



BARC Compass

Data Quality Management

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Data Quality – Evergreen and Yet Hyped in the Context of AI

Having consistently ranked first or second over the past five years, data quality has topped BARC's BI & Analytics Trend Monitor. This persistence reveals a hard truth: decades of investment have not solved the problem of data quality and – more than ever – organizations continue to struggle with it. In a 2024 BARC survey, three-quarters of respondents stated that “Data and analyses lack reliability and interpretability” in their organization¹.

Recently, generative AI has fundamentally changed data quality requirements. The RAG concept (now foundational for many AI agents) retrieves context from your documents to answer questions. Feed them flawed fact sheets or outdated processes and they will confidently deliver wrong answers. Furthermore, AI agents will use transactional data to perform tasks, creating new requirements for those types of data too.

When it comes to training AI models, data quality goes far beyond factual correctness: toxic inputs can lead to misaligned outputs for example. This makes unstructured data the critical challenge. Documents, emails, and process definitions cannot be manually corrected at scale like relational data. Unlike Orwell's Ministry of Truth (in 1984), we cannot rewrite yesterday's documents to match today's standards. The past stays frozen with all its flaws.

So, how can organizations tackle their old and new data quality challenges? This report examines eight practices and technologies shaping the Data Quality and Observability landscape in 2026 – well beyond generative AI and agentic AI. We assess how widely each practice and technology has been adopted and how mature the software market has become to support practitioners in the field. Lastly, we will look at the data quality management solution landscape, where different vendors are bringing different strengths to the table.

Whose Problem Is Data Quality in 2026?

The simple answer is: If it fails, it is everyone's problem. But the perspective will differ from role to role. That's why you should care about data quality right now.

Persona	Core Concern	2026 Priority
CDO	Everyone in the company can trust the data	AI-ready data, unstructured data quality, business-driven data quality
CAIO	AI systems are safe and deliver business results	AI-ready data, unstructured data quality
Data Engineer	Pipelines are reliable and easy to maintain	Observability, agentic automation of data quality processes, data contracts

¹ BARC Survey “Data Mesh and Data Fabric,” 2024 (n=197)

Persona	Core Concern	2026 Priority
Data Owner/ Steward	Data is ready for business use cases	Business-driven quality, data contracts, unstructured data quality
Business Leader	Accurate AI agents and data-driven decisions drive business results	Business-driven quality, unstructured data quality
AI/ML Engineer	Model performance, fairness, and resilience	Unstructured data quality, AI-ready data

Eight Practices and Technologies Shaping Data Quality in 2026

Our analysis applies the BARC Compass methodology – an adaptation of Rogers' innovation diffusion S-curve – to evaluate practices and technologies across two dimensions: general maturity (x-axis) and organizational adoption (y-axis). The S-curve maps the *expected* progression, revealing adoption-maturity mismatches. This framework helps software buyers make informed investment decisions by identifying which practices and technologies offer immediate value through mature solutions and which require cautious exploration due to market uncertainty.

Each practice and technology falls into one of two categories:

- **High Market Resonance** (above the S-curve): Strongly adopted by companies despite limited vendor investment. This gap may occur when SaaS business models can't monetize the practice or technology effectively, or when challenges are organizational rather than technical. Buyers should remain cautious of over-investing in early-stage hype.
- **Ready-to-scale** (below the S-curve): Mature software exists, but adoption is lagging behind. Buyers should monitor these closely; mature solutions may offer quick wins if the practice or technology proves valuable.

Strategic recommendations by practice/ technology stage:

Based on the general adoption of each practice and technology, we provide tailored guidance on the appropriate level of engagement and investment.

