



# From data management to data transformation

Data management as a driver of transformation in Saudi Arabia

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# Table of contents



## **03 Introduction**

## **04 Data as one of the building blocks of Vision 2030**

- Data as competitive advantage
- Data management in practice
- Value realization from data
- The road ahead

## **07 Data management**

- Data management defined
- Data governance within data management strategies
- Data management principles
- The opportunities of good data management

## **10 The data management journey**

- Regulations and ecosystem
- Foundations for a data management strategy
- Setting up a strategy
- Instilling a data culture
- Preparing your people

## **14 A joint approach to supporting your data journey**

## **15 Contacts**

# Introduction

The prevalence and importance of data is hard to underestimate. It is big in terms of business, the Saudi Data and Artificial Intelligence Authority (SDAIA) estimates the value of Saudi Arabia's data and AI economy to be SAR15 to 20 billion.<sup>1</sup> Demonstrating a commitment to investing in data management, the Saudi Ministry of Communications and Information Technology (MCIT) launched an US\$18 billion plan to build a network of data centers across the Kingdom in July 2021.<sup>2</sup>

There is a vast opportunity for data analytics to be used to fuel the digital economy and to power Vision 2030. We know that our data has the potential to illuminate the answers to long-standing questions but without a data strategy in place, information can seem

inaccessible, disorganized and even overwhelming. Good data management is thus the bedrock that will allow us to gain value and competitive advantage from data, and with new regulations from the National Data Management Office (NDMO), the regulatory arm of SDAIA, implemented, now is the time to act.

These new regulations will provide a structure and environment in which individual organizations can build robust data management strategies. However, regulations alone will not fulfill Vision 2030's ambitious goals around data. It is up to individual organizations to develop their own data management SDAIA.

