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Research Article

Data Governance Evaluation of the Data Management Office at King Saud University based on the National Data Management Office standards

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ABSTRACT

This study aimed to investigate the implementation of data governance at the Data Management Office of King Saud University by examining the adoption of the strategic plan, implementation mechanisms, and compliance with data governance standards and controls established by the National Data Management Office (NDMO), the national regulatory and reference authority for data management and governance.

Using a descriptive-analytical approach, a questionnaire was designed based on three dimensions: the strategic dimension, the executive dimension, and the challenges dimension. The study sample included all 15 employees of the Data Management Office at King Saud University. The data were analyzed using IBM SPSS Modeler statistical software.

The results of the study at the level of the main dimensions showed that the strategic dimension achieved the highest arithmetic mean (4.51) with a very high degree of compliance, followed by the executive dimension (3.69) with a high degree of compliance, and finally, the challenges dimension obtained a medium degree with an average of (3.05).

The study revealed that the lack of data unification and its inconsistency across university departments, as well as the scarcity of financial resources that limit the improvement of the technological infrastructure at the Data Management Office, represent the most important challenges facing the implementation mechanisms of data governance at the Data Management Office at King Saud University.

The researcher recommends the necessity of creating a clear framework for cooperation to define roles, responsibilities, and joint operations between the university colleges and the Data Management Office regarding data circulation, and strengthening cooperation with external parties with expertise in the field of data governance to improve implementation processes.

Keywords: Data – Data Governance – Data Management

INTRODUCTION

Data is a crucial and vital asset that organizations generate, receive, or interact with. It serves as a significant resource for enhancing performance, productivity, and innovation. This importance is clearly evident in the emergence of a new economic era: the data-driven economy. Countries worldwide are striving to leverage the value of data as an economic resource that contributes to strengthening the foundations of economic transformation and competitiveness. At the national level, both governmental and private entities are collecting and processing massive amounts of data that can be utilized to contribute to economic growth and elevate the Kingdom to a leading position among global data-driven economies.

Higher education institutions (HEIs) are no exception. They are significantly affected by economic changes and the need to keep pace with the wheel of innovation, much like business organizations. In fact, they are among the sectors most concerned with change, as they are most closely linked and influential in the surrounding community

environment. Through their significant role in disseminating culture and knowledge, they are committed to being learning centers that provide services built on a solid foundation at the lowest costs.

In light of Vision 2030, the Kingdom is striving towards a new era that enhances the performance of government agencies, increases their transparency and accountability, and encourages economic diversification and the utilization of data-dependent services. This will have an effective role in the global economy, which is based on trust and international partnerships.

Based on this vision, the National Data Management Office (NDMO), as the national regulatory and reference authority for data management and governance, developed a national data governance framework. This framework defines the controls for managing, governing, and protecting personal data to enhance data organization by utilizing the best effective international practices for handling data across various government agencies. The NDMO selected DAMA controls and metrics as a primary source when developing the national data management, governance, and personal data protection controls in the Kingdom, which government agencies are expected to implement by establishing their own data offices. Accordingly, this study sought to evaluate the data governance practices at the King Saud University Data Management Office, as the entity responsible for managing data assets within the university, established in 2021. This evaluation is based on the data governance standards issued by the NDMO, consisting of 8 controls and 28 specifications that help ensure the management of data assets in the relevant entities, starting from the development of the plan, the approval of the strategy, the development of controls and policies, and up to implementation and compliance.

Accordingly, this study aims to assess the data governance practices at the Data Management Office of King Saud University (KSU), which was established in 2021 as the entity responsible for managing the university's data assets. The evaluation is based on the data governance standards issued by the National Data Management Office, which consist of 8 controls and 28 specifications designed to ensure the proper management of data assets across relevant entities. These standards encompass all aspects, from strategic planning and policy formulation to execution and compliance.

LITERTURE REVIEW

Proper data governance practices, based on well-defined standards, empower institutions to transition to digital transformation more rapidly. They also assist in maximizing the value of their digital information assets while minimizing potential risks. For instance, numerous leading corporations, such as IBM, Google, and SAP, place significant emphasis on data governance standards, recognizing that data governance is a crucial method for accelerating decision-making, increasing legitimacy, and improving collaboration (Zhang et al., 2022). It is undoubtedly essential for the successful digital transformation of all organizations, and universities are no exception.

