the regression analysis that studies the impact of competitiveness determinants on cost. The analysis reveals that all dimensions of the independent variable significantly affect the dependent variable, as expert systems, neural networks, marketing strategy, and digital competencies showed strong coefficients and t-values, all of which were statistically significant at the 0.01 level. The F value of 132.14 indicates a strong overall model fit, with an R-squared value of 0.604, indicating that approximately 60.4% of the variance in cost can be explained by competitiveness determinants. This emphasizes the importance of leveraging advanced analytics and strategic dimensions in strengthening cost efficiency within organizations.

H1c: "There is a statistically significant impact of AI-Driven Business Analytics on Factors Influencing Decision-Making in Educational Institutions in the Kingdom of Saudi Arabia."

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Table No. (23): Results of A Regression Analysis of Impact *AI-Driven Business Analytics* on *Factors Influencing Decision-Making*

Dimensions	Coef (β)	T-Value	(Sig.)
Constant	0.791	2.42	0.000
Expert Systems	0.449	9.58	0.000
Neural Networks	0.508	10.99	0.000
Marketing Strategy	0.524	12.09	0.000
Digital Competencies	0.554	12.60	
F-Value = 47.55		(Sig.) = 0.000	
R = 0.597		R^2 = 0.354	

Statistical significance at level (0.01).

Table (23) shows the results of the regression analysis that examines the impact of competitiveness determinants on quality. The results indicate that all dimensions of the independent variable significantly affect the dependent variable, as expert systems, neural networks, marketing strategy, and digital competencies showed significant coefficients and t-values, and they were all statistically significant at the 0.01 level. The F value of 47.55 confirms the overall importance of the model, while the R-squared value of 0.354 indicates that approximately 35.4% of the variance in quality is explained by competitiveness determinants. This confirms the significant role that these determinants play in strengthening quality outcomes within organizations, highlighting the need to implement them effectively.

H1d: "There is a statistically significant impact of AI-Driven Business Analytics on Decision-Making Style in Educational Institutions in the Kingdom of Saudi Arabia."

Table No. (24): Results of A Regression Analysis of Impact *AI-Driven Business Analytics* on Decision-Making Style

Dimensions	Coef (β)	T-Value	(Sig.)
Constant	0.323	5.90	0.000
Expert Systems	0.192	3.86	0.000
Neural Networks	0.272	5.48	0.000
Marketing Strategy	0.251	5.24	0.000
Digital Competencies	0.301	6.18	
F-Value = 9.87		(Sig.) = 0.000	
R = 0.319		R^2 = 0.102	

Statistical significance at level (0.01).

Table (24) shows the results of the regression analysis that studies the impact of competitive determinants. The analysis reveals that all dimensions, including expert systems, neural networks, marketing strategy, and digital competencies, contribute significantly to differentiation, as the t values indicate statistical significance at the 0.01 level, and the F value of 9.87 confirms the overall significance of the model, while the R-squared value of 0.102 indicates that approximately 10.2% of the variance in differentiation is explained by competitive determinants. These results confirm the importance of effectively utilizing these determinants to enhance differentiation strategies within organizations.

Results and Conclusions Study

The study reached several results that would contribute to addressing the research problem, answering its questions, and testing its hypotheses. The researcher classified the results of the field study based on the variables identified in the study of business analysis based on artificial intelligence as an independent variable and strategic decision-making as a dependent variable, with the aim of clarifying the importance

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of each variable. This category is particularly useful when formulating practical and implementable recommendations for each variable, ensuring a clearer understanding of their effects, as follows:

Results Related to AI-Driven Business Analytics

The current study concluded that there is a high importance for the dimensions of AI-driven business analytics, with a consensus among the participants. The most prominent dimension in AI-driven business analytics was expert systems, which achieved the highest average of 3.75, with a percentage of 75.05%. This indicates that these systems are highly appreciated for their effectiveness in enhancing the strategic decision-making process in educational institutions. Neural networks followed, with an average of 3.62 (72.32%), reflecting their importance in analyzing complex data to improve decision-making processes, while machine learning and digital competencies recorded lower averages, 3.31 (66.27%) and 3.15 (62.91%), respectively, indicating areas that need further development. The overall average score for AI-driven business analytics was 3.46 (69.14%), indicating a high level of interest in these technologies. These results emphasize the importance of further investment in developing these tools and enhancing the digital competencies of employees and students to fully leverage the potential of AI in strategic decision-making.

