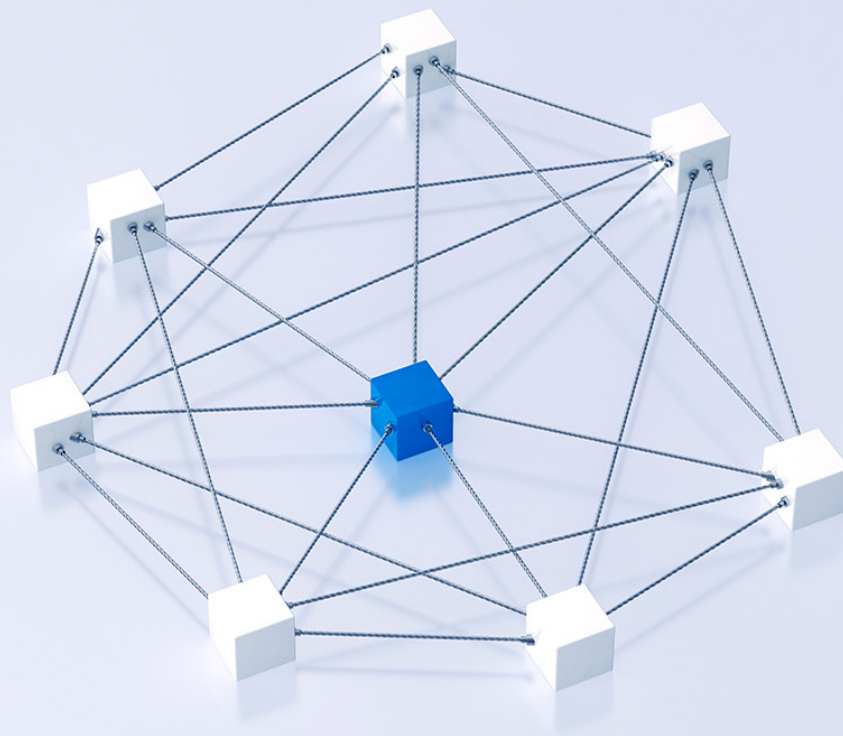


# Master data management: The key to getting more from your data

Master data management can give organizations a leg up by allowing them to easily organize and access data about customers, suppliers, products, and employees.

*This article is a collaborative effort by Aziz Shaikh, Holger Harreis, Jorge Machado, and Kayvaun Rowshankish, with Rachit Saxena and Rajat Jain, representing views from McKinsey Digital.*



**Picture this:** a sales representative at a multibillion-dollar organization has an upcoming meeting with a prospective client. She searches for the client in the organization's customer relationship management software and finds several accounts with the same name. She struggles to learn more about the products and services the client is already buying, the customer contacts that have already been engaged, and the relationships the contact may have with other sales representatives within the organization. As a result, the sales representative spends several hours manually pulling together information to get organized for the upcoming meeting.

This scenario is an example of poor master data management (MDM), which commonly results in suboptimal customer and employee experience, higher costs, and lost revenue opportunities. MDM is a critical component of any organization's data strategy (see sidebar "About master data management"). These capabilities can make or break an organization's efficiency and reliability—particularly in complex organizations with multiple business units, where data silos can lead to inefficiencies and errors.

## About master data management

**Typically, organizations** have four types of data: transaction, reference, derived, and master. Of these, master data provides the most relevant, foundational information about entities and their attributes, unique identifiers, hierarchies, and relationships within an organization. This information is shared across business functions and systems to support business processes and decision making.

In 2023, McKinsey surveyed more than 80 large global organizations<sup>1</sup> across several industries to learn more about how they organize, use, and mature their master data. McKinsey's Master Data Management Survey indicated that organizations have four top objectives in maturing their MDM capabilities: improving customer experience and satisfaction, enhancing revenue growth by presenting better cross- and up-selling opportunities, increasing sales productivity, and streamlining reporting (Exhibit 1).