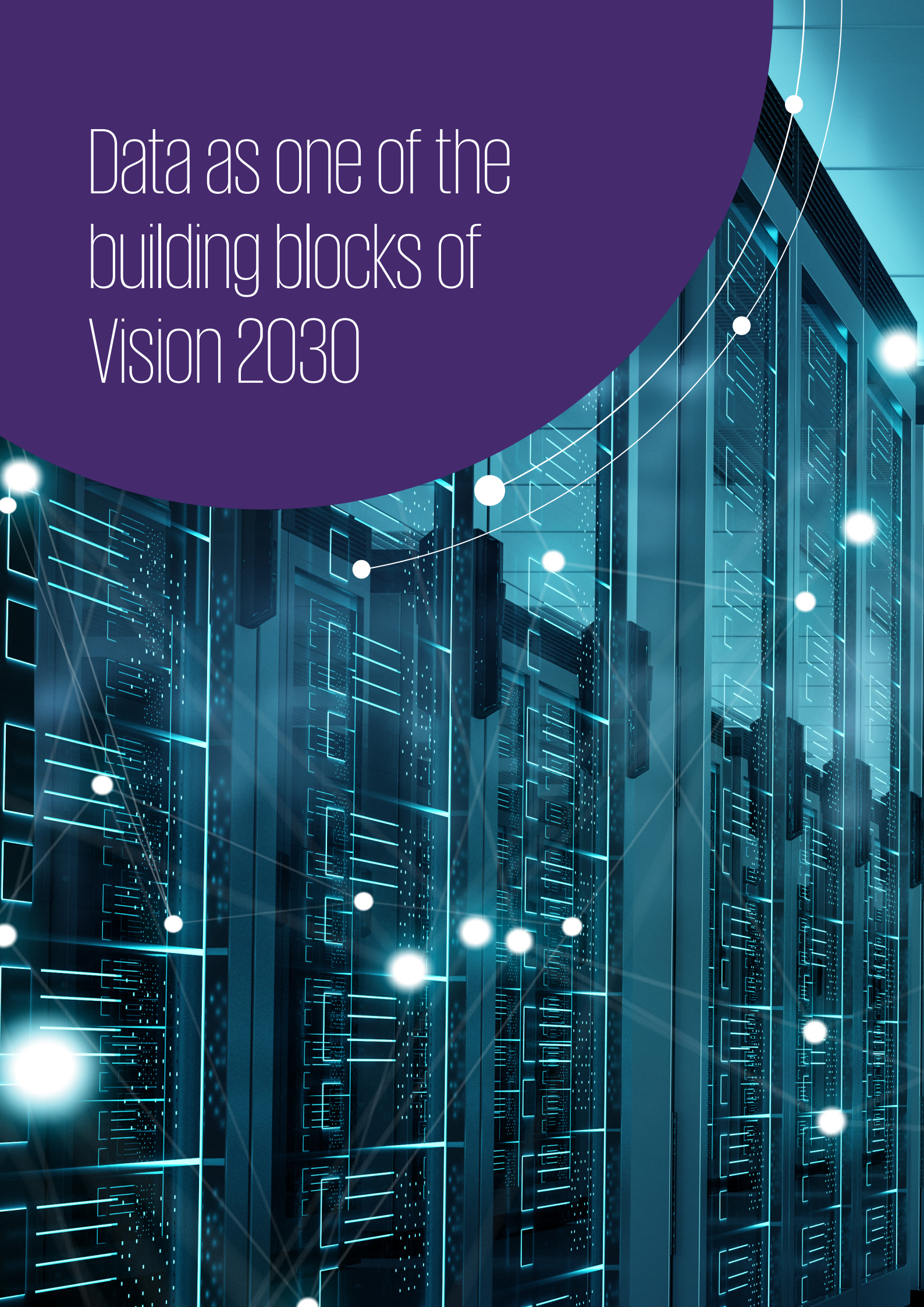


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<sup>1</sup> <https://www.arabnews.com/node/1637336/saudi-arabia>

<sup>2</sup> <https://www.arabnews.com/node/1889796/business-economy>

# Data as one of the building blocks of Vision 2030



### Data as competitive advantage

Data is now a major driver of business value. And, if that data can be kept secure, accurate and available for analysis it can offer competitive advantage. Good data management enables organizations to use, share, and in effect, democratize, their data in order to glean maximum value from it and in doing so, gain competitive edge. But to get to this stage, the right foundations need to be in place so that data is relevant, accessible, and trustworthy.

As the volume of data that businesses generate continues to increase, it is even more crucial to have processes in place to manage structured, semi-structured and unstructured data that accrues over time. But many are not at this stage yet and fragmented data or fragmented architecture are holding businesses back from yielding the results they expect from data.

As formulated by Andrei Agiu and Julian Write in an article for the Harvard Business Review, customer data can help build competitive defenses if it offers high and lasting value, is proprietary, leads to improvements that can't be easily imitated, or generates insights that can be quickly incorporated.<sup>3</sup>