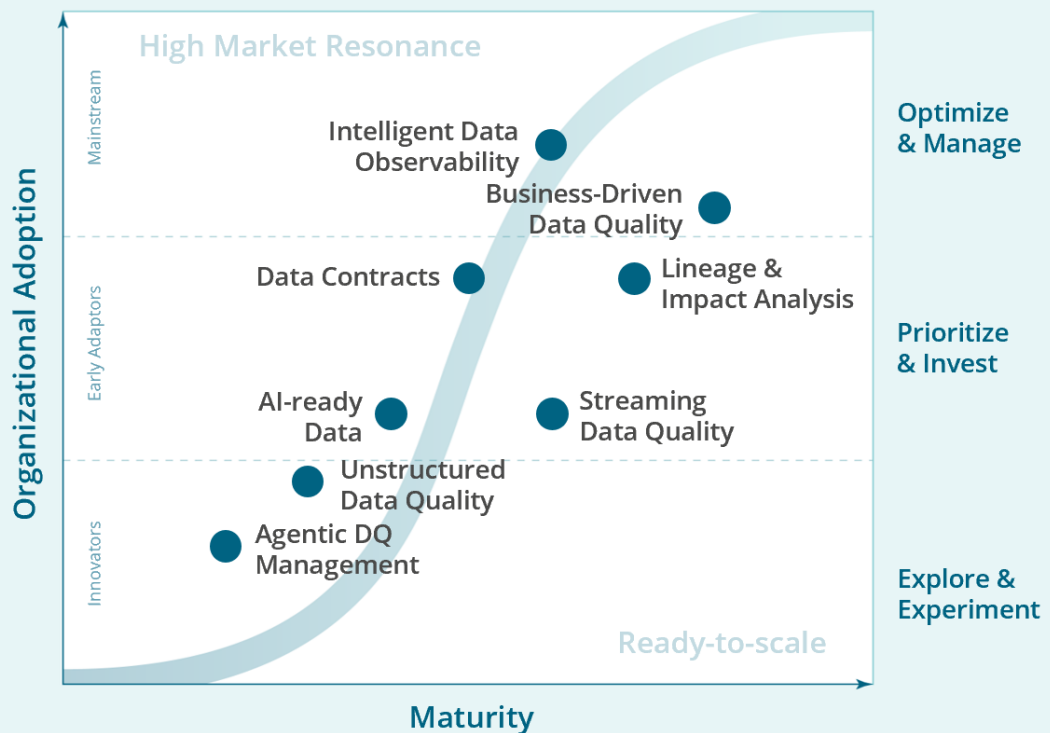
- **Explore & Experiment:** For innovators. Standards remain undefined, software is fragmented, and market consolidation is likely. Be selective when testing these practices and technologies.
- **Prioritize & Invest:** Early adopter stage. Assess which practices and technologies align with your organization's needs and invest to build capability.
- **Optimize & Manage:** Mainstream adoption. Standardize these as core capabilities, embed them into processes, and continuously refine.

BARC Compass

Data Quality Management

BARC

Practices and Technologies positioned by organizational adoption and general maturity



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Figure 1: BARC Compass Data Quality Management

1. Intelligent Data Observability

Traditional data quality tools react to problems after they occur. Intelligent data observability promises to react much earlier to changes: machine learning models learn normal data patterns and detect deviations automatically, shifting from reactive rule-based checks to proactive anomaly detection. Think of it as an early warning system for data – similar to earthquake detection systems that sense tremors before the full impact hits, allowing teams to respond before quality issues cascade through downstream systems.



Business impact: Data observability detects quality issues earlier, faster, and more reliably. Downstream failures are prevented at source before cascading through pipelines. Data engineering teams spend less time firefighting.