MDM plays an important role with modern data architecture concepts and creates value in five ways:

- MDM cleans, enriches, and standardizes data for key functions, such as customer or product data, before it is loaded into the data lake. In this way, MDM ensures that data is accurate, complete, and consistent across an organization.
- In the context of data products, MDM provides a hub for high-quality data across entities, which improves the effectiveness, consistency, and reliability of data products for improved decision making, accurate reporting and analysis, and compliance with local regulations and standards.
- MDM standardizes data across entities to provide a unified view across various systems.
- MDM can act as a system of reference that shares data with applications and other domains via web services, typically representational state transfer application programming interfaces (REST APIs).
- MDM and artificial intelligence (AI) can benefit from each other. For instance, MDM can leverage AI algorithms to identify duplicate records and merge them intelligently, which can enhance the performance and reliability of generative AI systems.

<sup>1</sup> Companies surveyed earned more than \$100 million in annual revenue.

Exhibit 1

## Companies pursuing maturity in master data management prioritize customer experience and revenue growth.

Objectives for companies pursuing more mature MDM,<sup>1</sup> % of respondents, n = 83



Question: What are the objectives that your organization wants to achieve with more mature master data management (MDM)?

<sup>1</sup>MDM is master data management. Participants were able to choose more than one option.

Source: McKinsey Master Data Management Survey 2023

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But many organizations have not fully harnessed the potential of MDM. This article builds on the insights from our MDM survey, describes the common challenges companies face when integrating MDM capabilities, and highlights areas in which MDM could be optimized to help businesses gain a competitive advantage.

### Common issues organizations face when implementing MDM

Small and large organizations alike can benefit from implementing MDM models, yet collecting and aggregating quality data can be difficult because of funding constraints, insufficient technological support, and low-caliber data. Based on our survey results, following are some of the most prevalent challenges to implementing MDM.

#### Difficulty of making a business case

Demonstrating potential savings through reduced data errors, enhanced operational efficiency, and

improved decision making can provide a clear return on investment for MDM initiatives. However, this return is inherently difficult to quantify, so positioning MDM as a priority ahead of projects with more visible, immediate benefits can be challenging. Consequently, despite MDM's potential to enhance an organization, leaders may have a difficult time building a business case for augmenting their MDM and investing in associated architecture and technology capabilities.

#### Organizational silos

Eighty percent of organizations responding to our survey reported that some of their divisions operate in silos, each with its own data management requirements, practices, source systems, and consumption behaviors. For example, a sales team may maintain client data in a customer relationship management (CRM) system, while a marketing team may use a client data platform (CDP) to create customer profiles and inform ad campaigns. Silos can lead to inconsistencies and errors, increasing

the difficulty of making decisions related to business, data, and technology (see sidebar “Types of master data domains”).

### **Treating MDM as a technology discipline only**

Organizations typically think of MDM as a technology discipline rather than as a differentiator that can drive enterprise value. According to our survey, only 16 percent of MDM programs are funded as organization-wide strategic programs, leaving IT or tech functions to carry the financial responsibility (Exhibit 2). Sixty-two percent of respondents reported that their organizations had no well-defined process for integrating new and existing data sources, which may hinder the effectiveness of MDM.

While technology plays a crucial role, the success of MDM initiatives requires significant business influence and sponsorship to set the strategic direction, understand data dependencies, improve the quality of data, enhance business processes,

and, ultimately, support the organization in achieving its goals. It’s important for the role of data owner to be played by a business stakeholder—specifically, the head of the business unit that uses the data most, such as the head of sales and marketing for the client data domain. That leader can provide guidance for defining data requirements and data quality rules that are aligned with the business’s goals.

### **Poor data quality**

Poor-quality data cannot deliver analytics-based insights without substantial manual adjustment. According to the MDM survey, 82 percent of respondents spent one or more days per week resolving master data quality issues, and 66 percent used manual review to assess, monitor, and manage the quality of their master data. Consequently, large, multidivisional organizations may be unable to efficiently generate KPIs or other metrics, and sales representatives may be unable to quickly generate a consistent, holistic view of prospective

## **Types of master data domains**

**A variety of** categories can serve as master data domains, and each serves a specific purpose. The most common categories include the following:

**Customer data.** Customer data includes key details such as customer contact information, purchasing history, preferences, and demographic data. Organizations can leverage customer data to optimize marketing strategies, personalize customer experiences, and foster long-term relationships.

