

Exploration of Data Governance Frameworks, Roles, and Metrics for Success

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ABSTRACT

This paper discusses the evolution and significance of data governance, emphasizing its essential role in managing data quality, integrity, and security. It presents a comprehensive framework covering vision, strategy, governance structure, policies, and the data management process. Roles within a governance committee, compliance considerations, and the application of data governance in the travel industry are explored. The paper proposes metrics for tracking successful implementation, including compliance audits and evaluations of fair and ethical data exchange and privacy practices. Overall, it provides valuable insights into establishing and assessing effective data governance frameworks in the contemporary business landscape.

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Introduction

Data has become as essential as oil in the 21st century. History of Data governance started in the 1960s until 80s where organizations utilized computers to automate the manual data processing tasks. In the 90s organizations started consolidating the data into spreadsheets. Due to the internet revolution in the early 20s, organizations started generating huge amounts of data. Due to this, countries started regulating the usage of data through multiple regulations such as Sarbanes-Oxley act which further enhanced GDPR & CCPA. This cautioned organizations to create a governance framework in order to better overall management of the data. Data governance helps organizations in making sure the data available is quality, quick to retrieve and securable. Increase in technologies such as Big Data, Cloud computing etc. further strengthened the data governance rules.

Significance of Having a Data Governance Framework?

Data governance framework is essential to an organization explores a case study on data governance's role in the success of a data science project predicting highway maintenance needs, revealing that clearly defined data ownership, quality monitoring, and compliance management are critical factors for successful data science outcomes [1]. The term "governance" remains ambiguous, drawing from political science and risk scholarship, emphasizing a shift from 'command-and-control' by the State to involve a multitude of actors in managing societies; it encompasses a descriptive and normative scope, guiding rule-making and promoting wider participation, with data governance analyzed through a social science-informed perspective, considering data infrastructure as a complex socio-technical assemblage with diverse actors and interests [2]. The authors in conduct a structured

literature review, presenting a conceptual framework for data governance comprising six dimensions: governance mechanisms, organizational scope, data scope, domain scope, antecedents, and consequences of data governance [3].

Vision and Strategy is essential for an efficient establishment of a data governance framework. This should align with the organizational strategy and objectives. Vision and strategy for a data governance setup is mainly centered around making sure the data quality, integrity and safety is ensured. This also establishes how the privacy and security controls are set up and making sure they are in line with compliance and regulations of the industry. Organizations should also be clear in defining the end-to-end roles, establishing processes and procedures throughout the lifecycle. Understanding the business needs, organizational strategy is key to setting up the right vision and strategy. Governance Structure is essential in shaping up how the teams interact to implement the defined vision and strategy. This paper also talks about various roles and teams that collaborate within the organization.

Establishing policies and procedures is useful to ensure the execution of data governance framework across the organization in uniform. It is important to create a standard policy for the overall data management process as well as for objectives such as metadata management, data quality management and also for data security and privacy under data management process. Data quality is crucial for IT initiatives like data mining and business intelligence. It involves dimensions like accuracy, timeliness, and completeness. Having poor quality data is linked to increased costs and complexity in developing systems, emphasizing the importance of creating a 'single truth' of data; effective master data management, supported by a data governance program, addresses data quality issues, and ensures data is managed as an enterprise asset [4]. In addition to policies, it is also useful

to create standard procedures within each policy for efficient execution of the policies.

The Data Management Process is another pillar within the framework. Metadata Management, Data Quality Management and Data Security and Privacy are some of the key initiatives within the process. Data Management is useful in establishing controls within each initiative and ensuring data is readable, quality, and secure enough for each role.

Roles in a Data Governance Committee

Data governance committee and coordinator: Establishing a governance committee is required to align with continuous updates on the program. Members of this committee include various roles within the organization who are responsible for the implementation of Data governance vision and strategy.

A. Data Governance Coordinator

The data governance coordinator is responsible for coordinating with all the members and keeping a log of all the decisions made through the committee.

B. Data Governance Officer

The Data Governance Officer is responsible for the execution of the program. The DGO is responsible for leading the committee meetings and providing leadership for executing the objectives.

C. Data Owners

Data Owners are the owners of the data sets and are helpful in assisting for data management, access, and usage policies. They are responsible for creating the governance policies and ensure that data supports strategic initiatives. Data Owners are broadly responsible to fit their data within data governance standards whereas data stewards are responsible for day-to-day management of data.

D. Chief Data Officer

The Chief Data Officer is the senior executive responsible for overall vision and strategy of data governance. This generally aligns with the organization's overall vision and strategy.

E. Compliance Officer

The Compliance Officer is responsible for making sure the data governance framework aligns with the legal and compliance requirements designed according to the regional standards. They are constantly in touch with the legal and compliance representatives about relevant laws and regulations.

F. Data Stewards

Data Stewards are representatives from respective business processes. They are the custodians of the data and are responsible for day-to-day maintenance of the data. These stewards have domain specific knowledge and are responsible for ensuring the data is aligned with data governance policies and procedures.

In addition to these major contributors, there are other roles that work regularly with the team. Some of these include business analysts who are aware of the business requirements and are responsible for making sure they are meeting the standards of data governance procedures, data architects who are responsible to make sure data governance is in standard with the architecture of the organization.