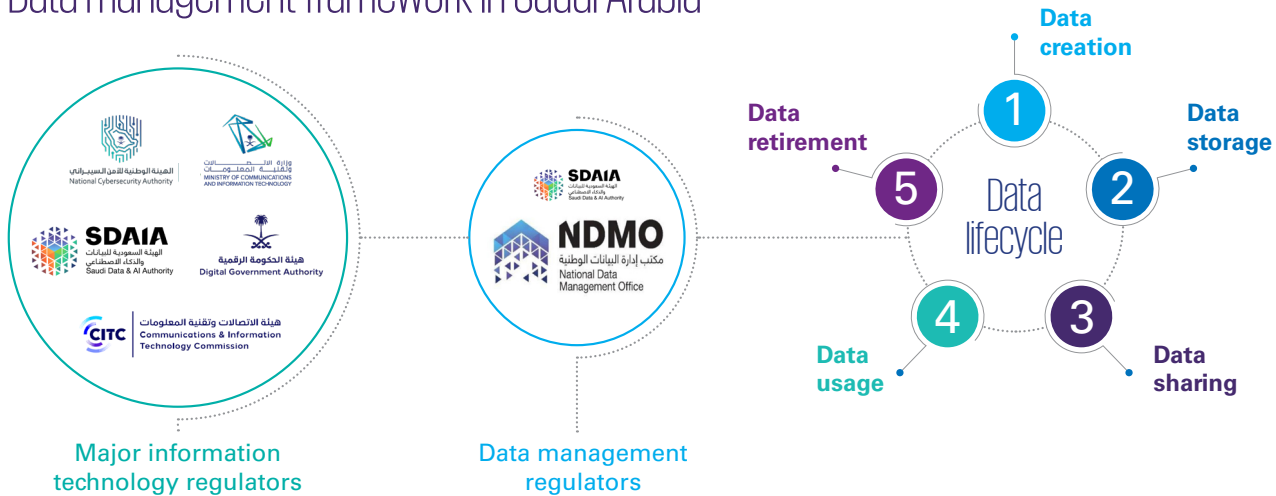
### Data management in practice

When data is accurate and trustworthy, great achievements can be made. The Tawakkalna app is a shining example of what can be achieved through joined-up data management. Tawakkalna uses centralized collection and analysis of data and enabled the Kingdom to move quickly in response to the global Covid-19 pandemic.

**US\$18 billion**  
Investment by MCIT in a network of data centers across Saudi Arabia, targeting 1,300 MW capacity by 2030<sup>4</sup>

Cross-entity data management has been key to Tawakkalna's success. Data is initially collected centrally by SDAIA before it analyzed by different government bodies, which then make rulings within their purview which are deployed via the mobile app.

### Data management framework in Saudi Arabia



<sup>3</sup> <https://hbr.org/2020/01/when-data-creates-competitive-advantage>  
<sup>4</sup> <https://www.arabnews.com/node/1889796/business-economy>

The app was introduced initially to facilitate the issuance of movement permits during the curfew period but as movement restrictions were eased, the Tawakkalna app integrated a wide range of data points and linked many government entities with new services. Tawakkalna now holds digital documents such as resident IDs, driver's licenses and vehicle registrations that users no longer need to carry physically.

NDMO has released Interim Regulations for data protection that address open data, data classification, data sharing, freedom of information, and personal data protection. These regulations feed into corporate data management strategy.<sup>5</sup>

### Value realization from data

Building the right data management foundation is essential to build trust and unlock the full potential of economic growth. To realize true value from data, organizations need to build the foundations first before travelling the road into analytics and AI, while being cognizant of NDMO and other regulations. While approaches will vary across industries and the public and private sectors, the foundations on which data management is built, remain the same.

### The road ahead

The World Economic Forum's publication 'The Importance of Human Centricity' showed that, given technological advances, our ability to store and process vast amounts of data and the evolution of artificial intelligence, business models increasingly see personal data as a raw material suitable for collection, refinement and application for broader use.<sup>6</sup>

However, the appetite to progress at speed making use of new technologies is tempered by the challenge of data volume, legacy systems, and fragmented data. Our experience found that there is a gap to be closed between organizations' vision for their own data strategies and the reality of wrangling their data into a useable form that can add strategic value to the business.

Putting in place the right data foundations now will enable organizations to make leaps forward in terms of technology adoption and value creation from data in the medium and longer term.

## Compliance with regulators' standards and policies



### Building foundation

Establishment of the **data management practice** based on policy and standards from **NDMO**



### Technology enabler

Establishment of modern **business intelligence and data warehouse** to support advanced **analytics capabilities**



### Value realization

Delivering high impact **advanced analytics** and **data science** use cases

<sup>5</sup> <https://sdaia.gov.sa/ndmo/Files/PoliciesEn.pdf>

<sup>6</sup> [http://www3.weforum.org/docs/WEF\\_On\\_the\\_Importance\\_of\\_Human\\_Centricity\\_2021.pdf](http://www3.weforum.org/docs/WEF_On_the_Importance_of_Human_Centricity_2021.pdf)

# Data management



### Data management defined

Data management is a set of disciplines and techniques to unlock the full potential of data and ensure it is treated as an asset.