**Client data.** Client data typically includes client names, contact information, billing and shipping addresses, payment terms, key decision makers, and other client-specific identifiers. Business-to-business (B2B) organizations can manage client data to tailor their strategies, personalize communications, and optimize sales and

marketing efforts to better serve their clients’ needs and preferences.

**Product data.** Product data includes attributes such as product names, descriptions, SKUs, pricing, and specifications. Product data typically spans across R&D, supply chain, and sales.

**Supplier data.** Supplier data includes attributes such as vendor names, contact details, payment terms, tax information, and vendor-specific codes. Accurate supplier data helps to establish a single, complete, and consistent definition of vendors across the organization.

**Financial data.** Financial data typically includes information about legal or management entities (a company code, for instance), a chart of accounts, cost and profit centers, and financial hierarchies.

**Employee data.** Employee data includes attributes such as employee names, contact information, job titles, employee IDs, department assignments, and payroll information.

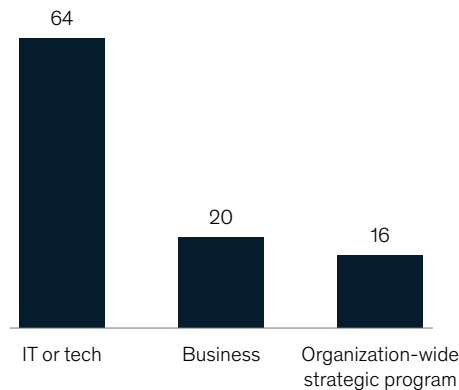
**Asset data.** Asset data includes attributes such as asset name, type, purchase date, installation date, manufacturer details, financial and depreciation details, and maintenance and repair details. Organizations can improve their operational performance by maintaining consistent, accurate, and efficient management of assets across an organization.

According to the McKinsey Master Data Management Survey 2023, 83 percent of organizations consider client and product data to be the most dominant domains.

## Exhibit 2

### Master data management programs are typically funded by IT or tech functions within organizations.

Funding source for master data management (MDM) programs, % of respondents, n = 81



Question: How is the MDM program funded within your organization?  
Source: McKinsey Master Data Management Survey 2023

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clients. According to the MDM survey, the most prevalent issues in organizations' data quality were incompleteness, inconsistency, and inaccuracy (Exhibit 3).

In addition to incompleteness, inconsistency, and accuracy, many companies also contend with issues of uniqueness, or duplicate information, across systems. Traditionally, organizations classify data assets based on the stakeholders they interact with, but this approach can lead to duplication of information. For example, a supplier to an organization can also be its customer. These circumstances have led to the design of a "party" data domain that generalizes the characteristics of a person or organization and establishes the connection between them and their distinctive roles to the company.

Master data quality issues can cause customer dissatisfaction, operational inefficiencies, and poor decision making. Furthermore, companies handling private or sensitive consumer information have stricter compliance requirements and data quality,

security, and privacy standards. Without good data, implementing MDM processes will be difficult.

#### Complex data integration requirements

Organizations may find it difficult to integrate MDM into their existing systems. Compatibility issues, data migration challenges, and system upgrades can hinder successful MDM implementation, and minimizing integration latency is crucial to provide timely and accurate data to the MDM system. Organizations may have to significantly model, map, and transform data systems so they can work with newer and older technologies.

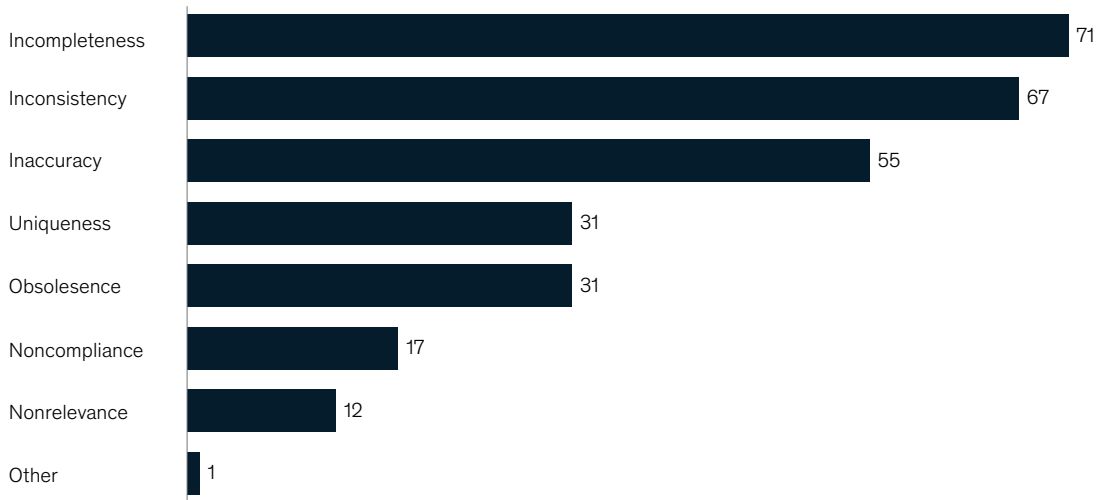
#### How to effectively implement and optimize MDM capabilities

