Forging the Future: Pioneering Approaches in Business, Management and Economics Engineering to Overcome Emerging Global Challenges - 2024

https://doi.org/10.24867/FUTURE-BME-2024-022 Original scientific paper

ENTERPRISE DATA MANAGEMENT: DESIGN OF A CONCEPTUAL MODEL FOR EFFECTIVE DATA GOVERNANCE FRAMEWORK IN LARGE ORGANIZATIONS

Chadwick Thompson Okoye[1]

Abstract

Managing large volumes of data is crucial for the success of large organizations in the digital age. This research proposal aims to evaluate the impact of data governance frameworks on data quality and strategic business outcomes. We want to identify the critical factors contributing to the successful implementation of data governance and understand stakeholder perceptions of its benefits, challenges, and barriers. To achieve this, our study will employ a quantitative approach. We will collect data through surveys targeting key stakeholders such as data managers, IT professionals, and business analysts. These surveys will gather insights into the use and impact of data governance frameworks, focusing on data quality, compliance, and strategic business outcomes. By analyzing this data, we aim to uncover meaningful trends and relationships that can inform better data management practices. Our findings will provide valuable insights for large organizations, helping them enhance their data management practices, ensure regulatory compliance, and achieve better business outcomes. By addressing the challenges and leveraging new technologies, this research aims to offer practical, actionable recommendations for improving data governance in today's complex data environment.

Key words*: Data Governance, Data Quality, Strategic Business Outcomes, Large Organizations, Stakeholder Perceptions, Enterprise Data Management, Data Security.*

Introduction

In the current digital era, the production of data is exceptional, underscoring the critical role of Enterprise Data Management in organizational success. This comprehensive approach involves the effective management of data assets

[1] Swiss School of Business and Management, chadwick_okoyeus@yahoo.com

throughout their lifecycle in an organization, encompassing collection, storage, organization, integration, and distribution of data from diverse sources, including internal systems, external partners, and Internet of Things (IoT) devices.

Enterprise Data Management is crucial in converting unprocessed data into actionable insights that inform critical business decisions. Efficient data management enables organizations to streamline operations, stimulate innovation, and gain a competitive advantage. It offers valuable benefits such as heightened data accuracy, uniformity, and dependability, vital for informed decision-making and attaining strategic business goals (Frank et al., 2024).

Data governance is critical in Enterprise Data Management, as it entails establishing guidelines, protocols, and positions to guarantee accurate, consistent, and secure data management. Organizations utilize data governance frameworks to uphold data quality by outlining data standards, ownership, and stewardship responsibilities. They also ensure adherence to regulatory mandates, such as the General Data Protection Regulation (GDPR) and the Health Insurance Portability and Accountability Act (HIPAA), which enforce stringent data handling and protection guidelines (Silva and Soto, 2022).

Data governance is not just about managing data, but about fostering a culture of accountability and transparency within organizations. It ensures that data is not only accessible and reliable but also protected, mitigating the risks of data breaches and unauthorized access.

The evolving landscape of data management introduces new complexities and opportunities. Emerging technologies such as big data analytics, artificial intelligence (AI), machine learning, and blockchain are transforming how organizations handle and utilize data. These technologies enable organizations to quickly process large volumes of data and derive actionable insights, enhancing decision-making capabilities (Udeh et al., 2024).

It is important to remember that effectively using new technologies with our data can be a complex task. We need a plan that can adapt to new technologies and handle all the complicated parts of modern data, while also ensuring data integrity, safety, and compliance with regulations. In summary, this research underscores the importance of robust data management strategies for large companies, which leverage new technologies to improve data management, tackle the challenges, and capitalize on the opportunities presented by the evolving data landscape.

