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**Top 10 Data Quality Best Practices to Improve Data Performance**

Did you know that businesses [lose an estimated $3.1 trillion annually in the U.S.](https://blogs.sap.com/2023/09/01/bad-data-costs-the-u.s.-3-trillion-per-year/#:~:text=This%20figure%20should%20surprise%20no,is%20costly%2C%20this%20figure%20stuns.)alone due to poor data quality? In a world where decisions hinge on accurate information, such losses underscore the critical importance of [data integrity](https://atlan.com/what-is-data-integrity/?ref=/data-quality-best-practices/).

Understanding and implementing **data quality best practices** isn’t just a recommendation—it’s a necessity. This article provides a clear roadmap to ensuring the data driving your business decisions is impeccable.

Ready? Let’s dive in!

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## What is data quality?

**Data quality** refers to how well a set of data supports its intended use in operations, decision-making, and planning.

In essence, if you can trust your data to make important decisions without any second thoughts, then you have good [data quality](https://atlan.com/data-quality-explained/?ref=/data-quality-best-practices/).

On the other hand, if your data often leads to mistakes, and confusion, or requires frequent double-checking, it’s likely of poor quality.

For data to be of high quality, it should be [accurate](https://atlan.com/data-accuracy-101-guide/?ref=/data-quality-best-practices/), complete, reliable, relevant, and timely. Ensuring this quality is essential for your business operations and making informed decisions. It’s not just about having data; it’s about having the right data.

To learn more about data quality, click here → [Data Quality Explained: Causes, Detection, and Fixes](https://atlan.com/data-quality-explained/?ref=/data-quality-best-practices/)

## Top 10 data quality best practices you need to know

The foundation of every successful business strategy is rooted in pristine data. Explore these 10 Data quality best practices to elevate your data’s integrity and enhance your company’s performance.

1. Data governance framework
2. Regular data audits
3. Validation rules and checks
4. Data standardization
5. Data cleaning and maintenance
6. Continuous monitoring and reporting
7. Data source verification
8. User training and awareness
9. Backup and data recovery
10. Access controls and permissions

Let’s look at these best practices in detail:

### 1. Data governance framework

* **Introducing data governance**

At its core, [data governance](https://atlan.com/what-is-data-governance/?ref=/data-quality-best-practices/) is the formal arrangement by which businesses manage their data. Think of it as a set of rules or policies that determine how data gets used, stored, and handled within your company.

* **Its role in ensuring data quality**

Just as a captain steers a ship, data governance guides your data’s journey. It ensures that everyone in the organization handles data with care, precision, and consistency. A solid [governance framework](https://atlan.com/data-governance-framework/?ref=/data-quality-best-practices/) guarantees that your data is trustworthy, which in turn, bolsters your decision-making process.

### 2. Regular data audits

* **Importance of auditing data**

Regularly checking your data is much like a health check-up. It’s essential to spot inconsistencies, duplicates, or errors. These hiccups might seem minor, but they can severely skew your understanding of your business and customer base.

* **Recommended frequency for data audits**

Ideally, business owners should conduct data audits at least once a year. However, if you’re in an industry with rapidly changing data or if you’ve recently merged with another company, consider doing it more frequently.

### 3. Validation rules and checks

* **What are validation techniques?**

Simply put, [validation is about ensuring the data you collect is accurate](https://humansofdata.atlan.com/2018/05/18-data-validations-collect-accurate-data/?ref=https://atlan.com/data-quality-best-practices/) and relevant. For example, if someone enters a phone number into an email field, validation checks can catch and correct such errors.

* **Importance of automated validation checks**

Manual checks are time-consuming and prone to human error. By setting up automated checks, you can catch errors in real-time, saving both time and potential headaches down the line.

### 4. Data standardization

* **Why data should conform to particular formats?**

Imagine getting a report where dates, names, and addresses are all in different formats. It can be frustrating and time-consuming to make sense of it. Uniformity in data ensures it’s easily readable and understandable.

* **Benefits of standardized data**

When your data follows a standard format, it’s easier to analyze, compare, and use for crucial decisions. It also reduces the chances of misunderstandings or misinterpretations.