Universities today generate, collect, and store an immense amount of data, ranging from internal data such as administrative records, financial records, registration data, student information, and faculty records, to external data from third-party applications like learning management systems, curricula, educational tools, digital library resources, and social media data. Jim & Chang (2018) adds a third type of data in academic settings, which falls between internal and external, such as research data, which is usually handled based on the institution's data management policy.

Therefore, universities do not lack data, but rather guidance on how to use data and information to their advantage and how to protect data as a critical asset. Consequently, awareness and understanding of data as a valuable asset is the first step towards managing it and implementing governance policies. In most cases, third parties outside the university may be the first to seize the opportunity to obtain data for various purposes. Therefore, governance mechanisms are essential to ensure the protection of privacy, academic freedom, intellectual property, information security, and compliance in universities (Borgman, 2018).

Many global universities have recognized the importance of adopting effective data governance policies to leverage their vast data assets, which can represent significant opportunities for universities and educational institutions if used correctly, especially with modern trends of integrating business operations into the educational process supported by information technology. It is not easy for these institutions to maintain business operations and maintain information technology while striving to achieve their primary goal of improving education and learning efforts for students and the community (Park et al., 2017). Therefore, a comprehensive structure for

managing data, information, individuals, and technology is required for the benefit of stakeholders and to reduce security and privacy risks.

In the context of protecting privacy, the US Congress joint hearing explored privacy concerns in education, particularly "sharing student information" with automated educational programs, third-party providers, and cloud service vendors, and discussed the laws and guidelines that govern them. Therefore, the session recommended the need to examine data sharing and how third parties use data in the academic environment through the application of data governance in educational institutions (Jim & Chang, 2018).

With integrated and effective data governance practices, universities and educational institutions can move faster while mitigating security and privacy risks in the areas of learning, research, innovation, and investment. This enbles smarter decision-making and provides better insights into labor market and consumer requirements, which will contribute to increased efficiency at minimal costs. Data is a valuable asset for higher education; therefore, there is a renewed need for a systematic approach to data management to support the dual role of academic institutions as both educational organizations and commercial entities. The goal of data governance in higher education should be strategic, aiming to meet the needs and interests of stakeholders such as students, staff, faculty members, administrators, and the wider research community (Jim & Chang, 2018). Failure to formulate systematic, strategic, and clear standards for data governance may lead to failure in implementation. This is confirmed by a McKinsey report, which states that institutions spend an average of 30% of their time on tasks that have no added value due to poor data quality and availability, largely due to the ambiguity of data governance processes in these institutions (Zhang et al. 2022).

Although some higher education institutions have already designed their own data governance, the common failure lies in the effectiveness of implementation and monitoring. In addition, the chosen data governance structure may not be compatible with the needs of higher education institutions (Randhawa, 2019). Data governance and data management today are closely linked to the performance of institutions and organizations. Institutions, including higher education institutions, should not overlook considering data as opportunities for growth, performance, and competitiveness. Ramingwong and Manopiniwes confirm that data governance and data security management are critical success factors for the productivity and sustainability of industries and organizations today (Omar, 2020).

METHODS

The initial study data was collected using a questionnaire developed by the researcher to investigate the study objectives and answer its questions. The questionnaire consists of 33 statements divided into three main sections: The first section measures the strategic dimension of data governance and contains 12 statements. The second section measures the operational dimension of data governance and contains 12 statements. The third section addresses the challenges faced by data governance in the Data Management Office and includes 9 statements.

The study population consists of all the members of the Data Management Office at King Saud University, including management and staff, totaling 15 employees.

The questionnaire received 13 responses during the study period.

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Statistical tests such as the weighted mean and standard deviation were used. The five-point Likert scale, a type of ordinal response scale used to measure beliefs, opinions, or attitudes, was employed.

The external validity of the instrument was verified by presenting the questionnaire to three expert reviewers, including a summary of the study's objectives and axes. The internal consistency validity of the instrument was verified by applying Pearson's correlation coefficient to the questionnaire data to measure internal validity by calculating the correlation coefficient between the statement score and the total score of the axis. In addition, the reliability of the instrument was measured using reliability analysis with the most common method for extracting the reliability coefficient, Cronbach's Alpha (α) equation, for each axis of the questionnaire.