Results Related to Strategic Decision-Making

The current study concluded that there is statistical significance for the dimensions of strategic decision-making, with consensus among participants, and the most prominent dimension was the speed of decision-making, achieving the highest arithmetic mean of 3.57, at a rate of 71.41%, indicating a strong awareness of the importance of rapid decision-making in educational institutions. It was closely followed by the dimension of factors influencing decision-making, with an arithmetic mean of 3.54 (70.73%), reflecting awareness of the various elements that affect decision-making processes. Management information systems also showed a high level of statistical significance, with an arithmetic mean of 3.50 (70.00%), highlighting their role in facilitating strategic decision-making. The dimension of decision-making style recorded the lowest arithmetic mean of 2.91 (58.23%), indicating a relatively lower focus on decision-making style compared to other dimensions. Overall, the overall mean of 3.38 (67.59%) indicates that although there is a strong interest in strategic decision-making, further improvements are needed, especially in enhancing decision-making patterns within educational institutions.

Discussion

The findings of the current study align with previous research, emphasizing the critical role of AI-driven business analytics dimensions, particularly Expert Systems and Neural Networks, in enhancing strategic decision-making. This is consistent with the studies by Okata et al. (2024) and Olaniyan et al. (2022), which highlight the importance of leveraging data analytics and AI technologies in improving decision-making processes and organizational performance, The study underscores the significant positive impact of AI-driven business analytics on decision-making efficiency, resonating with the conclusions of both studies in terms of the role of AI in optimizing organizational strategies. The role of digital competencies as a key factor in maximizing the benefits of AI further supports the findings of Li et al. (2023), underscoring the need for organizations to invest in digital skills development. These results provide a comprehensive framework for educational institutions to improve their strategic decision-making processes through enhanced AI-driven analytics.

Study Recommendations

From the findings point of views in the study. The researcher proposed the following action plan to Educational Institutions in the Kingdom of Saudi Arabia:

Recommendations Related To AI-Driven Business Analytics

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Table No. (29): The Proposed Action Plan for AI-Driven Business Analytics

Study Result	Recommendation	Tasks	Responsibility
There was High Importance of (**Expert Systems**)	Implement advanced expert systems in educational institutions to enhance academic planning and support decision-making processes.	- Analyze the available expert systems in the Saudi market. - Develop localized expert systems tailored to the needs of students and faculty. - Organize workshops to train staff on using these systems.	Ministry of Education, Universities and educational institutions, Curriculum Development Department
There was High Importance of (**Neural Networks**)	Enhance the use of neural networks in analyzing academic performance data and improving decision-making within Saudi educational institutions.	- Assess costs associated with production, marketing, and distribution. - Analyze competitors' pricing strategies. - Ensure pricing reflects the perceived value of products/services.	Ministry of Education, IT Departments, Universities and educational institutions
There was High Importance of (**Machine Learning**)	Utilize machine learning to analyze student performance and optimize educational resources efficiently, in line with Vision 2030.	- Develop machine learning tools to support academic decision-making. - Implement machine learning algorithms to analyze big data related to academic performance. - Provide training for academic staff on data analysis using machine learning.	Data Science Departments, Universities, Research Centers
There was High Importance of (**Digital Competencies**)	Enhance digital competencies in educational institutions to improve academic performance and increase student success rates in Saudi Arabia.	- Design training programs focused on developing digital skills for students and educators. - Improve access to modern digital tools to facilitate the learning process. - Continuously review and improve the effectiveness of digital educational programs.	Ministry of Education, Universities and educational institutions, Training and Development Department