Data management is the implementation of the standards and policies of the data governance framework. It can include taking measures to minimize risks, setting protocols for storing sensitive data and creating access rights for individuals.

### Data governance within data management strategies

Data governance has an important role to play in an organization's data gathering and management strategy.

Data governance is a set of rules that lay out an organization's strategy for using, processing and storing data. It defines data owners, data policy and metrics and helps an organization to stay compliant, minimize risk, improve security and set standards for data quality.

## NDMO data management and personal data protection framework





## Data management principles



All data must have an owner



All data must be described



Data quality must be defined and measured



Data must be available to those who have an authorized need to access the data



Data should be shared between systems, processes, and entities



Data that is properly managed enables the entity to implement information systems that take advantage of well-controlled data

## The opportunities of good data management



Enhancing the experience of data transactions between stakeholders, improving reporting and analytics



Ensuring the authenticity of data across all touchpoints



Removing silos and data redundancy through centrally and coherently locating data



Enable master edits to data and ensuring consistency



Improving data availability across different platforms



Robust data governance and operational practices



Seamless data interactions with internal and external stakeholders



# The data management journey



## Regulations and ecosystem

The foundations of sound data management are critical to the success of the data strategy. A successful strategy has business buy-in throughout the organization from the CEO to individual contributors with data becoming a 'single source of truth' to everyone.

- For public sector organizations, the starting point is the NDMO which has published a detailed set of regulations under fifteen pillars for data management and data governance best practice.
- For private sector organizations, the Data Management Association International (DAMA) is a reference point for governance. DAMA International's Data Management Body of Knowledge was used as a basis for the Kingdom's National Data Management Standards.

Good data management encourages a data culture though data which is democratized, accessible to many, and trusted by all. The starting point for all of this is readying your data.

## Foundations for a data management strategy

### *Ready your data*

At the root of all successful data projects is the quality and control of the underlying data. Which means you need a robust and mature data management strategy that all parts of the organization sign up to. This will enable you to share trusted data, safely and securely, and extract actionable value from it to feed your next generation of AI-driven services.

### *Ensure the right policies are in place*

Data management is not a one-off activity. Once the organization is set up, the right policy framework and supporting processes need to be implemented. Assess risks to data quality, ensure data security standards are being met, and put in place mechanisms to monitor adherence and violations.

### *Clarify your metadata*

Most organizations do not have a formal approach to managing metadata, but this is essential. You may want to give users the ability to add their own descriptive metadata—such as a tag—to make the data source more understandable to others. When data is properly classified, you can also manage it in ways that protect sensitive or important data.

### *Improve your data quality*

Quality must be measured, monitored, and managed so that it reaches the appropriate level to support the intended use of the data.



NDMO as a  
springboard for  
your organization's  
data success

Organizations should look to establish a guiding framework that covers the identification of data quality requirements, the implementation of appropriate rules, and the detection, management, and resolution of any issues.

### *Secure your data*

Develop clear and simple guidelines to identify, protect, and monitor your important data assets. Consider how to protect data at rest (i.e., existing statically on physical media or in the cloud) and data in transit (i.e., data being transferred between components or over a network).

### *Overcome legacy and free your teams*

As expectations around data grow, internal teams can feel a lot of pressure to deliver results—and their first forays into the world of analytics often disappoint.

### *Establish digital governance*

Set up a system that helps to establish lines of accountability, roles and decision-making authority for the digital presence of an organization. Digital tools include websites, mobile sites, social media outlets, the internet, and products and services that are promoted on the internet.

## Setting up a strategy

The most important part of putting in place effective data management is to put in place solid foundations. The four steps below form part of KPMG's methodology for data management and are the base from which to build good data management practices.