The questionnaire items were developed based on the data governance standards issued by the NDMO, consisting of 8 controls and 28 specifications, as shown in Figure (1)

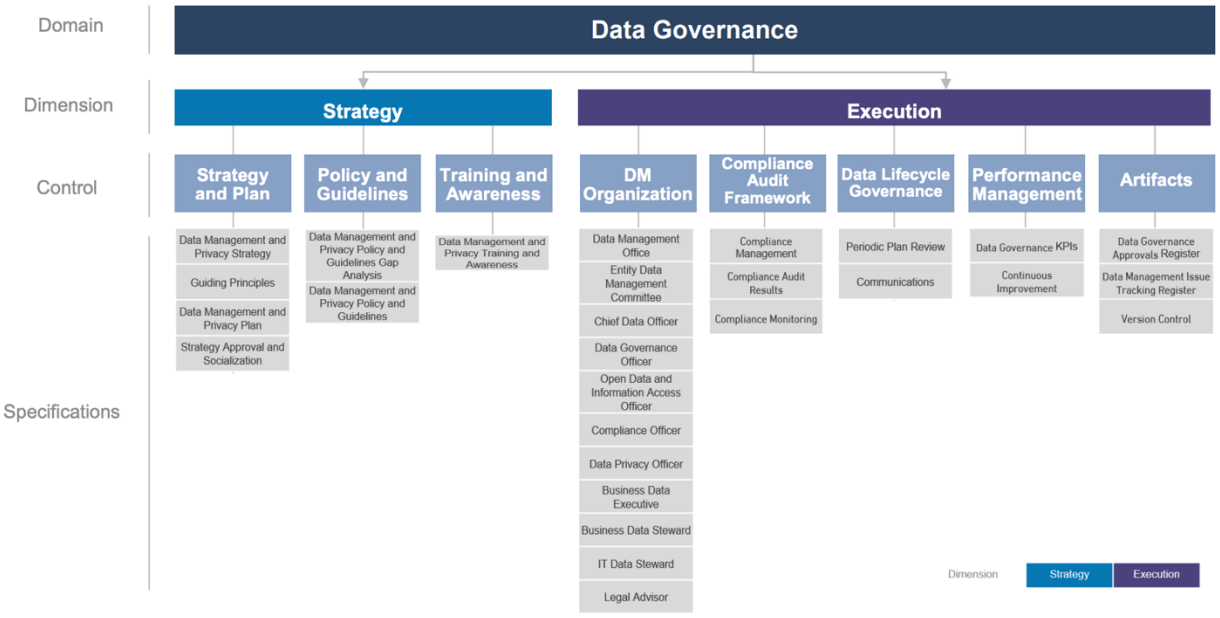

Figure (1) Data Governance domain Issued by the NDMO

RESULTS AND DISCUSSION

First: Results related to the description of the study sample characteristics:

Table (1) Distribution of the study sample members according to the educational qualification variable.

	Frequency	Percentage
Bachelor	10	76.9
Master	3	23.1
Total	**13**	**100%**

It is evident from Table (1) that 10 members of the study sample, representing 76.9% of the total sample, have a Bachelor's degree, making them the largest group in the study sample. Meanwhile, 3 members, representing 23.1% of the total sample, have a Master's degree.

Table (2) Distribution of Study Sample Participants According to the Variable of Years of Experience

	Frequency	Percentage
Less than 5 years	2	15.4
Five to ten years	6	46.2
More than 10 years	5	38.5
100٪	**13**	**100%**

As shown in Table (2), 6 of the sample members, representing 46.2% of the total sample, have between five and ten years of experience, making them the largest group in the sample. Meanwhile, 5 of them, representing 38.5% of the total sample, have more than ten years of experience, and 2 of them, representing 15.4% of the total sample, have less than five years of experience.

Secondly: Results related to the study questions:

Question 1: "What is the status of the strategic dimension in data governance at the Data Management Office at King Saud University?"

To understand the data governance strategy at the Data Management Office at King Saud University, the arithmetic averages and standard deviations for this dimension were calculated, and the results are presented in the following table:

Table (3) Responses of the study sample members to the statements of the strategic dimension, sorted in descending order based on the average responses.