To learn more about data standardization, click here → [Standardize Data: Learn Why It Matters & How to Do It Effectively!](https://atlan.com/standardize-data/?ref=/data-quality-best-practices/)

### 5. Data cleaning and maintenance

* **Processes for detecting and correcting data errors**

Just as you regularly clean a physical store or office space, you need to [‘clean’ your data](https://humansofdata.atlan.com/2015/01/data-management-cleaning-tagging/?ref=https://atlan.com/data-quality-best-practices/). This involves finding inaccuracies, duplicates, or outdated information and setting them right.

* **Tools for regular data cleanup**

There are many tools available, ranging from simple spreadsheet functions to specialized software, which can help in maintaining your data’s hygiene.

### 6. Continuous monitoring and reporting

* **Why does continuous oversight matter?**

In the fast-paced world of business, data changes constantly. Continuous monitoring ensures that your data remains accurate and relevant, no matter the changes or influxes.

* **Role of real-time monitoring tools**

These tools are like your data’s security guards. They keep an eye on your data around the clock, ensuring any issues are identified and addressed immediately, thus preserving its quality.

### 7. Data source verification

* **Ensuring the reliability of data sources**

It’s essential to know where your data comes from and if those sources are reliable. Just as you’d check the credibility of a news source, it’s vital to verify your data sources.

* **Cross-referencing for accuracy**

Don’t put all your eggs in one basket. By using multiple sources and cross-referencing the data they provide, you can ensure your data’s accuracy and [reliability](https://atlan.com/what-is-data-reliability/?ref=/data-quality-best-practices/).

### 8. User training and awareness

* **The role of human error**

Mistakes happen. However many data quality issues arise from simple human errors - like inputting the wrong date or misspelling a name.

* **Why does training and awareness matter?**

Educating your team about the significance of data quality and giving them the tools to maintain it can dramatically reduce errors. It’s an investment in your company’s future accuracy and success.

### 9. Backup and data recovery

* **Why backups are essential?**

In the same way, you’d have insurance for your physical assets, data backups act as insurance for your digital assets. Unexpected events, such as system failures or cyber-attacks, can jeopardize your data’s integrity and availability.

* **Steps for effective backup**

Regularly schedule automated backups to a secure location, be it cloud storage or physical servers. Also, periodically test the recovery process to ensure that the data can be accurately restored when needed.

### 10. Access controls and permissions

* **Understanding data accessibility**

Not everyone in your organization needs access to all your data. Limiting access ensures data remains secure and reduces the chances of accidental modifications or deletions.

* **Implementing controls and permissions**

Set up clear hierarchies and user roles, determining who can view, modify, or delete specific data sets. Regularly review and update these permissions, especially when employees join, move roles, or leave the organization.

## 10 Data quality best practices for ETL processes

ETL, which stands for Extract, Transform, Load, is a crucial process in [data warehousing](https://atlan.com/data-warehousing-guide/?ref=/data-quality-best-practices/) that involves extracting data from various sources, transforming it into a format suitable for analysis, and loading it into a target database or [data warehouse](https://atlan.com/data-warehouse-101/?ref=/data-quality-best-practices/). Ensuring high data quality in ETL processes is vital for reliable analytics and decision-making.

Here are some best practices for maintaining data quality in ETL processes:

1. Data quality assessment
2. Data cleansing
3. Data validation
4. Data transformation
5. Error handling
6. Documentation and metadata management
7. Performance optimization
8. Security and compliance
9. Testing and quality assurance
10. User collaboration and feedback

Let us understand each of them in detail.

### 1. Data quality assessment

* **Pre-ETL assessment**: Before starting the ETL process, assess the quality of source data. This involves checking for [data accuracy](https://atlan.com/data-accuracy-101-guide/?ref=/data-quality-best-practices/), completeness, consistency, and format.
* **Continuous monitoring**: Implement continuous monitoring to track [data quality issues](https://atlan.com/data-quality-issues/?ref=/data-quality-best-practices/) that may arise during the [ETL process](https://atlan.com/etl-vs-elt/#what-is-etl-extract-transform-load).

### 2. Data cleansing

* **Error correction**: Identify and correct errors in data, such as incorrect or missing values.
* **Standardization**: Standardize data formats to ensure consistency. For example, date formats should be uniform across all data sets.

