FROM INFORMATION TO INTELLIGENCE: OPTIMIZING STRATEGIC DECISION-MAKING IN SAUDI ENTITIES THROUGH BIG DATA SYNTHESIS

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Abstract

The digital transformation is more of a reality, and organizations are finding it extremely difficult to cope with the issue of converting high volumes of data into practical and useful intelligence. The present paper is about the promise of Saudi organizations in streamlining the process of strategic decision-making when handling big data. The study is analytical and conceptual and examines synthesis of various sources of information, sophisticated analytical technology and organizational designs required to transform information into intelligence. The paper presents the following concepts to be considered as the key facilitators to effective decision-making data integration, artificial intelligence, governance arrangements, and organizational culture.

The findings indicate that Saudi institutions are rapidly adopting big data technology and there are significant gaps in the bits of data, governance, and analytics. The transformation of traditional data management to intelligence-based solutions does not just require a molding of technology but an institutional orientation and capacity development. The study also mentions that the quality of decisions, responsiveness, and strategic alignment is high with firms using integrated data ecosystems and AI-based analytics.

As well, the research offers the importance of an integrated strategy that integrates both the technological infrastructure and human and organizational factors. The synthesis of the existing literature that the study offers contributes to enhancing the knowledge of the role that big data can be played in supporting evidence-based decision-making in dynamic and complex environments. The paper closes with strategic recommendations on how to aid in the use of data and intelligence development within Saudi organizations and lead to overall reshaping of the nation.

Keywords: Big Data Synthesis, Strategic Decision-Making, Artificial Intelligence, Data Governance, Saudi Arabia, Business Intelligence, Digital Transformation.

1. Introduction

Lack of data is no longer a problem in the contemporary digital world, and organizations are now confronted with the challenge of managing a multitude of data. The digital technologies, intelligent infrastructure and interconnected systems are high rate has seen a high volume of information in the sectors like never before (Al Abdallat, 2025). This kind of change is particularly noticeable in Saudi Arabia, where

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grand national projects such as Vision 2030 incorporate the emphasis on digital transformation, economic diversification, and decision-making as a knowledge-based process (Shafa, 2025).

Although very large volumes of data are at our disposal, an important number of Saudi organizations, state and non-state, continue to face the issue of how to transform raw data into actionable intelligence. Data are typically maintained in silo, collected by different departments, in incompatible formats or never used at all dues to a lack of analytical capabilities. The difference between the availability of information and the efficiency of the decision-making process evidences a serious gap: transformation of information to intelligence (Alsaad, 2024).

One important possible step towards closing this gap is big data synthesis. Unlike the older data analysis cycles that primarily focus on specific data sets, the process of big data synthesis integrates alternative sources of data, employs advanced data analysis techniques and creates comprehensive information which may be utilized to make strategic decisions. It assists organizations in escaping the descriptive reporting and striving to anticipate and prescribe intelligence, gaining a stronger ability to predict trends, minimize risks and opportunities (Alhakami, 2024).

The importance of the strategic decision-making maxim is increased by the depth and quantity of the reforms that are occurring in the Saudi environment (Rathore et al., 2021). Government agencies have to develop responsive and evidence-based policies and the organizations within the private sector must also remain competitive in the dynamic global market. Efficient implementation of big data synthesis can potentially help such organizations make correct decisions in a timely manner and at a high level of alignment (Assoufi, El Farissi & Slimani, 2024).

However, there are no issues with transitioning to the intelligence founded on big data that are devoid of problems. Factors such as data governance, privacy, technological infrastructure constraints and organizational resistance can be an impediment. What is even more, the lack of a widespread system of merging and synthesizing data complicates the decision-making environment even more (Saraya, Saleh & Rezk, 2025).

This paper will set out to explain how big data synthesis can be employed by Saudi organizations in order to optimize their strategic decisions. It is analytic in nature, examining the mental foundations, key components and enabling aspects required to transform information into intelligence. The research paper will contribute to the scientific discourse as well as to the policies design in Saudi Arabian context by proposing a systematic framework and providing remarks on its implications in practice (Souames et al., 2025).