1.2 Motivation for the Study

Managing data in large organizations is crucial in today's digital era. Effectively dealing with data comes with unique challenges due to its sheer volume and the rapid evolution of new technologies like AI, machine learning, and blockchain. Large organizations need help creating robust data governance frameworks to ensure data quality, security, and regulatory compliance. With proper governance, organizations can prevent data breaches, inaccuracies, and legal issues, thus avoiding substantial fines and damage to customer trust.

Our research aims to tackle these challenges by creating a conceptual model tailored for large organizations, enabling them to handle their data more effectively.

The potential benefits of this model, such as improved data management and operational efficiency, make this research a valuable investment.

Identifying the key factors contributing to successful data governance is another crucial aspect of our research. We greatly value stakeholders' perspectives in this process, as their insights will play a pivotal role in shaping the course of this research. This is a collaborative effort, and your input is essential.

1.3 Importance of Data Governance in Maintaining Data Quality and Compliance

Effective data governance is crucial for improving data quality in large organizations. It involves establishing policies, procedures, and standards to manage data and ensure its accuracy, completeness, and consistency. This is essential for making informed decisions and improving operational efficiency. Effective data governance provides a structured framework for managing data as a strategic asset, leading to improved data quality. A systematic approach to data governance can ensure the development of clear policies and procedures to enhance data quality and compliance with regulatory requirements (Khatri & Brown, 2010). Implementing robust data governance practices benefits organizations dealing with large volumes of data by helping them manage the complexity and variety of big data, ensuring better data quality, and supporting effective decision-making (Malik, 2013). A detailed nine-step data governance framework helps organizations improve data quality by treating data as a strategic asset. This approach includes setting priorities, connecting teams, establishing policies, and implementing ongoing data quality monitoring (Huff & Lee, 2020). Data governance positively impacts enterprises' performance and compliance by clearly defining responsibilities and processes for data management, enhancing data quality and operational efficiency (Martijn et al., 2015). Understanding and addressing the data quality needs of data consumers, rather than solely relying on technical metrics, can significantly improve data quality and its usability within organizations (Wang & Strong, 1996). Effective data governance is essential for maintaining high data quality in large organizations. Establishing comprehensive policies, procedures, and frameworks can ensure data accuracy, completeness, and consistency, enhancing overall performance and decision-making capabilities.

Data governance is essential for organizations to comply with rules and regulations. It involves creating and enforcing policies for managing data. This is crucial for maintaining data accuracy, integrity, and security. It helps organizations avoid penalties and feel secure.

For example, data governance is crucial for meeting rules in the financial sector. Financial institutions must control data entry, test data for accuracy, and ensure data integrity. These practices are required by regulations like Sarbanes-Oxley (SOX) and Basel II, which aim to prevent fraud and financial misstatements (Burniston, 2015).

High-quality data is essential for following rules. Poor data can lead to fines and reputational damage. Effective data governance ensures that an organization's

data is accurate and reliable, essential for compliance with various regulations (Mahanti, 2022).

Implementing comprehensive data governance frameworks also helps organizations follow data privacy rules like the General Data Protection Regulation (GDPR). These frameworks typically include policies for data protection, risk management, and regular audits to ensure continuous compliance. These structured approaches help organizations manage data privacy effectively while meeting regulatory demands (Kabanov, 2016).

Integrating compliance activities with strategic governance practices can significantly improve business performance. Organizations that align compliance-related activities with their strategic goals can better manage risks and improve accountability. This integration creates a culture of compliance that meets regulatory requirements and strengthens overall business strategy, highlighting the potential for growth and success through effective data governance (Héroux & Roussy, 2020).

The evolving landscape of corporate governance underscores the increasing importance of compliance functions. Traditionally handled at the board level, compliance now involves structured frameworks imposed by regulatory bodies to ensure that firms adhere to legal, regulatory, and social norms. This shift underscores firms' need to adapt their behavior to these norms, ensuring robust corporate governance (Griffith, 2016).