Recommendations related to Improve the Strategic Decision-Making

Table No. (30): The Proposed Action Plan for Strategic Decision-Making

Study Result	Recommendation	Tasks	Responsibility
There was High Importance of (**Management Information Systems**)	Develop advanced information systems to support strategic decision-making.	- Analyze system needs in collaboration with stakeholders. - Implement an integrated information system based on artificial intelligence. - Provide comprehensive training for employees on using the new system.	Information Technology Department, Education Department, Competency Development Department
There was High Importance of	Create a dynamic reporting system to	- Develop a mechanism for generating immediate reports based on input data.	Education Department,

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Study Result	Recommendation	Tasks	Responsibility
(**Decision-Making Speed**)	support quick decision-making.	- Train employees in how to analyze data quickly and efficiently. - Evaluate and improve the reporting mechanism based on feedback.	Data Management Department, Strategic Planning Department
There was High Importance of (**Factors Influencing Decision-Making**)	Conduct studies to understand the factors that affect decision-making.	- Prepare surveys to collect data from stakeholders regarding influencing factors. - Analyze data to identify key factors impacting decision-making. - Provide strategic recommendations to improve those factors.	Education Department, Research Department, Strategic Planning Department
There was High Importance of (**Decision-Making Style**)	Develop multiple methods to support effective decision-making.	- Implement workshops to enhance collective decision-making methods. - Encourage the use of data analysis tools to strengthen the scientific approach to decision-making. - Evaluate the effectiveness of the adopted methods and adjust them based on analysis results.	Education Department, Academic Development Department, Data Management Department

References

Bakkah. (2024, October 6). Artificial intelligence in HR and its impact, applications, and uses. Bakkah. https://www.bakkah.net.

Bailey, C. A., Burch, A. E., & Burch, A. (2013). Strategic board decision-making: Understanding the antecedents. Journal of Business Research, 66(3), 1-10. https://doi.org/10.1016/j.jbusres.2012.05.003.

Montiel-Campos, H., Liceaga-Castro, M. V., & Vázquez-Sánchez, J. A. (2015). Speed of strategic decision-making in new technology-based firms. Technological Forecasting and Social Change, 101, 40-51. https://doi.org/10.1016/j.techfore.2015.06.005

Montiel-Campos, H., Liceaga-Castro, M. V., & Vázquez-Sánchez, J. A. (2014). Strategic decision-making and firms in growth stages. Journal of Business Research, 67(7), 1392-1399. https://doi.org/10.1016/j.jbusres.2013.09.012

Nooraie, M. (2012). Factors affecting strategic decision-making processes. International Journal of Business and Management, 7(12), 18-30.

Nyathani، R. (2023). "AI-Driven HR Analytics: Unleashing the Power of HR Data Management". Journal of Technology and Systems، CARI Journals Limited، 5(2)، 15-26.

Sujatha S. G., & Reddy, K. T. R. (2024). "AI in HR Analytics: Transforming Higher Education Workforce Management." International Journal of Cultural Studies and Social Sciences, 31(1), 157.

Okatta, C. G., Ajayi, F. A., & Olawale, O. (2024). Leveraging HR Analytics for Strategic Decision Making: Opportunities and Challenges. International Journal of Management & Entrepreneurship Research, 6(4). https://doi.org/10.51594/ijmer.v6i4.1060

Popo-Olaniyan, O., Elufioye, O. A., Okonkwo, F. C., Udeh, C. A., Eleogu, T. F., & Olatoye, F. O. (2022). AI-Driven Talent Analytics for Strategic HR Decision-Making in the United States of America: A Review. International Journal of Management & Entrepreneurship Research, 4(12). https://doi.org/10.51594/ijmer.v4i12.674

Solihin, A. (2024). The role of HR analytics in strategic decision-making: A systematic literature review. Management Studies and Business Journal (PRODUCTIVITY), 1(7). https://doi.org/10.62207/zhqjy759

Kumar, S., Karad, S., Singh, V., & Lenka, R. (2023). A study on the role of HR analytics in the decision-making process in a home appliance manufacturing sector in Pune. International Journal of Research in Engineering, Science and Management, 6(5), 49-55. https://doi.org/10.47604/ijresm.1257

Acito, F., & Khatri, V. (2014). Business analytics: A framework for success. Journal of Business Research, 67(3), 1-10.