1.1 Research Questions

The provided analysis is justified by two analytical research questions that assist in exploring the way in which the big data synthesis may be employed to enhance the mechanisms of making strategic decisions at the Saudi bodies:

1. So, what can Saudi organizations do so that they can become capable of transforming huge quantities of raw information into useful strategic intelligence?
2. What are the key components and processes of the big data synthesis process to maximize decision making?
3. What are the organizational, technological and governance challenges which hinder the successful use of big data in Saudi organizations?

1.2 Research Objectives

1. The objectives of this research in regard to the research questions are as follows:
2. To analyze such phenomena as the synthesis of big data and its relevance to strategic decision-making in Saudi organizations.
3. To identify and examine the valuable factors that should be present in the transformation of information to intelligence.

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2. Literature Review

Tsiu et al. (2025) provide the methodological review of how data mining and business intelligence (BI) can be used to address its performance and competitive advantage of small and medium-sized enterprises (SMEs). Their discussion indicates that BI systems have the potential to assist companies in deriving patterns, correlations, and forecast information out of large volumes of data, and hence inform decision making. However, as it is also observed in the study, many organizations have not progressed further than a descriptive or diagnostic level of analytics and have not progressed to strategic intelligence. This limitation is particularly so in the Saudi situation since organizations might possess information but cannot synthesize due to absence of integrating processes. Thus, the strategic usage of BI tools is not developed yet, though they are famous.

The article by Šajnovic et al. (2024) focuses on the overlap between the Internet of Things (IoT) and big data analytics in proactive healthcare, which presents the data on the possible combination of real-time information streams to make proactive decisions. They demonstrate that the nonhomogenous data that is brought together by sensors, patient data, and environmental data makes predictability higher and contributes to early interventions. Analytically, this underscores the importance of integrating information and real-time processing as one of the fundamental aspects of intelligence generation. Syntetic creation of meaningful insights out of these different data sets is crucial in case of Saudi organizations particularly those in the process of digitizing when they are responsive to strategic considerations (Mohiuddin, 2025).

Badawy (2023) discusses the effects of artificial intelligence (AI) and big data in smart health systems and indicates that smart automation replaces data gathering. The article claims that AI-based analytics can be applied to both prediction and prescriptive decision making by identifying the most desirable action plans. Such a shift towards smart information processing systems is but one part of a greater shift in organizational decision paradigm. The Saudi Arabian context, where digital activities are accelerating and opening up uncertainty and increasing foresight, can be enhanced even more through the inclusion of AI into big data ecosystems to bolster strategic decision-making.

Ramdana et al. (2025) focus on information systems that are improved by big data with the aim of improving the resilience and performance of SMEs. They evaluate them and find that the firms with built in data systems are better placed to react to the external environment changes and upheavals. The implications of analysis are that the synthesis of data assists an organization to be more adaptable because it enables the organization to be in a position to continually observe and react on a short-term basis (Mohiuddin, 2024a). The paper also references structural and cultural barriers, such as lack of data literacy and technological resistance to change. These points are highly relevant when it comes to Saudi organizations where transformations within the organization might require harmonization between technology implementation and the willingness to modify the institution.

Alotaibi and Alshehri (2023) explore opportunities and challenges of applying artificial intelligence in institutions of higher learning in Saudi. In their conclusion, they conclude that despite the huge potential of AI in enhancing learning outcomes and decision-making processes, there is a restricted use of AI because of governance issues, skills, and infrastructural barriers. On the analytical side, the current study indicates that technological capability is not a decisive factor to convert information into intelligence; human capital development and adequate data management are also important. This is true to bigger Saudi-based organizations, სადაც strategic decision-making needs organizational and technological maturity.

The article by Rathore et al. (2021) is a comprehensive literature review of AI, machine learning and big data in digital twins technologies. They have emphasized how the process of strategic planning and optimization of operations can be supported by the use of real-time data synchronization and simulation (Mohiuddin & Farhan, 2025). Digital twins illustrate the use of synthetic data to build dynamic and predictive physical system models, and how these models can be exploited to make decisions. In the context of Saudi organizations, particularly the energy, infrastructure and smart cities sector, these functions are vital in balancing strategic objectives with real-time feeds.