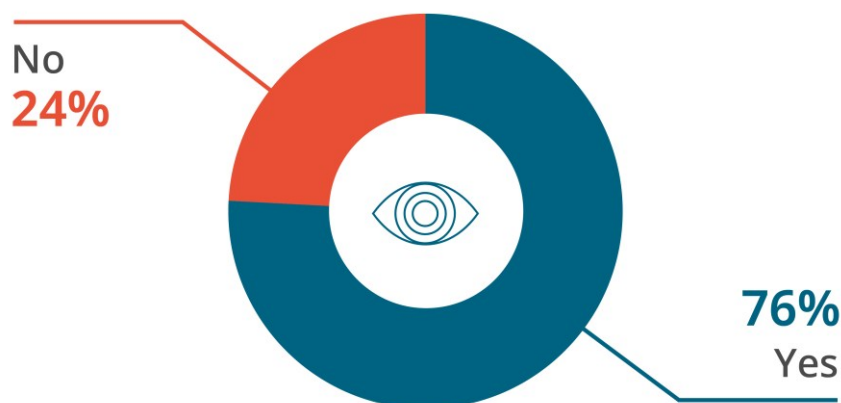


Figure 2: Does your company have a formalized, implemented, or optimized data quality observability program? Source: BARC Survey “Observability for AI Innovation” (n=221)

2. Unstructured Data Quality

Unstructured data quality extends data quality management into the domain of documents, emails, contracts, images, and videos. Typical, yet not all relevant dimensions of unstructured data quality include accuracy, completeness, representativeness & variety, consistency, relevance, and timeliness. Also, those assets should be free of biases and toxicity. Those dimensions extend rather than replace typical data quality dimensions, and many are hard to measure. Innovative solutions and frameworks have emerged in the past year anyways.



Business impact: Regulatory and reputational risk can be reduced by preventing exposure of sensitive information. AI system reliability can improve. Organizations avoid affecting individuals negatively if their agent’s knowledge is free from toxic or biased content.

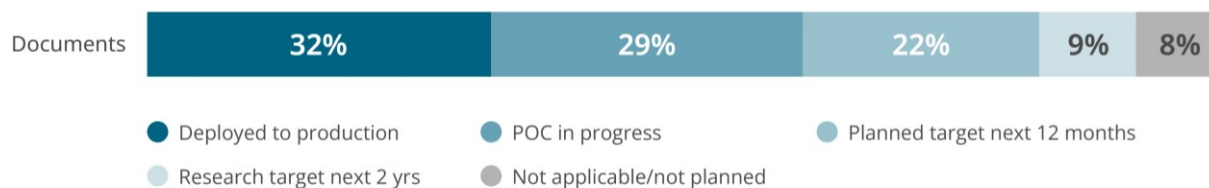


Figure 3: Which of the following data types is your organization observing in support of AI/ML projects?
Source: BARC Survey "Observability for AI Innovation" (n=213)

3. Streaming Data Quality

Data at rest is easier to handle than data in motion. Batch processing at higher frequencies often suffices where streaming seemed necessary before. The same is true for the related data quality checks. However, when batch windows are too slow, streaming data quality requires data to be validated in flight. This is typically limited to simple technical checks (e.g., validating the sensor output against a range) to maintain performance. More complex business rules can be applied later in batch processes. Streaming data quality thus trades comprehensive accuracy for speed on time-critical checks.



Business impact: Business-critical applications that take decisions in real-time stay protected from bad data. Early validations prevent bad streaming data from accumulating in data lakes where retroactive cleaning would be more costly.

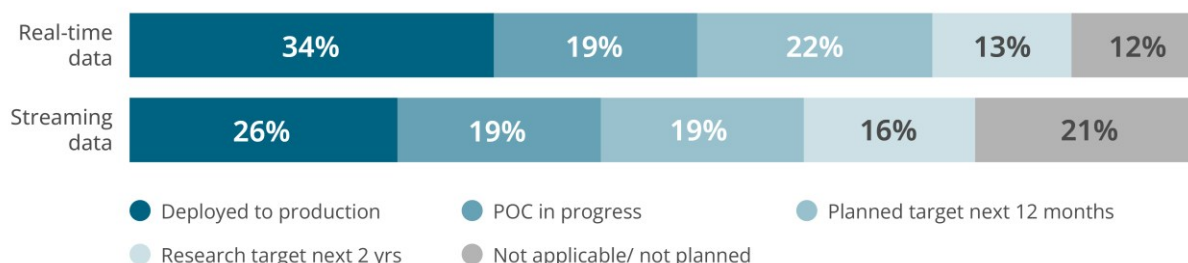


Figure 4: Which of the following data types is your organization observing in support of AI/ML projects?
Source: BARC Survey "Observability for AI Innovation" (n=221)

4. Lineage and Impact Analysis for Data Quality

Where does this data come from? What depends on it? These questions sound simple but answering them can be challenging. Lineage and impact analysis maps end-to-end data flows from source systems through transformations to reports and dashboards. The result is a dependency graph that reflects the current state of the data ecosystem.