### 1 **Setting up a data strategy**

- Understand the organization's strategic direction
- Data maturity assessment exercise to identify gaps
- Validate challenges and understand future aspiration
- Data strategy with vision, mission, goals, initiatives and timeline

### 2 **Data management and governance**

- Data management policy and procedures
- Change management awareness and training program
- Data governance KPIs
- Data management operating model
- Governance committee and data management program

### 3 **Metadata management and data classification**

- Metadata management and policy and procedures
- Metrics for the quality of metadata
- Metadata repository and architecture
- Data catalogue with policy and procedures

### 4 **Data quality and master data management**

- Standards, requirements and specifications for data quality controls
- Monitoring, audit and cleansing of data
- Master data management plan with policy and procedures
- Identification and definition of master data
- Master data model



25,000  
Number of specialists jobs  
in data and AI that need to  
be developed before 2030<sup>7</sup>

## Instilling a data culture

Data culture cannot just happen, it has to be nurtured, from the top down and bottom up. This requires a data team with the right skills, training, accessibility, and management. The appropriate data infrastructure, including governance and management, is the foundational building block of a strong data culture. The success or failure of transforming into a data-driven enterprise comes down to four key factors:

**Data governance:** Appropriate authority and control over the management of data to ensure the right people have access to the right data at the right time.

**Data discovery:** Identifying and giving your everyone in the enterprise access to an inventory of high-quality data that enables them to find relevant information in time for important decision-making.

**Data literacy:** Enabling accurate analysis and interpretation of data through integration of the necessary technical, operational and behavioural elements such that this 'language' becomes the new 'business as usual.'

**Data-as-an-asset:** Actively managing data as one of the core assets of the enterprise, from which it can continuously derive value, through the necessary leadership, commitment, planning and coordination.

<sup>7</sup> <https://www.eyeofriyadh.com/news/newsdetail.php?newsid=120167>

### **Preparing your people**

The right team is essential to the success of your data management strategy. Through re-skilling and hiring, your organization need to have these members.

#### ***Data Owner***

A Data Owner is accountable for the functionality and use of the data within their domain. This person ensures that data is properly defined and used. A key activity is developing the data catalog and business glossary. An example KPI would be a percentage increase in data quality.

#### ***Data Steward***

A Data Steward is a nominated representative who has a deep understanding of a specific data domain. They are able to identify functional data requirements. A key activity is identifying the root cause of data quality issues and resolving them. An example KPI would be the number of data improvement initiatives completed.

#### ***Data Champions***

Data Champions oversee a specific part of data management such as analytics and reporting, governance or open data. A key activity is providing data from their specific area to the Chief Data Officer. This might be related to spatial data, data sharing, or the data catalog.

#### ***Data Engineers***

The Data Engineer is responsible for data architecture, data modeling and extract-transform-load (ETL) activities. A key activity is reviewing, approving, and implementing the target data architecture.

#### ***Data Architect***

The Data Architect is responsible for defining the technical, security and data architecture at the conceptual and logical level. A key activity is advising IT on technology usage and endorsing all design artefacts related to data management.



# A joint approach to supporting your data management

KPMG has a local team of NDMO-trained practitioners based in Saudi Arabia. Using our tried and tested **Advanced Data Management Framework**, we are taking organizations on the data journey while ensuring full compliance with NDMO regulations.

As a start, talk to us about our introductory experiences:

- Data Foundations Workshop (two hours)
- Data Maturity Assessment
- Data Lifecycle Workshop

KPMG is offering these sessions to equip leaders and data professionals with the right tools to effectively manage data and comply with regulations. Looking through the lens of trends, technologies and said regulations, you will learn how to prepare your organization for efficient data management. These sessions will be hosted at our Insights Center in Riyadh, the Center of Excellence for data analytics, artificial intelligence and emerging technologies.

To learn more about how we can support you on data management journey, contact the [Digital Lighthouse](#).

The Forrester Wave:™ Data Management Service Q4 2021 report recently called KPMG a “leader”, with high scores for data governance, training and literacy, data integration, community, and business impact offerings. Read the Forrester Wave [here](#).

“Organizations seeking a partner that has a strong methodology to connect data to process and decision flows will find that KPMG is exceptional in this approach and will help them with its unique but pragmatic strategy and services.”

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