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Kgakatsi et al. (2024) survey the contribution of big data to the performance of SMEs and observe that the most important measures of success are the quality of data, its integration, and data analysis (Mohiuddin, 2024b). Their methodological review has connoted that the entities that can unite information between functions effectively achieve optimal decision making outcomes. It is found in the study though that disintegrated data environments, and lack of strategic orientation cause a constraint in the achievement of such benefits. This helps in the thesis statement that big data is no longer a technological resource, but an aligned strategic resource that must be aligned.

Mazumder (2023) speaks about the opportunity of promoting big data visualization with the assistance of generative AI and dwells upon the possibility of applying the technology to the international business decision-making process. The article determines the role of advanced techniques in visualization to transform complex information in a manner that is easy to comprehend and act on to allow decision-makers to get to know the plans of the process. This emphasizes analytically the importance of data representation in the intelligence-generation process, supplemented by data synthesis. The technical analysis and strategic interpretation gap in the Saudi context can be mitigated through effective visualization since in most Saudi cases, the decision-making process can involve a multitude of stakeholders.

3. Methodology

The research onion framework is employed to systematize the methodological design in this research study. Research onion provides a hierarchical approach that eases the congruence between the philosophical presumptions, research methods and data gathering methods. The paper builds a logical and analytical based methodology, which is suitable to investigate the synthesis of big data and strategic decision-making within Saudi organizations through the peeling.

3.1 Research Philosophy

The analysis of the Alosaimi et al. (2025) article in which the authors concentrate on the data-driven decision environment of Saudi smart cities presupposes the use of pragmatism philosophy in the given research. Pragmatism would be appropriate as it takes care of the practical outcome and practical application of the big data analytics. The study is neither positivist nor interpretivist-based, but a mix of hard facts and contextual organizational intelligence. This is very fundamental in the Saudi case where, embracing technology is closely related to the institutional practices and national transformation aims.

3.2 Research Approach

The study is inductive-analytical in nature because it is presented in line with the studies of Aseeri (2023) and Aseeri and Kang (2023) who aim at analyzing socio-technical systems in Saudi higher education. It is not a research that begins with prestructured assumptions but builds the conceptual knowledge in accordance with the existing literature and the trends of the big data application. The approach enables investigating the interplay of organizational culture, technology, and data ecosystems to shape processes of strategic decision-making.

3.3 Research Strategy

According to the conceptual and exploratory research strategy, the proposed variables will be applied in a conceptual study proposed by Aldossari et al. (2025), which proposes big data adoption frameworks in Saudi SMEs. It has an interest in the establishment of an ordered system explaining how the information can be converted to intelligence. The plan does not involve empirical testing, but aims at synthesis of the already known information to provide theoretical knowledge that cuts across sectors.

3.4 Research Choice (Methodological Choice)

The current work is grounded in a qualitative mono-method research informed by a study conducted by ur Rashid et al. (2025), who focus on the integration of governance, architecture, and AI analytics. This study relies on the qualitative research with the use of secondary data sources, e.g., academic literature and conceptual models. This alternative allows an analytical interpretation of complex data system and decision effectiveness relationships.

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3.5 Time Horizon

This research is a cross-sectional one, like the findings made by Ojeda et al. (2025), and the goal is to transform the processes of decision making through the assistance of AI. It dwells on the current operation, trends and systems of big data analytics among Saudi players at a specific point in time. This is a suitable technique to adopt in conceptual research which would aid in capturing the state of transformation and not tracking it through time.

3.6 Data Collection and Analysis Techniques

Based on Jaradat et al. (2025), who develop a case study on the integration of ERP and BI in Saudi industries, this research utilizes the collection of secondary data via systematic review and analytical synthesis of academic sources. The analysis targets the thematic and conceptual analysis method and is aimed at tracking common patterns, including data integration, governance, analytics capability, and decision-making outcomes.

The steps of analysis include:

- Examining pertinent literature about big data, AI and decision-making.
- Identifying major themes and constructions.
- Generalizing conclusions into a single conceptual framework.
- Contextualizing interrelations among variables in Saudi.