Business impact: Data stewards and engineers can resolve issues faster and inform downstream consumers immediately. This creates greater efficiency and more trust in data in the long run.

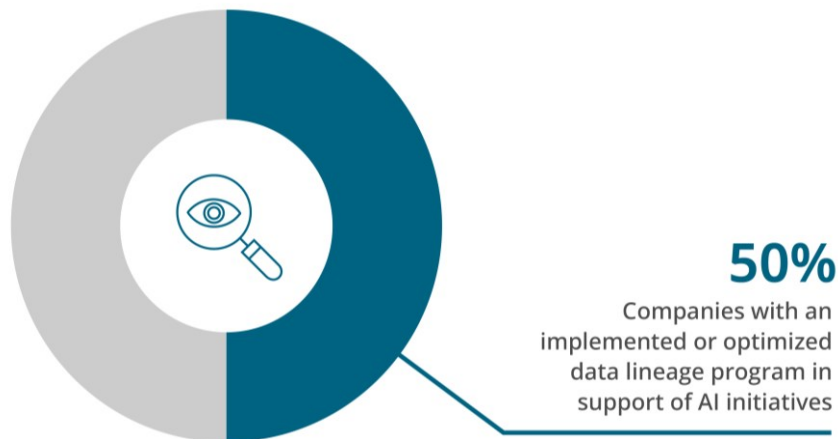


Figure 5: Companies with an implemented or optimized data lineage program in support of AI initiatives.
Source: BARC Survey "Preparing and Delivering Data for AI" (n=316)

5. Data Contracts

Data contracts formalize quality expectations between data producers and consumers through explicit, versioned agreements. Source system teams become accountable for the quality of data they publish. SLA-style commitments can define uptime, freshness, and accuracy guarantees. Monitoring systems support these commitments.



Business impact: A data contract itself will not prevent any kind of data quality issue from occurring directly, but it makes the discipline much easier by agreeing on one baseline that is both human- and machine-readable and agreed on.

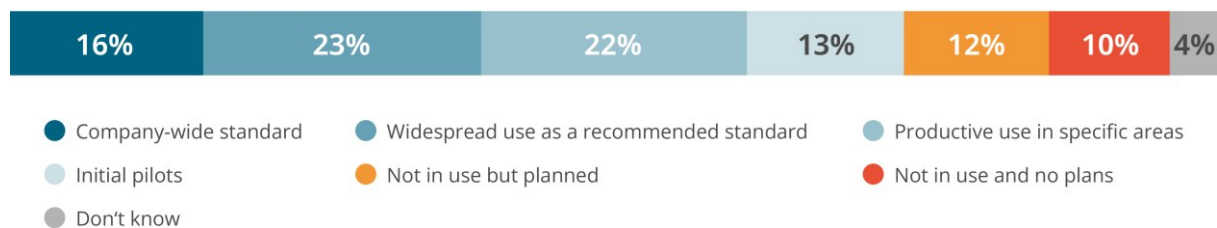


Figure 6: To what extent does your organization use data contracts? Source: BARC Survey "Data Products and Data Contracts in 2026" (n=308)

6. Business-Driven Quality

Data quality discussions often overlook that data represents reality for a specific purpose, such as capturing PoS transactions for tax compliance and sales analysis. Technical teams lack the full business context to define all quality rules and cannot adjust the operational processes causing poor data. Business-driven quality is not only a practice, but a core principle to data quality management: while technical experts facilitate and cleanse data, subject matter experts need to take responsibility for how data is generated in their business process. Domain experts should also implement business-related checks: Does this value make “business sense”?