Order	Statement	Mean	Standard Deviation	Statement number
1	The Data Management Office adopts a realistic vision that clarifies what the office aspires to achieve in the distant future.	4.62	0.650	3
2	The Data Management Office sets a clear mission that defines the primary purpose for its establishment.	4.77	0.599	1
3	The Data Management Office sets clear objectives to achieve its vision and mission.	4.46	0.660	5
4	The Data Management Office sets a long-term strategic plan that is measurable and achievable.	4.15	0.555	7
5	The Data Management Office sets a strategic plan that aligns with the national strategy for data governance.	4.69	0.630	2
6	The Data Management Office develops a plan to protect the personal data of university members, including students, faculty members, and staff.	4.31	0.480	6
7	It adopts ethical standards based on the principles and foundations of Saudi culture in data management.	4.62	0.650	3
8	Contributes to raising the culture and awareness of the university community regarding the importance of protecting personal data.	4.69	0.630	2
9	Formulates guidelines for data management and governance processes at the university.	4.54	0.660	4
10	Continuously reviews the policies and regulations related to data governance at the university.	4.31	0.630	6
11	Develops an executive roadmap for data management and governance.	4.31	0.630	6
12	Publishes and promotes the data management and governance strategy and personal data protection.	4.62	0.650	3
	Overall average	**4.51**	**0.530**	

It is clear from Table (3) that the study participants emphasize the adoption of data governance strategies, their dimensions, and awareness of this strategy at the Data Management Office at King Saud University with a very high degree, with a mean of (4.51 out of 5.00), which falls within the fifth category of the five-point scale (from 4.21 to

5.00), indicating the "Very High" option in the study tool. This made this axis rank first among the study's axes, which aligns with the study by Jim & Chang (2018), which indicates that leading universities are aware of data governance strategies, strive to establish their own policies and procedures, and have different comprehensive governance structures. It also agrees with Omar's (2020) study, which indicates that employees, faculty members, directors, and stakeholders in Saudi universities are highly aware of the principles of data governance. The researcher sees the increased awareness of the responsible entity regarding the importance of adopting data governance strategies to ensure compliance, improve data quality, and enhance trust and transparency, as well as enable intelligent decision-making by establishing a framework that defines the responsibilities, policies, and procedures necessary to comply with legal and regulatory requirements.

In general, based on the results shown above, it is evident that there is a slight variation in the study participants' emphasis on the application of the strategic dimension of data governance, where the mean confirmation of the statements ranged from (4.15 to 4.77), which are averages that fall within the fourth and fifth categories of the five-point scale, indicating "High/Very High" in the study tool. This illustrates the commitment and compliance of the Data Management Office at King Saud University in adopting data governance strategies in line with the NDMO standards. This is confirmed by (Hanapiah et al., 2021), who emphasized the urgent need for higher education institutions to have a comprehensive data governance framework that can improve the quality of student data in alignment with the desired outcome, ultimately improving university performance.

The researcher explains that this high result is due to the obligation of the NDMO, as the regulatory and national reference entity for data management and governance in government entities, including universities, to comply with laws and regulations in line with their governance standards.

Question Two: "What is the status of the executive dimension of data governance at the Data Management Office at King Saud University?"

To identify the extent of data governance implementation at the Data Management Office at King Saud University, the arithmetic averages and standard deviations for this dimension were calculated, and the results are shown in the following table:

Table (4) Responses of the Study Sample Participants to the Statements of the Executive Dimension, Ranked in Descending Order According to the Mean Scores of the Responses

Statement number	Statement	Mean	Standard deviation	Order
1	Forming specialized executive committees for data management and governance within the university.	4.00	0.408	3
2	Clarifying the responsibilities and roles of specialists in an approved job description.	3.62	Clo.768	4
3	Providing and analyzing data to support decision-makers in a timely manner.	4.00	0.577	5
4	Monitoring and auditing compliance with the data governance strategy.	4.23	0.599	6
5	Developing the technological infrastructure to enhance data governance practices.	3.38	0.961	7
6	Supporting institutional partnerships with relevant parties for data governance.	3.46	0.967	8
7	Measuring performance indicators for data management and governance.	4.15	0.689	9
8	Documenting the results and outputs of data monitoring and governance procedures.	3.69	0.855	10
9		3.69	0.855	11

Statement number	Statement	Mean	Standard deviation	Order
	Implementing continuous improvement mechanisms in all areas of data governance at the university.			
7	Monitoring the mechanisms for continuous improvement in all areas of data governance at the university.	3.62	0.768	12
8	Enhancing the university community's participation in data governance and management.	3.69	0.751	11
9	Providing sufficient financial budget to implement the strategy.	2.69	1.601	12
	Overall average	**3.69**	**0.701**	

It is clear from Table (4) that the study participants confirm the implementation of data governance at the Data Management Office at King Saud University to a high degree, with a mean score of (3.69 out of 5.00), which falls within the fourth category of the five-point scale (from 3.41 to 4.20), indicating the "High" option in the study tool. This is reflected in the ranking of the axis, where it comes second among the study's axes, which aligns with Omar's (2020) study, which states that Saudi universities still face difficulties in managing big data and utilizing it in ways that positively impact the performance and quality of organizations. The researcher believes that the newness of the Data Management Office at King Saud University may reflect a lack of experience in governance among staff, leading to weaknesses in the implementation mechanisms.