3.7 Justification of Methodological Choice

The methodological rigor and coherence are ensured with the help of the application of the research onion. The study is aimed at constructing the conceptual idea of information into intelligence transformation, which makes the qualitative, exploratory, and pragmatically based approach the most appropriate. It allows organizing the study of the technological, organizational and strategic dimension without being subject to the numerical analysis (Al Abdallat, 2025).

Overall, the methodology provides an analytical and systematic foundation of the interpretation of how Saudi organizations can attain ideal strategic decisions through the synthesis of big data and how theoretical knowledge and practical value can be oriented.

4. Results and Analysis

Here, thematic synthesis of literature reviewed is presented and its analytical results are given. The information does not suggest numerical modeling, but instead, the results are given in comparative tables in a bid to elicit patterns, connections as well as the distinctions in the use of big data and the strategic decision-making procedures among the Saudi organizations (Alsaad, 2024).

Table 1

Transformation from Data to Intelligence

Aspect	Traditional Data Handling	Big Data Synthesis Approach
Data Nature	Fragmented and siloed	Integrated and interconnected
Processing Style	Descriptive reporting	Predictive and prescriptive analytics
Decision Basis	Experience-driven	Evidence-driven intelligence
Responsiveness	Reactive	Proactive and adaptive
Strategic Value	Limited insight	High-value actionable intelligence

The results show a definite transition of individual data processing into combined intelligence mechanisms. Big data synthesis will increase the capacity of Saudi entities to cease making decisions based on hindsight and adopt future-oriented strategies (Shafa, 2025).

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Table 2

Role of Technology in Decision-Making

Technology Component	Conventional Role	Enhanced Role through Integration
Big Data Analytics	Data processing	Insight generation and forecasting
Artificial Intelligence	Automation	Intelligent decision support
IoT Systems	Data collection	Real-time monitoring and prediction
ERP & BI Systems	Operational reporting	Strategic integration platforms

The concept of technological convergence is an important aspect of facilitating intelligence. The combination of AI, IoT, and analytics systems can significantly enhance decision-making efforts, offering real-time and context-aware insights (Alahmari et al., 2023).

Table 3

Organizational Factors Influencing Data Utilization

Factor	Low Maturity Organizations	High Maturity Organizations
Data Culture	Resistant to change	Data-driven mindset
Leadership Support	Limited involvement	Strong strategic alignment
Skills & Expertise	Insufficient analytical skills	Advanced technical competencies
Data Governance	Weak or unclear	Structured and well-defined
Collaboration	Departmental silos	Cross-functional integration

Organizational preparedness turns out to be a decisive factor of success. Organizations that have robust leadership support, data culture, and governance structures are better placed when it comes to converting information into intelligence (Maswadi & Alhazmi, 2026).

Table 4

Challenges in Big Data Implementation

Challenge Area	Description of Limitation	Impact on Decision-Making
Data Integration	Disparate systems and formats	Incomplete or inconsistent insights
Infrastructure	Limited technological capacity	Delays in processing and analysis
Data Governance	Lack of policies and standards	Reduced trust in data outputs
Human Capability	Skill gaps in analytics	Underutilization of data resources
Organizational Resistance	Cultural and structural barriers	Slow adoption of data-driven practices

The results highlight that challenges are not purely technological but also organizational and institutional. These barriers hinder the full realization of big data's potential in strategic contexts (Jaradat, AL-Hawamleh & Hamdan, 2025).

Table 5

Impact of Big Data Synthesis on Strategic Decision-Making

Decision Dimension	Without Data Synthesis	With Data Synthesis
Decision Quality	Based on limited information	Comprehensive and accurate
Speed of Decision	Slow and delayed	Timely and real-time
Risk Management	Reactive risk handling	Predictive risk mitigation
Strategic Alignment	Fragmented planning	Cohesive and aligned strategies
Innovation Capability	Incremental improvements	Data-driven innovation

The synthesis of big data helps improve many aspects of decision-making. It allows Saudi organizations to be more aligned in their strategy and execution and to be more innovative and resilient (Ojeda, Valera & Diaz, 2025).