Business impact: The data observability report referred to previously in this report shows that business process owners are often involved in data quality observability more than other roles. This makes sense: Tackling data quality as early as possible in the lifecycle reduces the required effort by an order of magnitude, following the often cited 1-10-100 rule.

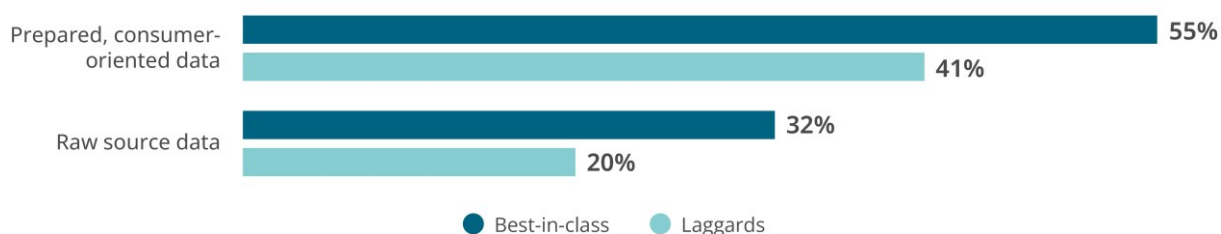


Figure 7: Does responsibility for the following data products reside within the business unit of your organization? Crosstab analysis, best-in-class vs. laggards. Source: BARC Survey “Data Mesh and Data Fabric” (n=62)

7. AI-Ready Data

AI changes how we think about data quality. New elements enter the picture: Context and knowledge become data objects. Synthetic data has a much more prominent role. Bias and toxicity become quality measures.

Also, language models work better with well-described data. Good metadata makes data understandable and AI agents more reliable; following the FAIR framework (Findable, Accessible, Interoperable, Reusable) can be a helpful tip here to take the relevant steps forward.

There are certainly overlaps between this practice and unstructured data quality. However, structured data remains a trusted source of truth. For agents and chatbots, it will often be the first choice. Additionally, AI-ready data means more than quality. It must represent reality from the right perspective (the one your user has when using the AI system), be responsible and secure (e.g., protect your IP), and align with your AI system's purpose and function.



Business impact: Your AI strategy's success, your prioritized use cases, and the trust of your employees and stakeholders all depend on this.

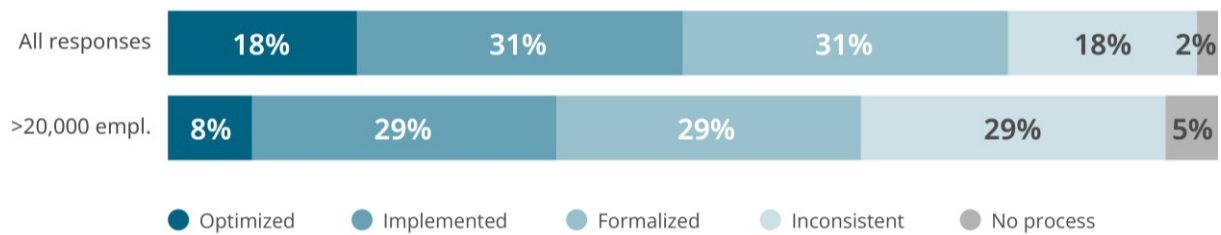


Figure 8: Please rate how well your organization addresses the following aspects of data governance in support of AI initiatives, answer option: Data Quality. Source: BARC Survey "Preparing and delivering data for AI" (n=316)

8. Agentic Data Quality Management

AI agents don't just detect data quality issues; they autonomously plan and execute fixes. Rather than alerting a human to investigate anomalies, agentic systems analyze root causes, propose remediation strategies, and in some cases automatically correct issues within defined guardrails. Think of it as moving from "smart smoke detector" to "autonomous fire suppression system." Early implementations focus on routine tasks, such as standardizing formats, resolving duplicates, or filling missing values based on learned patterns.