To overcome these challenges and successfully implement and optimize MDM capabilities, organizations must clearly identify the value they hope to create based on their priority business use cases such as operational efficiency and customer insights, which lead to cost savings and revenue growth. Organizations should measure the impact

Exhibit 3

## Incomplete data, inconsistent data, and inaccurate data are the top data quality issues facing organizations.

Master data quality issues,<sup>1</sup>% of respondents, n = 83



Question: What are the major master data quality issues that your organization is currently encountering?  
<sup>1</sup>Participants were able to choose more than one option.  
Source: McKinsey Master Data Management Survey 2023

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and effectiveness of MDM implementation using metrics such as ROI, total cost of ownership, and performance baselines. Organizations should maintain a forward-looking approach to adopt modern tools and technologies; create a robust data governance model backed by performance KPIs; and plan for capability building among stakeholders to ensure a uniform adoption of MDM principles.

### Build a 'golden record' that contains the most up-to-date information

An MDM "golden record" is a repository that holds the most accurate information available in the organization's data ecosystem. For example, a golden record of client data is a single, trusted source of truth that can be used by marketing and sales representatives to analyze customer preferences, trends, and behaviors; improve customer segmentation; offer personalized products and services; and increase cross-sales, interactions, customer experiences, and retention.

To build a golden record that contains the most up-to-date information, organizations integrate data from every business unit into the golden record and update it as more accurate information becomes available. Integrating information can be done with the help of AI and machine learning (ML) technology. Alternatively, organizations may establish one existing system as the golden record for a specific data domain to maintain consistency, precision, and timeliness across the enterprise.

There are four common MDM design approaches that can be used to update the golden record within the business unit data (see sidebar "Four common master data management design approaches"). Deploying a modular architecture enables fit-for-purpose consumption and integration patterns with various systems to manage the golden record. For example, every mastered client record could be linked back to the source systems and mapped to a hierarchy to show association in the MDM system.

## Four common master data management design approaches

**Organizations typically use** one of four master data management (MDM) design approaches, depending on the complexity of their data:

**Registry MDM.** This model aggregates data from multiple sources to spot duplicates in information. It is a simple, inexpensive approach that large, global organizations with many data sources often find helpful.

**Consolidation MDM.** This approach periodically sorts and matches information from multiple source systems to create or update the master data record. Simple and inexpensive to set up, it is a good option for organizations seeking to analyze large sets of data.

**Centralized MDM.** This approach establishes a single master repository to create, update, and maintain data, and shares it back with the respective source systems. This model is good for banks, insurance companies, government agencies, and hospital networks that require strict compliance to maintain integrity and control over their data.

**Coexistence MDM.** This approach creates and updates data in source systems,

giving businesses the flexibility and autonomy to manage data attributes at the division or business-unit level while maintaining consistent core client data. This model is especially good for large, complex enterprises with many segments and business-unit structures that are frequently integrating new clients into their databases.