In summary, data governance is essential for ensuring compliance with rules and regulations. It helps maintain high data quality, implement solid frameworks, and integrate compliance activities with business strategies. Effective data governance helps organizations avoid legal and financial repercussions and enhances their performance and **accountability.**

2 Methods

A quantitative methodology will be employed to achieve this research objective. This approach will involve collecting and analyzing numerical data to evaluate the impact of data governance frameworks on data quality and business outcomes in bigger organizations. Surveys will be distributed to data managers and IT professionals to collect stakeholders' perceptions of data governance's benefits, challenges, and barriers.

Statistical methods will be used to assess the relationship between data governance implementation and improvements in data quality. Additionally, factor analysis will help identify and prioritize the key elements contributing to successful frameworks. Using quantitative data, the study aims to provide objective insights and support the development of a tailored conceptual model for effective data governance in complex organizational environments. This methodology ensures the findings are grounded in real-world data, making them applicable and valuable for practitioners.

2.1 Data Collection Strategy

We plan to gather data for this research using a structured survey method. The survey will target key stakeholders in large organizations, such as data managers, IT professionals, and business analysts. We will ask questions about the use and impact of data governance frameworks, focusing on data quality, compliance, and strategic business outcomes.

We will distribute the survey online to reach a wide range of perspectives. It will consist of a mix of multiple-choice and open-ended questions to collect both quantitative and qualitative data. This will allow us to gather specific metrics and allow participants to share their experiences and insights in their own words.

To ensure a high response rate, we will send reminders and offer a summary of the research findings as an incentive. Once collected, the data will be analyzed using statistical methods to identify trends and critical factors contributing to successful data governance. This approach will provide a solid basis for understanding how data governance impacts large organizations.

2.2 Statistical Analysis

We will start by analyzing the data collected on data governance frameworks in large organizations. We will calculate critical metrics such as means, medians, and standard deviations for data quality, compliance rates, and strategic business outcomes to summarize the data and reveal trends and patterns. Additionally, we will use frequency distributions and percentages to understand the prevalence of certain data governance practices and their perceived effectiveness.

In our regression analysis, we will use multiple regression models to examine the relationship between the implementation of data governance frameworks (independent variable) and outcomes like data quality and compliance (dependent variables). This will help us identify the strength and direction of these relationships. We will also incorporate control variables such as organization size and industry type to ensure robust results and account for potential confounding factors. The regression coefficients and R-squared values will be reported to show the model's explanatory power.

Using this combined approach, we aim to assess the impact of data governance on organizational performance. We expect to gain practical insights into which practices contribute most to data quality and compliance, ultimately enhancing our understanding of data governance and providing actionable insights to improve organizational performance.

3. Discussion

The research we have proposed aims to explore the impact and effectiveness of data governance frameworks in large organizations. Our goal is to understand how these frameworks can improve data quality and support better business outcomes. By surveying data managers, IT professionals, and other stakeholders, we

plan to gather insights into the current state of data governance practices and their perceived benefits, challenges, and barriers.

Our approach involves using quantitative methods to analyze the data we collect. This includes statistical analysis and factor analysis to identify key elements that contribute to successful data governance. By examining the relationships between data governance practices, data quality, and business performance, we hope to uncover practical insights that organizations can use to enhance their data management efforts.

Evaluate the Impact of Data Governance: We will analyze how the implementation of data governance frameworks affects data quality and strategic business outcomes. This involves collecting data through surveys and using statistical methods to assess these relationships.

Identify Key Success Factors: Through questionnaires and factor analysis, we aim to pinpoint the critical factors that contribute to the successful implementation of data governance frameworks. This will help organizations prioritize their efforts and resources to achieve better results.

Understand Stakeholder Perceptions: By gathering and analyzing stakeholders' views on the benefits, challenges, and barriers of data governance, we can develop strategies to address common concerns and create a supportive environment for effective data management.

Throughout our research, we will ensure ethical standards by obtaining informed consent from participants, maintaining their privacy and confidentiality, and being transparent about our research objectives and methods. This approach will help us build trust with participants and ensure the reliability of our findings.