The results show that the study participants highly confirm one of the statements from the executive dimension, which is statement number (4): "Monitoring and auditing compliance with the data governance strategy" with a mean score of (4.23 out of 5). This process ensures that the organization meets all applicable laws and regulations, through which accountability and compliance are enforced, representing one of the key principles of governance (Brous et al., 2016). The researcher explains that the high focus on monitoring, auditing, and compliance is due to the NDMO's role as the regulatory and national reference body for data management and governance within government entities, which prepares an annual report to measure compliance with these regulations to ensure their proper implementation (National Data Management Office, 2020).

"Measuring performance indicators," "Establishing specialized executive committees for data management and governance," and "Providing data and analyzing it to support decision-makers in a timely manner" rank second in terms of the high degree of confirmation by the study participants. This somewhat reflects the office's commitment to a comprehensive data governance framework that includes performance measurement, specialized committees, and data analysis to support stakeholders. This aligns with Hanapiah et al. (2021), who emphasize the need for developing a functional and management team within the data governance framework to conduct periodic measurement and auditing to verify the accuracy and quality of data according to standards.

It is worth noting that "Clarifying the responsibilities and roles of specialists in an approved job description" contributes to enhancing performance by allocating committees for governance management based on functional roles, which is highly confirmed by the sample participants with a mean score of (3.62 out of 5). This helps in clearly defining individual responsibilities and duties, promoting balance and coordination between different teams responsible for data governance, and enhancing transparency, accountability, and responsibility in data management, contributing to ensuring compliance and maintaining data integrity and privacy.

In this axis, "Developing the technological infrastructure to improve data governance practices" was confirmed with a mean score by the sample participants. The development of technological infrastructure supports data governance practices, such as handling big data and improving the management and analysis of big data. This includes using advanced data analysis tools and machine learning techniques to extract value from data and identify patterns and trends, which is one of the key strategic actions for investing in digital technologies, as highlighted by Zhang et al. (2022). This is also supported by Omar's (2020) study, which stresses the need for developing technical plans within the governance strategy, including selecting and developing appropriate technologies.

Additionally, "Providing sufficient financial budget for implementing the strategy" was also confirmed with a mean score by the sample participants. Efforts should focus on convincing senior management of the importance of governance, its benefits, and adding value to the university through its implementation. The university can enhance its chances of securing sufficient financial resources to implement the data governance strategy.

Question Three: What are the challenges facing data governance at the Data Management Office at King Saud University?

To identify the challenges facing data governance at the Data Management Office at King Saud University, the arithmetic averages, standard deviations, and ranks of the study participants' responses on the challenges facing data governance at the Data Management Office at King Saud University were calculated, and the results are shown in the following table:

Table (5) Responses of the Study Sample Participants to the Statements of the Third Dimension: Challenges Facing Data Governance at the Data Management Office at King Saud University, Ranked in Descending Order According to the Mean Scores of the Responses

Statement number	Statement	Mean	Standard deviation	Order
9	Lack of an approved strategy for data and information management in the university administration.	2.31	0.751	1
1	Data inconsistency – sometimes – and conflicts in the university administration.	4.15	0.987	2
5	Lack of training provided to staff on data management and governance at the office.	3.00	0.913	3
8	Weak presence of a specialized committee overseeing the implementation of data governance at the university.	2.69	1.109	4
3	Weak cooperation of the university's colleges with the Office of Data Management.	3.08	0.641	5
7	Weak technical review of office systems and the development of its policies in alignment with the NDMO’s standards.	2.69	0.630	6
2	Insufficient financial resources that restrict the improvement of technological infrastructure at the Office of Data Management.	3.62	1.446	7
6	Lack of policies that enhance the accuracy of data circulated within the university's management environment.	2.85	0.689	8
4	Weak conviction among university leaders regarding data governance processes.	3.08	0.862	9
	Overall average	**3.05**	**0.488**	

It is evident from Table (5) that the study sample participants agree that there are challenges facing data governance at the Data Management Office at King Saud University at a moderate level, with an average of (3.05 out of 5.00), which falls within the third category of the five-point scale (from 2.61 to 3.40), indicating the "Moderate" option in the study tool.