Business impact: The faster data quality issues can be resolved, the fewer consequences they can create downstream. In the long run, this development might also have productivity advantages.



Figure 9: Top 3 priorities to apply agentic AI to data management. Source: BARC Survey "Preparing and delivering data for AI" (n=305)

Maturity, Adoption, and Core Software Requirements per Practice/Technology

Organizational adoption reflects the percentage of data-driven organizations currently implementing each practice and technology, based on BARC primary research surveys conducted between 2024 and 2026, where available. General maturity represents BARC analyst assessments informed by vendor product briefings, customer feedback from "The Data Management Survey," direct customer engagements, and observation of market patterns and feature commoditization across the vendor landscape.

Practices and technologies	Maturity	Organizational Adoption	Core Software Requirements
Intelligent Data Observability	6/10	8/10	• ML-based anomaly detection without manual rules • Intelligent alert management to prevent fatigue • Integration with lineage for root-cause analysis
Unstructured Data Quality	3/10	3/10	• NLP engines for entity extraction and content classification • Bias detection across text collection • Sensitive information flagging
Streaming Data Quality	6/10	4/10	• Rule-based validation embedded directly in streaming pipelines (simple checks optimized for performance)
Lineage & Impact Analysis	7/10	6/10	• Metadata extraction from logs and systems • Multi-layer metadata integration (quality metrics, incidents, lineage) • Visual dependency mapping
Data Contracts	5/10	6/10	• Contract definition frameworks • Automated SLA testing at ingestion • Metadata exchange with catalogs and marketplaces
Business-Driven Quality	8/10	7/10	• No-code rule builders for business users • Semantic validation of business concepts (hierarchies, lifecycles) • Metadata sync with transactional systems
AI-Ready Data	4/10	4/10	• Use-case-adaptive validation frameworks • Bias and fairness detection • Standardized AI readiness checks
Agent Data Quality Management	2/10	2/10	• Agentic workflow orchestration for multi-step fixes • Autonomous root-cause analysis • Human-in-the-loop approval for high-risk changes

The Software Market for Data Quality Management

The data quality management software market is divided along two critical dimensions. Firstly, the solution's architectural approach: Across the market, we see (1) broad data and analytics platforms that embed quality alongside compute, storage, and infrastructure; (2) data governance suites that bundle data quality with catalogs, governance, MDM, and sometimes even data replication and transformation as integrated data management offerings; and (3) best-of-breed point solutions focused exclusively on quality and observability.

In addition, two larger groups exist: (1) established vendors with 10-15+ year track records rooted in ETL, MDM, and enterprise data integration and (2) the providers representing the ML-powered data observability wave that emerged at the beginning of this decade, bringing fresh approaches to anomaly detection and metadata intelligence but less mature governance features.

