

AI and Data Management

Delivering Data-Driven Business Transformation and Operational Efficiencies

The 451 Take

Making decisions based on data is nothing new, but as companies pursue the goal of becoming more insight-driven, it has become clear that there is a need to adopt new technologies and methods that facilitate data-centric decision-making at the heart of the business. At the forefront here is artificial intelligence, or AI, which includes machine learning (ML) and deep learning (DL).

AI has the potential to transform nearly all aspects of life, including how people work, study, travel, govern and pursue leisure activities. But in order to take full advantage of everything that AI has to offer, enterprises must also embed AI at the data level, ensuring that AI enables the full scope of the data management lifecycle, from ingestion to curation and discovery, as well as driving applications that are built on that data.

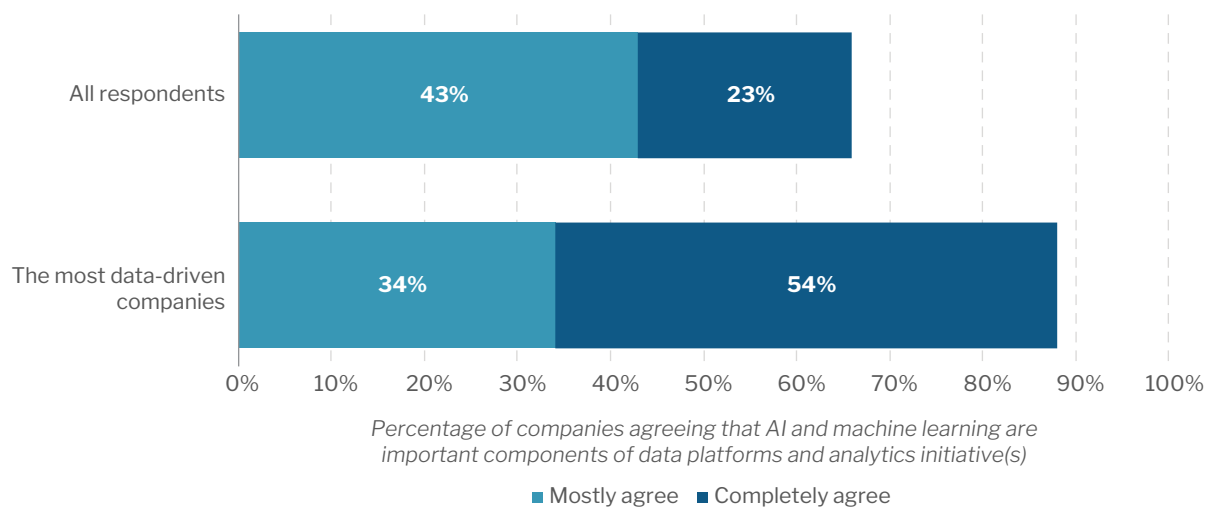
When it comes to data and the systems that manage it, enterprises are challenged in terms of increasing operational efficiencies and providing greater data access to a variety of data consumers. Enterprises need data management systems that run efficiently at high performance, capable of producing accurate results, and enterprises also need the data to be accessible to data scientists for building AI-enabled applications.

Data management systems and AI are synergistic. When AI becomes embedded within and throughout the data management system, it has the potential to improve database query accuracy and performance, and to optimize system resources. Further, as the underlying data platforms evolve to better support AI initiatives – for example, by providing direct support for the use of Python, GO, JSON and Jupyter notebooks – the development of AI-based applications and the construction of complex data models can be accelerated.

Data from 451 Research’s latest Voice of the Enterprise: Data Platforms and Analytics survey reveals the extent to which enterprises see AI and ML as critical aspects of their data platform and analytics initiatives. Two-thirds of all respondents agree that AI and ML are an important component of their data platform and analytics initiatives, but this figure increases to 88% among the most data-driven companies (i.e., those at which nearly all strategic decisions are data-driven).

The Importance of AI and Machine Learning to Data Platform and Analytics Initiatives

Source: 451 Research, Voice of the Enterprise: Data and Analytics, 1H 2019



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Business Impact

IMPROVE OPERATIONAL EFFICIENCIES. Enterprises often struggle to ensure that database systems are running efficiently. Queries that overload the system, consume excessive resources or impact other running jobs not only impact performance but also require manual resources to rectify. AI can help by automating the management of queries based on their likely resource consumption, providing a more stable and reliable system that can prioritize queries, reducing manual governance and monitoring of the database.

IMPROVE QUERY PERFORMANCE AND ACCURACY. AI-enabled database querying can have a dramatic impact on increasing the overall accuracy of – or confidence in – the query result. By executing queries in a more efficient manner, enterprises can lower the time taken to generate insight and improve business decisions.

EMPOWER BUSINESS ANALYSTS. One of the primary challenges when doing analytics has been to ‘democratize’ the technology to enable a broader range of people to be able to make analytics-driven decisions. Accelerating the development of AI-based applications can enable the output of machine learning models to be placed in the hands of domain experts and business decision-makers.

ACCELERATE DATA SCIENTIST PRODUCTIVITY. 451 Research survey results indicate that accessing and preparing data is one of the three most significant barriers to ML adoption. An AI-enabled database can help overcome this barrier to insight by accelerating data exploration and lowering development times through the integration of developer tools and frameworks.

THE AUTOMATION OF DATABASE ADMIN TASKS IS SET TO CHANGE THE ROLE OF THE DBA.

Through the automation of mundane database administration tasks such as database provisioning and performance tuning, DBAs can focus their time on higher-impact tasks such as architecture planning and data security.

Looking Ahead

The notion of a fully AI-enabled database is still in the early stages, with only a few vendors working on this type of initiative, although there are already some data management systems that have the benefit of embedded AI capabilities or functionality that supports AI-related activities. In the case of the former, we see built-in capabilities for workload management, for example, while the latter scenario includes functionality to support activities such as building and working with data science frameworks and tools.

Enterprises are bullish on the potential positive impact of AI. In 451 Research’s Voice of the Enterprise: AI and ML 2H 2018 survey, 68% of respondents already had or were actively planning machine learning projects, and 92% of those in the production or PoC stages have positive opinions about the performance of their ML projects to date.

Blending this optimism with the complexity of data management systems, there are a variety of areas in which AI can drive improvements – including query quality, system performance and data virtualization – and there are other areas that could be impacted as well, such as database administration. Likewise, databases can support data scientists and engineers in accelerating the development of AI applications, with further improvements to come in terms of advancements in tooling and algorithm development.



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