The results show that the study sample participants affirm that there are two major challenges facing data governance at the Data Management Office at King Saud University with a high degree, represented in statements No. (2 and 7), which are ranked in descending order of agreement by the study sample participants as follows:

1. Statement No. (2): "The lack of data standardization—sometimes—and its conflict in university management" came in the first position with a high degree of agreement, with an average of (4.15 out of 5).

The lack of data standardization represents a significant barrier to governance processes, as it causes inconsistency, which may lead to difficulties in analyzing and understanding the data correctly. Additionally, accessing information becomes challenging when the data is fragmented and non-standardized, requiring a lot of time and effort to find the necessary data, which affects work efficiency and timely decision-making. The lack of standardization and data conflict increases the likelihood of errors and incorrect considerations in the data, which can lead to a decline in data quality and reliability.

The researcher interprets this shortcoming in data standardization as a result of the university not adopting unified standards and procedures for data collection, storage, and organization, along with a weak definition of responsibilities and appropriate permissions for data access across various university departments.

2. Statement No. (7): "Lack of financial resources that restrict technological infrastructure improvement at the Data Management Office" came in second place with a high degree of agreement, with an average of (3.62 out of 5).

A lack of financial resources can limit storage and processing capabilities, as outdated or underdeveloped technological infrastructure may not effectively handle the growing volume of data. The difficulty of upgrading and updating infrastructure due to insufficient financial resources further complicates the situation. The technological infrastructure might not be compatible with modern technologies and security standards, making it difficult to implement improvements in data governance and enhance security and privacy. Financial resource shortages also impact training and employee development in data management and analysis, which can negatively affect data quality and understanding.

The researcher attributes the insufficient financial support for the Data Management Office to the university's failure to adopt a sustainable strategy for allocating financial resources to improve the technological infrastructure and update systems within the Data Management Office, as well as the lack of financial support for developing employees' data governance capabilities. Therefore, the university and other government organizations striving for effective data governance should overcome these challenges by adopting a sustainable strategy for financial resource allocation, focusing on priorities, and directing available resources to meet these needs while leveraging cost-effective solutions. Collaborations and partnerships also offer opportunities to gain technical support and additional financial resources.

In terms of challenges facing the Data Management Office, the results show that the study sample participants affirm five other challenges facing data governance at the Data Management Office at King Saud University but at a moderate degree, represented in statements No. (5, 9, 3, 8, 4), which are:

- "Weak collaboration between university colleges and the Data Management Office" with an average of (3.08 out of 5).

The absence of a clear collaboration framework makes it difficult to define roles, responsibilities, and shared processes between university colleges and the Data Management Office concerning data governance. Collaborative efforts between departments are supported by Zhang et al. (2022), who identify collaboration as one of the key activities in data management, as well as the nine success factors outlined by Khairi (2019) for implementing effective data governance.

This may lead to unclear common interests and goals, difficulty in coordination, and ineffective collaboration, which could result in duplicated efforts. The researcher explains this due to restrictions in data sharing between the university colleges and the Data Management Office. There may be rules or policies that restrict data sharing between

different departments or colleges, hindering cooperation and exchange with the Data Management Office. Overall, collaboration and communication between the university colleges and the Data Management Office should be enhanced by defining roles, responsibilities, and providing necessary training and awareness to ensure effective data governance.

- "Weak belief of university leadership in data governance processes" with an average of (3.08 out of 5).

If university leadership is not convinced of the importance of data governance, the priority given to the Data Management Office is likely to decrease, leading to a lack of follow-up, guidance, funding, and investment in data governance processes. This could be attributed to a lack of awareness and knowledge about the importance of data governance and its benefits among university leadership, as well as the absence of workshops, seminars, and awareness sessions for university leadership to introduce them to data governance concepts and the importance of its effective implementation.

- "Lack of training provided to employees on data management and governance at the office" with an average of (3.00 out of 5).