### 3. Data validation

* **Schema validation**: Ensure that the data matches the schema of the target database, including data types and lengths.
* **Business rules validation**: Validate data against business rules and constraints to ensure it aligns with business requirements and logic.

### 4. Data transformation

* **Consistency**: Maintain consistency in [data transformation](https://atlan.com/data-transformation-101/?ref=/data-quality-best-practices/) rules and logic.
* **Auditability**: Keep track of transformations applied to each data element for auditing and troubleshooting purposes.

### 5. Error handling

* **Robust error handling mechanisms**: Implement robust error handling mechanisms to capture and log errors encountered during ETL.
* **Failover strategies**: Develop strategies to handle failures, such as rerunning failed processes or redirecting to backup systems.

### 6. Documentation and metadata management

* **Documentation**: Keep detailed documentation of ETL processes, including data sources, transformation rules, and [data mappings.](https://atlan.com/what-is-data-mapping/?ref=/data-quality-best-practices/)
* **Metadata management**: [Manage metadata](https://atlan.com/metadata-management-101/?ref=/data-quality-best-practices/) effectively to provide context for data, such as source information, date of extraction, and any transformations applied.

### 7. Performance optimization

* **Efficient design**: Design ETL processes for optimal performance, balancing speed and resource utilization.
* **Incremental loading**: Use incremental loading strategies (such as change data capture) instead of full loads when appropriate to reduce load times and resource usage.

### 8. Security and compliance

* **Data security**: Ensure that data is securely handled and stored, especially sensitive data.
* **Compliance**: Adhere to regulatory and compliance standards relevant to the data, such as [GDPR](https://atlan.com/how-to-comply-with-gdpr/?ref=/data-quality-best-practices/) or [HIPAA](https://atlan.com/what-is-hipaa-compliance/?ref=/data-quality-best-practices/).

### 9. Testing and quality assurance

* **Comprehensive testing**: Conduct thorough testing of ETL processes, including unit, integration, and system testing.
* **Data quality metrics**: Define and measure [data quality metrics](https://atlan.com/data-quality-metrics/?ref=/data-quality-best-practices/) to evaluate the success of the ETL process.

### 10. User collaboration and feedback

* **Stakeholder engagement**: Engage with stakeholders and end-users to understand their data needs and quality expectations.
* **Feedback loop**: Establish a feedback loop to continuously improve data quality based on user feedback and changing business requirements.

By following these best practices, organizations can significantly enhance the quality of their data throughout the ETL process, leading to more reliable and actionable insights.

## The cost and consequences of poor data quality: Typical examples

Understanding the true cost of poor data quality is vital for every business owner and decision-maker. In today’s fast-paced business world, decisions often rely on data.

But when this data is not up to par, it can lead to significant and sometimes unforeseen expenses.

Let’s dive into the financial implications of poor data and explore some real-world examples to bring this to light.

### #1 Statistical insight on losses businesses incur due to poor data quality

Recent studies show that businesses can lose a significant portion of their revenue due to [data quality issues](https://atlan.com/data-quality-issues/?ref=/data-quality-best-practices/).

Imagine working hard to earn revenue and then seeing a sizable chunk of it disappear, not because of market competition or operational inefficiencies, but simply because of faulty data.

On average, businesses face a [potential loss of 15-25% in operational efficiency due to poor data quality](https://www.wealth-dci.com/wp-content/uploads/2023/01/dci-whitepaper-the_hidden_cost_of_bad_data.pdf). That’s like running a race with a heavy backpack; it slows you down and drains your energy. In monetary terms, for a company with a revenue of $10 million, this could mean a potential loss of up to $2.5 million every year.

### #2 Typical examples illustrating the negative impact of low-quality data

Let’s look at some tangible examples to better understand the implications:

* **Retail chain overstock**

A popular retail chain once ordered a vast quantity of a particular product based on sales data from previous years. Unfortunately, the data had not been updated or cleaned to reflect recent market changes.

The result? Massive overstock, huge storage costs, and eventually, a big sale at much lower prices just to clear out inventory.

* **Healthcare billing errors**

In a notable case from a few years ago, a healthcare facility faced legal actions and fines because of billing errors. The reason?