4. Conclusions

In today's digital era, large organizations must implement effective data governance to manage vast amounts of data efficiently and securely. Our proposed research aims to explore the impact of data governance frameworks on data quality and strategic business outcomes to provide valuable insights that can enhance data management practices in complex organizational environments.

In conclusion, our research strives to offer a comprehensive understanding of how data governance frameworks affect large organizations. By examining the relationship between data governance and quality, identifying critical success factors, and understanding stakeholder perceptions, we aim to provide insights that can significantly improve data management practices.

The results of this research will be based on real-world data and will have direct applicability to practitioners in the field. By addressing the challenges and leveraging the benefits of data governance, organizations can enhance their data quality, maintain compliance with regulations, and achieve better strategic business outcomes. Ultimately, this research will contribute to the development of more effective and efficient data governance frameworks that cater to the complex needs of today's data-driven world.

REFERENCES

[1] AbuHalimeh, A. (2022). Improving data quality in clinical research informatics tools. *Frontiers in Big Data, 5*, 871897. https://doi.org/10.3389/fdata.2022.871897

[2] Algemili, U. A. (2016). Outstanding challenges in recent open government data initiatives. *International Journal of e-Education, e-Business, e-Management and e-Learning*, *6*(2), 91–102. https://doi.org/10.17706/ijeeee.2016.6.2.91-102

[3] Al-Ruithe, M., Benkhelifa, E., & Hameed, K. (2016). A conceptual framework for designing data governance for cloud computing. *Procedia Computer Science*, *94*, 160–167. https://doi.org/10.1016/j.procs.2016.08.025

[4] Ashahril, S. M., Isa, A. M., & Anwar, N. (2022, December). Challenges in open government data implementation: A systematic literature review. In *2022 International Conference on Artificial Intelligence of Things* (ICAIoT) (pp. 1–6). IEEE. https://doi.org/10.1109/ICAIoT57170.2022.10121839

[5] Burniston, T. R. (2015). Data Governance: A regulatory and Business Imperative. American Bankers Association. ABA Banking Journal, 107(4), 56.

[6] Fan, W., Geerts, F., Ma, S., Tang, N., & Yu, W. (2013). Data quality problems beyond consistency and deduplication. In *Search of Elegance in the Theory and Practice of Computation: Essays Dedicated to Peter Buneman*, 237–249. https://doi.org/10.1007/978-3-642-41660-6_12

[7] Frank, E., Oluwaseyi, J., & Olaoye, G. (2024). *Introduction to Business Intelligence (BI) and data extraction*. https://www.researchgate.net/profile/Edwin-Frank/publication/379652742_Introduction_to_Business_Intelligence_BI_and_data_extraction/links/6612f0a42034097c54ff13cd/Introduction-to-Business-Intelligence-BI-and-data-extraction.pdf

[8] Griffith, S. J. (2015). Corporate governance in an era of compliance. *Wm. & Mary L. Rev.*, *57*, 2075.

[9] Héroux, S., & Roussy, M. (2020). Three cases of compliance with governance regulation: an organizational learning perspective. *Journal of Management and Governance*, *24*(2), 449–479. https://doi.org/10.1007/s10997-019-09468-y

[10] Huff, E., & Lee, J. (2020, July). Data as a strategic asset: Improving results through a systematic data governance framework. In *SPE Latin America and Caribbean Petroleum Engineering Conference* (p. D031S013R001). SPE. https://doi.org/10.2118/198950-MS

[11] Kabanov, I. (2016, December). Effective frameworks for delivering compliance with personal data privacy regulatory requirements. In *2016 14th Annual Conference on Privacy, Security and Trust (PST)* (pp. 551–554). IEEE. https://doi.org/10.1109/PST.2016.7907015

[12] Khatri, V., & Brown, C. V. (2010). Designing data governance. *Communications of the ACM*, *53*(1), 148–152. https://doi.org/10.1145/1629175.1629210