Training is essential for enhancing technical skills, as data governance requires specialized technical skills such as database management, data analysis, and information security. This aligns with the nine success factors identified by Khairi (2019), reflecting the best practices for implementing effective data governance. If employees do not receive the necessary training to develop these skills, they may be unable to implement data governance effectively or analyze data to understand risks and identify opportunities. Additionally, a lack of training on security and privacy could prevent employees from implementing data governance in secure ways that comply with applicable laws and regulations. Training is directly linked to leadership awareness and the availability of financial resources. Training costs are part of the investment that institutions must bear to enhance and develop their employees' capabilities in data management and governance.

- "Lack of policies that enhance the accuracy of data circulated within the university management environment" with an average of (2.85 out of 5).

Policies that enhance data accuracy clarify responsibilities and procedures for data collection, analysis, documentation, and updating. The researcher interprets this as the result of a lack of serious steps to enhance data accuracy in the university management environment, starting with raising awareness and knowledge of best practices for data management and ensuring its accuracy, along with auditing and reviewing data-sharing policies. The failure to conduct periodic audits to verify the application of policies and procedures related to data accuracy across all university departments contributes to this issue. This is also supported by Hanapiah et al. (2021), who emphasize the need for higher education institutions to develop a functional team to carry out periodic monitoring and audits to verify the accuracy and quality of data according to standards.

- "Weak presence of a specialized committee overseeing the implementation of data governance at the university" with an average of (2.69 out of 5).

The presence of a specialized data governance committee plays a vital role in improving data quality and ensuring its accuracy. It provides strategic guidance and a shared vision while enhancing coordination and collaboration between different departments within the Data Management Office. The weakness of this committee's role could lead to confusion and lack of coordination in data governance efforts, reducing work efficiency and its ability to achieve common goals. Despite the existence of specialized executive committees for data management and governance at the Data Management Office, as confirmed by the study sample in the first dimension, it appears that the role of these committees does not reach high levels to fulfill their vital role in guiding efforts and providing the necessary guidance and standards to improve data quality and ensure its accuracy. The researcher attributes the weakness of specialized committees to several reasons, including weak management and strategic vision at the university. If senior management is not committed to enhancing data governance and supporting the committee's role, it may be difficult for the committee to have a meaningful and positive impact. Furthermore, if the committee lacks the necessary authority and delegation to make decisions and implement recommendations, it may struggle to achieve effective impact.

Summary of Study Results

1. The reality of applying the strategic dimension in data governance at the Data Management Office at King Saud University is highly aligned with the standards of the NDMO in all three of its controls (strategic plan, policies and guidelines, and awareness). This is reflected in the participants' confirmation of the first axis elements, which had an average of (4.51 out of 5.00), indicating the "Very High" option in the study tool.
2. The reality of applying the executive dimension in data governance at the Data Management Office at King Saud University is highly aligned with the standards of the NDMO in all four of its controls (auditing and compliance, data governance, performance management, and documentation). This is reflected in the participants' confirmation of the second axis elements, which had an average of (3.69 out of 5.00), indicating the "High" option in the study tool.
3. "Data non-unification in some cases and conflicts within the university management," along with "limited financial resources that hinder the improvement of the technological infrastructure at the Data Management Office," represent the most significant challenges facing data governance at the Data Management Office at King Saud University. This is reflected in the participants' confirmation of these two elements in the third axis, with averages of (4.15 out of 5) and (3.62 out of 5), respectively, indicating the "High" option in the study tool.

CONCLUSION

This study evaluated the implementation of data governance at the Data Management Office of King Saud University, based on the standards set by the National Data Management Office (NDMO). The findings indicate a strong alignment with strategic governance principles, with the highest compliance observed in the strategic dimension, followed by the executive dimension. However, challenges persist, particularly in the standardization of data across university departments and financial limitations affecting technological infrastructure enhancements.

The study highlights the necessity for a comprehensive framework to foster collaboration between university colleges and the Data Management Office, ensuring seamless data governance integration. Additionally, securing financial support for technological improvements and workforce training is essential to enhance data governance effectiveness. Strengthening regulatory oversight, refining data policies, and promoting awareness among university leadership and staff will further facilitate the transition toward a more robust governance structure.

Future research may explore comparative analyses with other higher education institutions to identify best practices and strategies for optimizing data governance implementation. Moreover, longitudinal studies assessing the long-term impact of governance frameworks on institutional performance and decision-making would provide valuable insights for academia and policymakers alike.

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