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Table 6
Integrated Conceptual Insights

Core Element	Function in Framework	Strategic Outcome
Data Integration	Combines multiple data sources	Holistic organizational view
Analytics Capability	Processes and interprets data	Actionable intelligence
Governance Structure	Ensures data quality and security	Trustworthy decision environment
Technological Infrastructure	Supports data processing	Operational efficiency
Organizational Culture	Promotes data usage	Sustainable decision practices

A combination of these components is the key to the successful decision-making system founded on big data. Interaction of technology, governance and culture is paramount towards transforming information to intelligence (ur Rashid, Hussain & Nawaz, 2025).

Overall, the results suggest that the process of strategic decision-making in Saudi organizations must be streamlined through the multidimensional approach. It is not only about the adoption of new high technologies but also restructuring, competencies, and culture to exploit the full potential of big data synthesis.

5 Discussion.

This paper shows that the results confirm the growing consensus that the transformation of information to intelligence is not merely a technological transformation but a multidimensional process which involves the convergence of data, the management of data, culture and utilization of sophisticated analytics to extract meaning out of data. When comparing it with the literature reviewed above, one can see that the core of the big data synthesis in strategic decision-making enhancement can be considered. However, what is also unveiled in the discussion is another layer of complications surrounding the functioning of these capabilities as implemented by Saudi actors in their institutional contexts.

The conclusions about the shift to unified information systems and integrated intelligence are most applicable to the concepts presented in the articles by Alahmari et al. (2023) who emphasis on the idea of information-based optimization depending on the multi-perspective parameters within the context of sustainable service economies. The true potential of big data, according to their work is its ability to merge disparate collections of data into one model of analysis. This is consistent with the earlier findings of Šajnovic et al. (2024), who discovered that the abilities of predictions are enhanced with the inclusion of the IoT-based generated data. This contributes to strategic decision-making being improved in the Saudi context as organizations begin to move past silo analytics to interrelated data ecosystems that can capture the dynamic real-time aspects of the organization.

At the same time, the role of artificial intelligence as a factor of the analytic-to-intelligence transformation is repeated across the literature review and the current findings. Shafa (2025) is of the opinion that AI-based business intelligence will enable organizations to abandon descriptive analytics in favor of intelligent decision automation. This is within house with Badawy (2023) which describes AI as a significant facilitator of prescriptive decision-making in complex environments. The results of the study go a step further to establish that Saudi organizations that have adopted systems integrating AI are typified by an expedited decision-making process, enhanced accuracy and enhanced strategic coherence. The argument, though, also makes reference to the fact that the efficiency of such systems depends on the quality and integration of the underlying information on which such systems are built which contributes to the necessity to encourage synthesis rather than accumulation.

The other critical dimension that emerges out of the findings is that data governance is fundamental in ensuring that the intelligence outputs are viable and useful. According to Alsaad (2024), when weak governance provision is applied in the government organizations, trust in data-driven decisions is likely to be broken. This observation is a first hand observation that coincides with the above mentioned results in which lack of governance was identified as a major impediment to effective decision making. Similarly, the paper by ur Rashid et al. (2025) highlights the topicality of the governance frameworks to align the data architecture

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and the organizational objectives. The regulatory and institutional environment of Saudi organizations is shifting and the absence of standardized systems of governing can lead to the discrepancy in the quality of data and limit the strategic usefulness of analytics.

Organizational and cultural factors also play crucial role in determining the success of big data initiatives and this has been likewise discussed. According to Al Abdallat (2025), the supply of AI and analytics is increasing, but it is up to the organizational readiness and the perspective of the manager. It can be discussed as per the prior findings reported by Aseeri and Kang (2023) who highlight that the organizational culture influences the socio-technical systems adoption. Such results can also serve as a further confirmation of the effectiveness of organizations where a high culture of data and leadership commitment is turned to the transformation of information into intelligence. Conversely, change resistance and lack of analysis have been a crippler to developments in majority of organizations.