[13] Layton, R., & Elaluf-Calderwood, S. (2019, November). A social economic analysis of the impact of GDPR on security and privacy practices. In *2019 12th CMI Conference on Cybersecurity and Privacy (CMI)* (pp. 1–6). IEEE. https://doi.org/10.1109/CMI48017.2019.8962288

[14] Mahanti, R. (2022). Compliance, Data, Quality, And Governance. *The EDP Audit, Control, and Security Newsletter*, *66*(2), 20–25. https://doi.org/10.1080/07366981.2022.2026575

[15] Malik, P. (2013). Governing big data: principles and practices*. IBM Journal of Research and Development*, *57*(3/4), 1–13. https://doi.org/10.1147/JRD.2013.2241359

[16] Martijn, N., Hulstijn, J., De Bruijne, M., & Tan, Y. H. (2015). Determining the effects of data governance on the performance and compliance of enterprises in the logistics and retail sector. *In Open and Big Data Management and Innovation: 14th IFIP WG 6.11 Conference on e-Business, e-Services, and e-Society*, I3E 2015, Delft, The Netherlands, October 13–15, 2015, Proceedings 14 (pp. 454–466). Springer International Publishing. https://doi.org/10.1007/978-3-319-25013-7_37

[17] Mathur, S., Sankaran, S., MacAulay, S., & Tsang, I. (2022). Minimum Viable Governance for Data Science Initiatives A Transport for NSW Case Study. *Value co-creation in the project society*, 65–76. https://hdl.handle.net/10453/164627

[18] Mulgund, P., Mulgund, B. P., Sharman, R., & Singh, R. (2021). The implications of the California Consumer Privacy Act (CCPA) on healthcare organizations: Lessons learned from early compliance experiences. *Health Policy and Technology*, *10*(3), 100543. https://doi.org/10.1016/j.hlpt.2021.100543

[19] Price, W. N., Kaminski, M. E., Minssen, T., & Spector-Bagdady, K. (2019). Shadow health records meet new data privacy laws. *Science*, *363*(6426), 448–450. https://doi.org/10.1126/science.aav5133

[20] Servigne, S., Ubeda, T., Puricelli, A., & Laurini, R. (2000). A methodology for spatial consistency improvement of geographic databases. *GeoInformatica*, *4*(1), 7–34. https://doi.org/10.1023/A:1009824308542

[21] Silva, I., & Soto, M. (2022). Privacy-preserving data sharing in healthcare: an in-depth analysis of big data solutions and regulatory compliance. *International Journal of Applied Health Care Analytics*, *7*(1), 14–23. Retrieved from https://norislab.com/index.php/IJAHA/article/view/39

[22] Shiloach, M., Frencher Jr, S. K., Steeger, J. E., Rowell, K. S., Bartzokis, K., Tomeh, M. G.,... & Hall, B. L. (2010). Toward robust information: data quality and inter-rater reliability in the American College of Surgeons National Surgical Quality Improvement Program. *Journal of the American College of Surgeons*, *210*(1), 6–16. https://doi.org/10.1016/j.jamcollsurg.2009.09.031

[23] Udeh, C. A., Orieno, O. H., Daraojimba, O. D., Ndubuisi, N. L., & Oriekhoe, O. I. (2024). Big data analytics: a review of its transformative role in modern business intelligence. *Computer Science & IT Research Journal*, *5*(1), 219–236. https://doi.org/10.51594/csitrj.v5i1.718

[24] Voss, W.G., (2021). *The CCPA and the GDPR Are Not the Same: Why You Should Understand Both*. https://ssrn.com/abstract=3769825
[25] Wang, R. Y., & Strong, D. M. (1996). Beyond accuracy: What data quality means to data consumers. *Journal of management information systems*, *12*(4), 5–33. https://doi.org/10.1080/07421222.1996.11518099