Organizations typically start by deploying more rudimentary MDM models, such as registry or consolidation, then evolve to more mature approaches, such as centralized or coexistence. These more mature models are more flexible but also more complex. When choosing an MDM deployment approach, organizations should consider the following questions, among others:

- How should the organization centralize and streamline master data across different systems and locations to maximize accessibility and usability?
- What methodologies should be used to manage the complexity of data relationships and structures to improve efficiency and interoperability across systems?
- What strategies need to be implemented to enable real-time master data updates and guarantee instant access to the most current and accurate information?
- How should the organization maintain consistent, high-quality data across all departments to support data-driven decision making?
- What initiatives need to be implemented to empower business units to increase autonomy and maturity, fostering innovation and agility throughout the organization?
- Which systems must be seamlessly integrated with the MDM strategy to establish a cohesive and unified data ecosystem?
- How should MDM support and enhance current and future business processes to drive sustainable growth and competitive advantage?
- What proactive measures should be in place to address regulatory and compliance requirements, ensuring risk mitigation and adherence to industry best practices?

Alternatively, client data could be mastered and assigned a unique client ID within the golden record to stitch together data from all systems and create a single portfolio of a client.

### **Establish a robust data governance model to maintain integrity and reliability of MDM capabilities**

Only 29 percent of companies responding to our survey had full upstream and downstream MDM integrations with source systems and business applications, as well as all governance or stewardship roles, in place. Organizations should clearly identify the single source of truth for data and properly train employees on handling integration failures to avoid saving stale information.

Data governance models for MDM should be designed with clear roles and responsibilities, be managed by a governance council with representatives from different business units and IT, and be shepherded by someone who can serve as an MDM liaison among business, data, and technology stakeholders. The structure should be complemented by a clearly defined policy framework and a tailored, business-backed, and IT-supported operating model for master data domains. These data governance processes will allow upstream system owners and a data governance council to address data quality issues—for example, when the MDM identifies new or updated information as conflicting with other information based on the survivorship strategy.

# Organizations should choose data management tools that align with their priorities and make the transition seamless.

## **Choose an MDM tool that enhances data quality and accelerates transformation**

MDM tools are becoming more intuitive and user-friendly, and recent innovations in AI, ML, cloud technologies, and federated architectures have opened new possibilities for data mastering and processing. For example, AI-enabled tools use pretrained AI and ML models to automate data quality, data matching, and entity resolution tasks with a higher degree of accuracy and greater efficiency. According to the survey, 69 percent of organizations are already using AI as part of their overall data management capabilities; however, only 31 percent are using advanced AI-based techniques to enhance match-and-merge capabilities and to improve master data quality more broadly.

Organizations should choose data management tools that align with their priorities and make the transition seamless. It's also important to consider the return on investment and the incremental value that each MDM tool can bring to the organization. When choosing an MDM tool, relevant business stakeholders should understand data processes and requirements, including the data elements that affect business operations and the priority use cases, and then help determine the technology capabilities and workflows that are required to integrate new systems.

For example, stakeholders should assess the maturity of their organization's capabilities, including its data quality, matching, and entity resolution, to determine how easily new systems will be able to integrate with existing systems and technologies. It is also important to consider these

systems' scalability and flexibility to accommodate future growth and evolving data management needs. Moreover, AI and ML capabilities should be considered to help the MDM tool automate tasks to improve data quality.

## **Plan for capability building and change management**

Organizations that implement technology without changing their processes and the way people work with master data may not fully reap the benefits of MDM.

Change management is crucial to ensure that employees understand and embrace the changes brought about by MDM implementation. It typically includes securing executive sponsorship to demonstrate the importance of MDM to the organization; engaging with business and technology stakeholders to communicate the vision; setting expectations for accountability and processes; and rolling out comprehensive training programs to educate employees on MDM and data principles, processes, and tools.

## **Start with a pilot implementation**

Organizations can start integrating MDM tools by first piloting MDM in one domain to validate its design, governance model, and workflows in a controlled environment. Organizations can then easily identify any potential issues or challenges and make the necessary adjustments before scaling up the implementation to other master data domains or to the entire organization. Piloting these tools also allows organizations to gather feedback from users and stakeholders to understand the user



experience, identify areas for improvement, and make necessary changes to optimize the MDM tool and workflows.

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Implementing and optimizing MDM capabilities can seem daunting, especially for large

organizations with multiple complex systems. But once successfully deployed across master data domains—using an optimal design approach, an efficient governance structure, and sufficient change management efforts—MDM can ensure that high-quality data is available for strategic decision making, leading to cost savings and revenue opportunities across an organization.

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