Their patient data had duplication and inaccuracies, leading them to bill some patients multiple times while completely missing out on others.

* **E-commerce site pricing glitch**

An online store once listed a high-end product for $10 instead of $1,000 due to a data input error. By the time the mistake was noticed, several orders had been placed, leading to significant losses and damage to the brand’s reputation.

These examples underline a straightforward message: data, when not maintained, validated, and updated, can cost businesses both in terms of money and reputation. It’s not just about numbers on a screen; it’s about the real-world implications of those numbers.

For business owners and decision-makers, understanding and mitigating the risks associated with poor data quality should be a top priority.

Ensuring high data quality isn’t a luxury; it’s a necessity. The costs associated with overlooking this crucial aspect can be far-reaching, affecting profits, operations, and brand reputation. Making a dedicated effort to maintain and [improve data quality](https://atlan.com/improve-data-quality/?ref=/data-quality-best-practices/) is an investment that every business should make.

## To summarize

By embracing data quality best practices, businesses not only safeguard their decision-making processes but also foster trust and reliability with stakeholders.

As we’ve discussed, these best practices range from regular audits to user training, all aimed at maintaining accurate, complete, and timely data. Every decision maker should recognize the paramount importance of high-quality data.

By investing in data quality best practices, businesses are poised to unlock clearer insights, make more informed choices, and ultimately drive success in their endeavors. Ensure your organization is on the right path by prioritizing data quality today.

## Data Quality Best Practices: Related reads

* [Data Quality Measures: Best Practices to Implement](https://atlan.com/data-quality-measures/?ref=/data-quality-best-practices/)
* [Data Quality Explained: Causes, Detection, and Fixes](https://atlan.com/data-quality-explained/?ref=/data-quality-best-practices/)
* [Data Quality Fundamentals: Why It Matters in 2023!](https://atlan.com/data-quality-fundamentals/?ref=/data-quality-best-practices/)
* [Data Quality in Data Governance: The Crucial Link That Ensures Data Accuracy and Integrity](https://atlan.com/data-quality-in-data-governance/?ref=/data-quality-best-practices/)
* [Data Quality Strategy: 10 Steps to Excellence!](https://atlan.com/data-quality-strategy/?ref=/data-quality-best-practices/)
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* [How To Improve Data Quality In 12 Actionable Steps?](https://atlan.com/improve-data-quality/?ref=/data-quality-best-practices/)
* [Data Quality Management: The Ultimate Guide](https://atlan.com/data-quality-management/?ref=/data-quality-best-practices/)
* [How to Fix Your Data Quality Issues: 6 Proven Solutions!](https://atlan.com/how-to-fix-data-quality-issues/?ref=/data-quality-best-practices/)
* [Data Quality Testing: Key to Ensuring Accurate Insights!](https://atlan.com/data-quality-testing/?ref=/data-quality-best-practices/)
* [Forrester on Data Quality: Approach, Challenges, and Best Practices](https://atlan.com/forrester-data-quality/?ref=/data-quality-best-practices/)
* [Predictive Data Quality & Observability: A Complete Guide!](https://atlan.com/predictive-data-quality-and-observability/?ref=/data-quality-best-practices/)
* [Data Quality Culture: Everything You Need to Know in 2023!](https://atlan.com/data-quality-culture/?ref=/data-quality-best-practices/)
* [Data Quality Dimensions: Do They Matter in 2023 & Beyond?](https://atlan.com/data-quality-dimensions/?ref=/data-quality-best-practices/)
* [Data Quality is Everyone’s Problem, but Who is Responsible?](https://atlan.com/who-is-responsible-for-data-quality/?ref=/data-quality-best-practices/)
* [Data Quality Problems? 5 Ways to Fix Them in 2023!](https://atlan.com/data-quality-problems/?ref=/data-quality-best-practices/)
* [11 Steps to Build an API-Driven Data Quality Framework](https://atlan.com/api-driven-data-quality/?ref=/data-quality-best-practices/)
* [Achieving High Data Quality During Cloud Data Migrations: A 2023 guide!](https://atlan.com/high-data-quality-during-cloud-data-migrations/?ref=/data-quality-best-practices/)