Such considerations as information confidentiality and computer safety are also present and are instrumental in the discussion. Coming to the issues of cybersecurity competencies in the environment of the support of data-driven environment, Alhakami (2024) shows the importance of the above-mentioned data within the framework of Saudi Arabian digital transformation. This perception also supplements the findings of this paper in which data security was found to be among the primary aspects of trust in decision-making systems. Without where there is great security, organizations are prone to threats that may lead to the loss of strategic and data integrity. It is particularly relevant in cases where the big data systems are premised more on interrelationship platforms as well as real-time data streams.

Knowledge management and decision-making relationship may also provide a further insight on the process of intelligence generation. As Assoufi et al. (2024) suggest, effective knowledge management system enhances information to actionable insights translation by enhancing information sharing and organizational learning. This is in line with the conceptualization that has been developed in this work where data synthesis is not only a technical process, but also a knowledge transformation process. The relation between knowledge management activities and those of big data analytics can be of significant use in enhancing the quality of strategic decisions made within Saudi entities by putting insights into perspective and making them available (Aldossari, Mokhtar & Abdul Ghani, 2025).

The fact that advanced analytical frameworks hold potential to become an essential part of risk analysis and predictive decision-making is one of the future prospects in the debate that deserve attention. The article by Saraya et al. (2025) focuses on the contribution of geo-blockchain intelligence and spatial big data to the prediction of extreme events, and the role of integrated data systems in encouraging proactive decisions in the case of uncertainty. The above observation is a supplement to the earlier attention paid to predictive analytics and the idea that big data synthesis will assist organizations to expected the risks rather than responding to them. Long-term strategic stability to Saudi ventures in dynamic and often uncertain environments can and should be based on such capabilities (Aseeri & Kang, 2023).

Overall, it has been demonstrated in the discussion that the theoretical benefits of big data synthesis are well established, though the actual application of the same is grounded on a very complex mix of technological, organizational, and institutional factors. The findings show that there is a rising propensity of Saudi organizations to move toward data-based decision-making. Formulating models, but there are still major gaps in the aspects of governance, integration and human capability. When these findings are contrasted with the existing literature, it will be clear that the process of maximizing strategic decision-making needs a holistic strategy that will integrate high-quality analytics with effective governance systems, organizational preparedness, and constant capability building (Aseeri, 2023).

6. Conclusion

This paper aimed at exploring how Saudi organizations can change their information-rich organizations to intelligence-oriented decision-making using the efficient utilization of big data synthesis. As seen in the analysis, data availability is no longer a major limitation, but the capability to combine, process, and interpret the data is a major challenge. The results affirm that big data synthesis can be significant in

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closing this divide by converting fragmented data into unified actionable intelligence that helps in strategic goals.

The paper points out that technological adoption is not the only way to optimize the decision-making process but holistic alignment of data infrastructure, governance mechanisms, and organizational culture is necessary. The combination of the latest technologies including artificial intelligence, IoT, and business intelligence systems is a powerful tool that increases the ability of organizations to make predictive and prescriptive insights. Nonetheless, unless there is an efficient management of data and an enabling institutional system, these technologies cannot deliver what they promise.

Besides, the paper mentions the importance of organizational readiness, in particular, the commitment of the leadership team, the data culture, and analytical proficiency. The better Saudi organizations have grown in these aspects, the greater the opportunity they have to make the big data an instrument of strategic advantage. Conversely, challenges such as data silos, talent and change resistance are a threat to data-driven initiatives success.

In response to the larger question of the digital transformation agenda in Saudi Arabia, the study concludes that big data synthesis is an enabler of intelligent decision making. It contributes to operational efficiency and long term planning, risk management and innovation. Accordingly the transition to intelligence must be viewed as a dynamic and ongoing process which must be persistently invested in and brought to bear on strategy.

7. Recommendations

Based on the analytical findings of this paper, it is proposed to make several recommendations that can enhance the efficiency of strategic decision-making using big data in Saudi organizations:

7.1 Strengthen Data Integration Frameworks

Companies should strive to improve the design of integrated data architectures that enable departments and systems to exchange and integrate information perfectly. This will reduce fragmentation and more uniform insights. It requires an effective governance structure comprised of data standards, data ownership, and data accountability to deliver data quality, data security, and trust in the decision-making processes (Alosaimi et al., 2025).