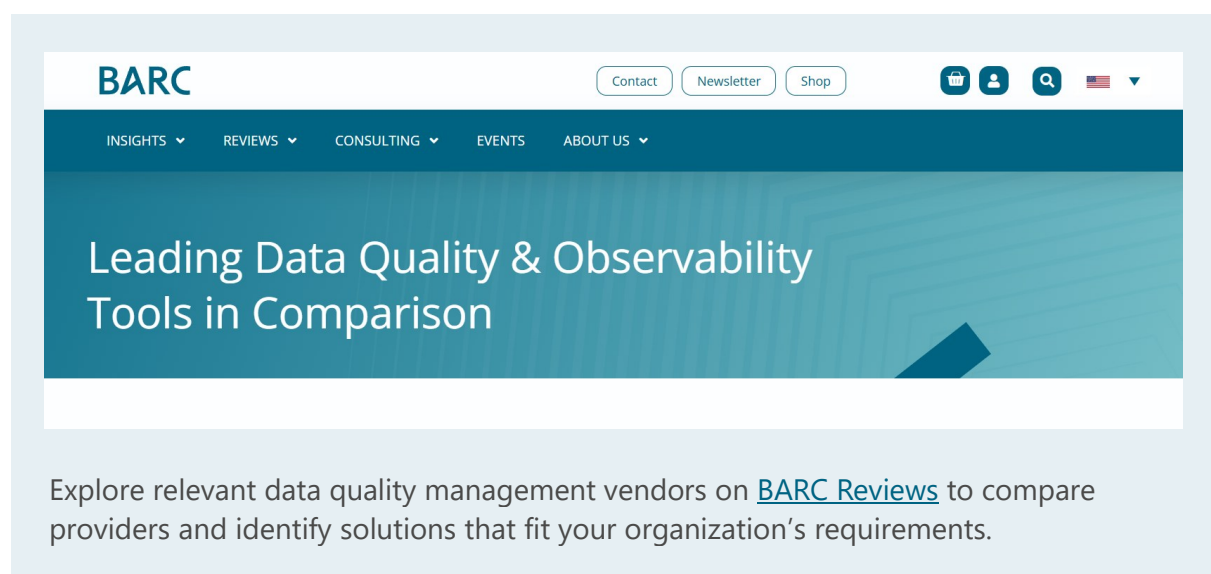
Neither legacy nor newcomer holds an inherent advantage. The right choice depends on your organization's existing infrastructure, maturity level, and strategic priorities. Understanding where vendors sit on these axes is essential for navigating a crowded market.

It is worth noting that adjacent market segments also address the need for high-quality data. These include master data management, data catalogs, data intelligence platforms, and providers focused on data enrichment.

BARC provides an overview of solution providers for data quality management on barc.com/reviews. The vendors listed there are considered globally relevant players in this market segment and meet the following inclusion criteria.

Inclusion criteria:

- Product is implemented globally.
- Vendor has 50+ employees.
- Product offers capabilities for at least 4 of the 8 practices/technologies covered in the BARC Compass.



The screenshot displays the top portion of the BARC website. At the top, the BARC logo is on the left, and navigation links for 'Contact', 'Newsletter', and 'Shop' are on the right. Below this is a dark blue header with white text links: 'INSIGHTS', 'REVIEWS', 'CONSULTING', 'EVENTS', and 'ABOUT US'. The main banner features a teal background with the text 'Leading Data Quality & Observability Tools in Comparison'. Below the banner, a white box contains the text: 'Explore relevant data quality management vendors on [BARC Reviews](https://barc.com/reviews) to compare providers and identify solutions that fit your organization's requirements.'

About BARC

BARC is the leading analyst firm for data & analytics, AI, corporate performance management (CPM) and ESG with a reputation for unbiased and trusted advice. Our expert analysts deliver a wide range of research, events and consulting services for the data & analytics community. Our innovative research evaluates software, vendors and service providers rigorously and highlights market trends, delivering insights that enable our customers to innovate with data, analytics and AI. BARC's 25 years of experience with data strategy & culture, data architecture, organization and software selection helps clients transform into truly data-driven organizations.

Research

BARC user surveys, software evaluations and analyst advisory services along with expert driven content such as research notes, trend analysis and blogs give organizations the confidence to make the right decisions. Our independent research gets to the heart of market developments, evaluates software, vendors and service providers thoroughly and gives valuable ideas on how to turn data, analytics and AI into added value and successfully transform businesses.

Consulting

The BARC consulting practice is entirely focused on translating companies' requirements into future-proof decisions. The holistic advice we provide helps companies successfully implement their data & analytics strategy and culture as well as their architecture and technology.

BARC's research and experience-founded expert input sets organizations on the road to the successful use of data & analytics, from strategy to optimized data-driven business processes.

Events

At BARC events, leading minds and industry experts come together to share insights and drive innovation. Our conferences, roundtables and online webinars attract over 10,000 participants annually, offering a unique blend of information, inspiration and interactivity. These events provide a platform to exchange ideas with peers, explore emerging trends and gain expert perspectives on market developments.

By engaging with thought leaders and industry practitioners, participants discover actionable strategies to enhance their business and stay ahead in the evolving world of data & analytics.



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