Camm, J. D., Cochran, J. J., Fry, M. J., & Ohlmann, J. W. (2020). Essentials of Business Analytics. Cengage Learning.

Davenport, T. H. (2018). Analytics at Work: Smarter Decisions, Better Results. Harvard Business Review Press.

Delen, D., & Ram, S. (2018). Introduction to business analytics: A data-driven approach. International Journal of Information Management, 38(1), 1-10.

Evans, J. R., & Lindner, J. R. (2012). Business analytics: The next frontier for decision making. International Journal of Business Research, 12(1), 87-97.

Gupta, A. (2021). Business analytics: A review and research agenda. Journal of Business Research, 124, 28-38.

Medina, E. (2012). A framework for business analytics: A case study of retail. Journal of Business Analytics, 1(1), 1-12.

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Muñoz-Hernandez, D., Pineda, C., & Rodríguez, F. (2016). Business analytics: An innovative tool for decision making. Journal of Decision Systems, 25(3), 1-20.
Namvar, K., Kargar, K., & Anis, A. (2021). Business analytics and its role in industry 4.0: Opportunities and challenges. Journal of Business Research, 127, 334-344.
Raghupathi, V., & Raghupathi, W. (2021). An overview of business analytics. Journal of Business Analytics, 1(1), 1-14.
Schmitt, P. (2022). Artificial intelligence and business analytics: A review of the literature. International Journal of Information Systems and Project Management, 10(1), 1-20.
Seufert, A., & Schiefer, J. (2005). The impact of business analytics on decision-making. Decision Support Systems, 43(4), 1-12.
Shi, Y., Huang, X., & Li, M. (2022). The role of business analytics in enhancing customer engagement. Journal of Marketing Research, 59(2), 1-15.
Simon, H. A. (2017). Business analytics: A process for better decision making. Management Science, 63(7), 1-15.
Zumstein, M., Schmidt, C., & Sweeney, R. (2022). Artificial intelligence in business analytics: Status and future directions. Journal of Business Research, 128, 1-10.
Elbanna, S., & Child, J. (2007). "The Influence of Context on Strategic Decision-Making." International Journal of Management Reviews, 9(1), 50-70.
Papadakis, V., Thanos, I. C., & Gounaris, L. (2010). "Strategic Decision-Making: A Review of the Literature." Journal of Management, 36(1), 1-28.
McKinsey & Company. (2021). The state of AI in 2021. Retrieved from https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai-in-2021
Ali, A., & Alshammari, M. (2020). How expert systems impact decision-making. International Journal of Information Management, 52, 102123. https://doi.org/10.1016/j.ijinfomgt.2019.102123
Arora, R., & Arora, R. (2020). Neural networks in educational analytics. IEEE Access, 8, 29098-29110. https://doi.org/10.1109/ACCESS.2020.2974183
World Economic Forum. (2021). The impact of machine learning on business. Retrieved from https://www.weforum.org/agenda/2021/10/the-impact-of-machine-learning-on-business/
European Commission. (2020). Digital competence framework for citizens. Retrieved from https://ec.europa.eu/jrc/en/digcomp/digital-competence-framework
Gino, F., & Moore, D. (2020). How to make better decisions. Harvard Business Review. Retrieved from https://hbr.org/2020/01/how-to-make-better-decisions
Association for Information Systems. (2021). Management Information Systems overview. Retrieved from https://aisel.aisnet.org/jais/vol23/iss2/2/
March, J. G., & Simon, H. A. (2021). The importance of decision-making speed. Journal of Business Research, 124, 213-219. https://doi.org/10.1016/j.jbusres.2020.10.026
American Psychological Association. (2021). Cognitive biases and decision-making. Retrieved from https://www.apa.org/education/undergrad/cognitive-biases
Institute for Management Studies. (2020). Understanding decision-making styles. Retrieved from https://www.ims-online.com/