7.2 Invest in Advanced Analytical Capabilities

Saudi entities must incorporate more artificial intelligence and machine learning tools to reach a stage of intelligence beyond descriptive analytics into predictive and prescriptive. It must also undertake regular training and capacity building programmes so as to equip employees with the knowledge of how to interpret and apply data in strategic situations.

7.3 Promote a Data-Driven Organizational Culture

To facilitate and support the use of data in the decision making process and to create an environment where policies are based on evidence and not intuition, organizations must develop strong data security systems to help safeguard sensitive information and maintain the integrity of systems.

7.4 Encourage Cross-Sector Collaboration:

Knowledge sharing, standardization, and innovation of big data applications could be provided with the help of collaboration between government, the private sector, and technology providers. Organizations must make sure that their data programs are in line with bigger national interests, like Vision 2030 in Saudi Arabia, to achieve as much strategic contribution and sustainability as possible. All these suggestions are aimed at creating a roadmap of Saudi entities to overcome data piles and begin to make smarter and evidence-based decisions that will help achieve sustainable development and competitive advantage.

References

Al Abdallat, Y. (2025). The impact of artificial intelligence on strategic decision-making in business administration: An analytical study including educational and business environments. *Educational Process: International Journal (EDUPIJ), 18*(5), 1–20.

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Alahmari, N., Mehmood, R., Alzahrani, A., Yigitcanlar, T., & Corchado, J. M. (2023). Autonomous and sustainable service economies: Data-driven optimization of design and operations through discovery of multi-perspective parameters. *Sustainability, 15*(22), 16003. https://doi.org/10.3390/su152216003

Alhakami, W. (2024). Enhancing cybersecurity competency in the Kingdom of Saudi Arabia: A fuzzy decision-making approach. *Computers, Materials & Continua, 79*(2).

Alosaimi, W., Alharbi, A., Alyami, H., Alouffi, B., Almulihi, A., Ahmad, M., … Khan, R. A. (2025). Decision analysis of IoT-based big data analytics in smart cities of Saudi Arabia. *PeerJ Computer Science, 11*, e3383. https://doi.org/10.7717/peerj-cs.3383

Alotaibi, N. S., & Alshehri, A. H. (2023). Prospects and obstacles in using artificial intelligence in Saudi Arabian higher education institutions—The potential of AI-based learning outcomes. *Sustainability, 15*(13), 10723. https://doi.org/10.3390/su151310723

Alsaad, A. M. A. (2024). *The imperative of data governance in government organisations: A Saudi Arabian study* (Doctoral dissertation, University of Southampton).

Aldossari, S., Mokhtar, U. A., & Abdul Ghani, A. T. (2025). Empowering Saudi manufacturing small and medium enterprises: A framework for big data analytics adoption and its impact on decision-making. *SAGE Open, 15*(3), 21582440251369162. https://doi.org/10.1177/21582440251369162

Aseeri, M. M. (2023). *Big data analytics socio-technical systems on strategic decision making and organisational performance: Case of Saudi Arabian higher education* (Doctoral dissertation, University of Technology Sydney, Australia).

Aseeri, M., & Kang, K. (2023). Organisational culture and big data socio-technical systems on strategic decision making: Case of Saudi Arabian higher education. *Education and Information Technologies, 28*(7), 8999–9024. https://doi.org/10.1007/s10639-023-11630-1

Assoufi, I., El Farissi, I., & Slimani, I. (2024). Knowledge management, decision-making and information and communication technology: A systematic mapping study. In *Modern artificial intelligence and data science 2024: Tools, techniques and systems* (pp. 581–591).

Badawy, M. (2023). Integrating artificial intelligence and big data into smart healthcare systems: A comprehensive review of current practices and future directions. In *Artificial intelligence evolution* (pp. 133–153).