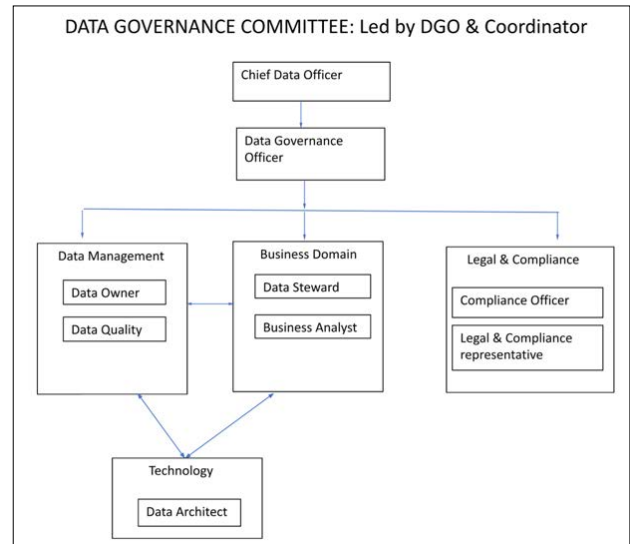


Figure 1: Roles in a Data Governance Committee

Data governance in the Travel Industry

In their research on digital privacy and data security in tourism and hospitality in, the authors highlight the significance of data privacy in marketing, particularly focusing on consumer concerns and factors influencing their willingness to disclose information [5]. The paper emphasizes the subjective nature of privacy, especially in the digital domain. Despite the importance of personalization in tourism and hospitality, the collection of extensive personal data raises critical issues of privacy and security.

The authors highlight the need for data governance to navigate the personalization-privacy paradox, emphasizing the strategic and responsible use of consumer data by organizations in the face of evolving digital technologies and increasing awareness among travelers. The framework emphasizes the crucial importance of compliance with data privacy and protection laws, especially in the collection, storage, analysis, and use of travelers' personal data. While compliance is vital for meeting regulatory obligations and ensuring online safety, the proposed framework goes beyond a mere compliance-based approach. It introduces an ethical-based perspective aligned with THOs' strategic objectives, aiming to conduct data processing and utilization in a fair, transparent, responsible, and ethical manner. The framework advocates for transparency in data collection methods, specifying the purposes of data usage, controlling access to data, and providing clear communication to travelers about the benefits of disclosing their data. The authors discuss the importance for Tourism and Hospitality Organizations (THOs) to recognize various key elements within a comprehensive approach to data governance, extending beyond legal and compliance matters. The proposed framework advocates for an ethical perspective, addressing individual ethical issues related to travelers' digital privacy and ethics, emphasizing confidentiality, transparency, equity of access, and informed use of information.

Tracking the Successful Implementation of Data governance in the Travel Industry

Implementing a robust data governance framework provides a foundation for responsible and secure data management. It is crucial for implementing data quality, security, and compliance. At the same time, it is important to scrutinize the framework's effectiveness, ensuring that the requirements for data quality, security, and compliance are not only met but also evaluating the

overall efficacy of the implemented framework. With respect to the framework described in, below are the metrics that can assist with tracking the successful implementation of data governance framework [5].

A. Compliance

The Data Governance team can conduct regular audits to assess internal processes, policies, and practices to identify areas of non-compliance. Engaging third-party experts or auditors can help in evaluating the organization's compliance status. It is imperative for organizations to stay informed about updates and changes in data protection laws and adjust policies accordingly to maintain compliance. Secondly, as it is crucial for organizations to identify data breaches swiftly, response times within which the organization commits to notifying consumers after discovering a data breach need to be established. Conducting simulated data breach scenarios to assess the organization's ability can enable the organization to respond within the defined timeframe.

B. Fair and Ethical Exchange of Data and Information

Evaluating the ethical aspects of data governance in the travel industry involves ensuring openness and clarity in communicating how data is collected, stored, and used, fostering trust between the organization and travelers. The Data Governance teams can evaluate the clarity and accessibility of information provided to travelers regarding data practices. This also involves regularly updating and enhancing privacy policies to reflect changes in data handling practices and ensure they are easily understandable. It is also crucial to evaluate the fairness and ethicality of data exchanges with various stakeholders, ensuring that travelers' data is shared responsibly and with consideration for their interests. This can be done by developing and communicating clear policies governing the exchange of traveler data with external parties, emphasizing ethical considerations.

C. Privacy

Organizations can empower travelers by providing them with the ability to access their stored data, enhancing transparency and control. Organizations can track the requests from consumers seeking access to their stored data, measure the time taken to fulfill data access requests to ensure timely response, and provide clear communication to consumers about the data they can access and the purpose of such access. Organizations also need to respect travelers' privacy preferences by allowing them to request the deletion of their stored data. To aim for a prompt response to customers' requests, organizations can benefit from measuring the time taken to process and complete data deletion requests. At the same time, implementing secure verification processes can ensure that the deletion requests are legitimate. Lastly, clearly communicating the process and implications of data deletion to consumers can ensure transparency.

Conclusion

Essential for organizations, a data governance framework aligns with business strategies, ensuring data quality, integrity, and security. The multifaceted approach involves vision and strategy, governance structure, policies and procedures, and the data management process. Roles within a data governance committee, including the coordinator, officer, owners, Chief Data Officer, compliance officer, and stewards, play crucial roles. In the travel industry, data governance is pivotal to address the personalization-privacy paradox, emphasizing ethical and transparent use of consumer data. Successful implementation metrics include compliance audits, fair and ethical data exchange evaluations, and

privacy assessments, tracking aspects like response times to data breaches and data access/deletion requests, ensuring transparency and respect for travelers' privacy preferences.

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