Jaradat, Z., Al-Hawamleh, A., & Hamdan, A. (2025). Examining the integration of ERP and BI in the industrial sector and its impact on decision-making processes in KSA. *Digital Policy, Regulation and Governance, 27*(2), 117–144. https://doi.org/10.1108/DPRG-09-2023-0123

Kgakatsi, M., Galeboe, O. P., Molelekwa, K. K., & Thango, B. A. (2024). The impact of big data on SME performance: A systematic review. *Businesses, 4*(4), 632–695. https://doi.org/10.3390/businesses4040039

Maswadi, K., & Alhazmi, A. (2026). Towards sustainable health management in the Kingdom of Saudi Arabia: The role of artificial intelligence—A systematic review, challenges, and future directions. *Sustainability, 18*(2), 905. https://doi.org/10.3390/su18020905

Mazumder, M. (2023). Application of generative AI in big data visualization for enhancing international business decision-making.

Mohiuddin, D. (2024). Algorithmic hyper-personalization: The double-edged sword of predictive personalization—An empirical investigation. *Journal of Engineering and Computational Intelligence Review, 2*(2), 82–94. https://jecir.com/index.php/jecir/article/view/34

Mohiuddin, D. (2024). Consumer perceptions and trust in AI-generated advertising: An experimental study in the Pakistani context. *Apex Journal of Social Sciences, 3*(1), 53–68. https://apexjss.com/index.php/AJSS/article/view/24

Mohiuddin, D. (2025). HR tech adoption in digital banking: Implications for workforce development and financial sector growth in emerging economies. *Journal of Business Insight and Innovation, 4*(2), 77–90. https://insightfuljournals.com/index.php/JBII/article/view/63

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Mohiuddin, D., & Farhan, D. N. (2025). Artificial intelligence in marketing: Ethical challenges and solutions for consumers and society. *Journal of Business Insight and Innovation, 4*(1), 73–87. https://insightfuljournals.com/index.php/JBII/article/view/69

Ojeda, A. M., Valera, J. B., & Diaz, O. (2025). Artificial intelligence of big data for analysis in organizational decision-making. *Global Journal of Flexible Systems Management, 26*(3), 515–527. https://doi.org/10.1007/s40171-025-00365-7

Ramdana, A. D., Sumiarsih, M., Sakinah, A. M., Yulianti, L., & Mutholib, A. (2025). Information systems empowered by big data: A review of applications in SMEs' resilience and performance. *Jurnal Informatika dan Teknik Elektro Terapan, 13*(2).

Rathore, M. M., Shah, S. A., Shukla, D., Bentafat, E., & Bakiras, S. (2021). The role of AI, machine learning, and big data in digital twinning: A systematic literature review, challenges, and opportunities. *IEEE Access, 9*, 32030–32052. https://doi.org/10.1109/ACCESS.2021.3060863

Saraya, H. M., Saleh, A. A. E., & Rezk, A. (2025). Geo blockchain intelligence risk assessment for extreme weather prediction in the era of internet of spatial big data computing. *Discover Internet of Things, 5*(1), 145. https://doi.org/10.1007/s43926-025-00145-3

Shafa, H. (2025). Artificial intelligence-driven business intelligence models for enhancing decision-making in US enterprises. *ASRC Procedia: Global Perspectives in Science and Scholarship, 1*(1), 771–800.

Souames, M. A., Mohammedi, L. A., Zouaghi, I., Gunasekaran, A., Beldjoudi, S., & Laghouag, A. (2025). Estimating import lead times using business intelligence and machine learning within the CRISP-DM framework: A case study in oil and gas services industry. *IEEE Access*.

Šajnović, U., Vošner, H. B., Završnik, J., Žlahtič, B., & Kokol, P. (2024). Internet of things and big data analytics in preventive healthcare: A synthetic review. *Electronics, 13*(18), 3642. https://doi.org/10.3390/electronics13183642

Tsiu, S. V., Ngobeni, M., Mathabela, L., & Thango, B. (2025). Applications and competitive advantages of data mining and business intelligence in SMEs performance: A systematic review. *Businesses, 5*(2), 22. https://doi.org/10.3390/businesses5020022

ur Rashid, R., Hussain, S. K., & Nawaz, S. (2025). The role of data governance, integration architecture, and AI-enabled analytics in enhancing decision-making effectiveness: Evidence from the telecom sector in Saudi Arabia. *AI, Technology & Social Transformation, 1*(2), 1–10.

Title: From Information to Intelligence: Optimizing Strategic Decision-Making in Saudi Entities through Big Data Synthesis

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