

Navigating the Technology Behind Decision Intelligence

Vanguard Report

October 2022

Commissioned by

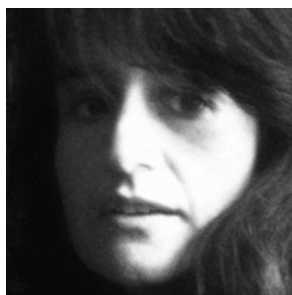


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Prior to joining 451 Research, Krishna held a number of positions as a journalist in London, New York and San Francisco. She began her career in journalism writing for Computergram International, and has a background in M&A as a former editor of weekly newsletter M&A Impact covering tech takeovers.

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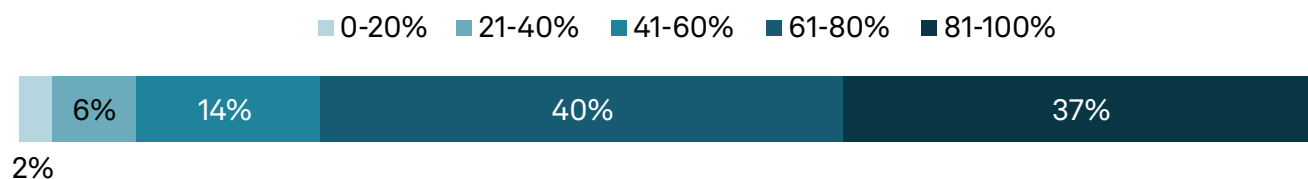
Introduction

Decision intelligence is an inclusive discipline focused on enabling more individuals in an organization to make better strategic and tactical decisions using data. These individuals could be non-experts – such as front-office workers, line-of-business managers and the C-suite – as well as experts in more technical roles, such as data scientists and data analysts. Either way, they are united by a requirement to be involved in their organization's data-driven decisions.

Decision intelligence has the potential to improve stakeholders' ability to make data-driven decisions by furnishing them with a self-service software platform designed to make the decision-making process easier, faster, more rigorous and more effective. To achieve this objective, decision intelligence requires a complete platform for data access and preparation, business analytics and data science.

AI-driven insights should be included in a decision intelligence platform since not every decision-maker has data or analytical acumen. Providing context for data and other AI-driven augmented capabilities is important to make a self-service decision intelligence platform truly live up to its name. Equally important is that the user experience supports governance. Governed DIY analysis paves the way for trusted insights that can be confidently relied upon to make data-driven decisions.

Figure 1: Proportion of Successful Data and Analytics Initiatives



Q. What proportion of your organization's data and analytics initiatives conducted in the last two years would you characterize as having been successful?

Base: All respondents (n=403)

Source: 451 Research's Voice of the Enterprise: Data & Analytics, Data Management & Analytics 2021

If understood and implemented successfully, decision intelligence can reduce the failure rate of data and analytics projects, which remains a major issue. Lack of access to all the appropriate data requiring analysis, poor data quality, and lack of clear, explicit and commonly agreed-upon objectives and outcomes are key reasons why these projects fail. Indeed, in a recent 451 Research survey, only 37% of respondents said that 81%-100% of their organization's data and analytics initiatives in the last two years had been successful (see Figure 1 above).

The Take

Any pioneering approach requires a comprehensive understanding of the technology behind it to make sense of it and “get” its benefits. Decision intelligence is no different. At the very least, organizations need to understand that decision intelligence is not the same as other decision-making approaches. Machine learning underpins its augmentation, automation and optimization capabilities, which lower the skills barrier to data-driven decisions for individuals who do not have sophisticated data or analysis skills – and reduce the “heavy lifting” for those who do. That said, decision intelligence also shares a major similarity with other business intelligence and analytics techniques in that it relies on rigorous data management, including robust data preparation involving the blending of datasets in multiple formats, states and environments in the cloud and on-premises. In fact, it could be argued that the data aspect of decision intelligence is just as critical as the analysis aspect because organizations’ data assets are increasingly used as the basis for strategic and tactical decisions. Almost half (43%) of respondents to 451 Research’s same Data Management & Analytics survey said data will be more important to their organization’s decision-making initiatives 12 months from now (see Figure 2 below).

The Technical Foundations of a Decision Intelligence Platform

The liberal use of machine learning to support analytics, data science and data management processes distinguishes a decision intelligence platform from other decision-making stacks. Machine learning is the linchpin of the forward-looking actionable insights that are a hallmark of decision intelligence – as well as the workhorse behind many data management capabilities, including self-service data prep and blending that are necessary to ensure less technical individuals can get data into a fit state for analysis.

Automated machine learning (AutoML) is another defining characteristic, as it is designed to liberate individuals from the time-consuming and complex processes involved in coding the models that power decision intelligence’s predictive and prescriptive analytical insights. A decision intelligence platform will also expose unexpected outliers in datasets – and reasons for them – using machine learning in the form of automated anomaly detection and root cause analysis. This helps support data-driven decision-making by non-experts, especially because it surfaces insights in vast quantities of data that would be impossible for these users to find manually.

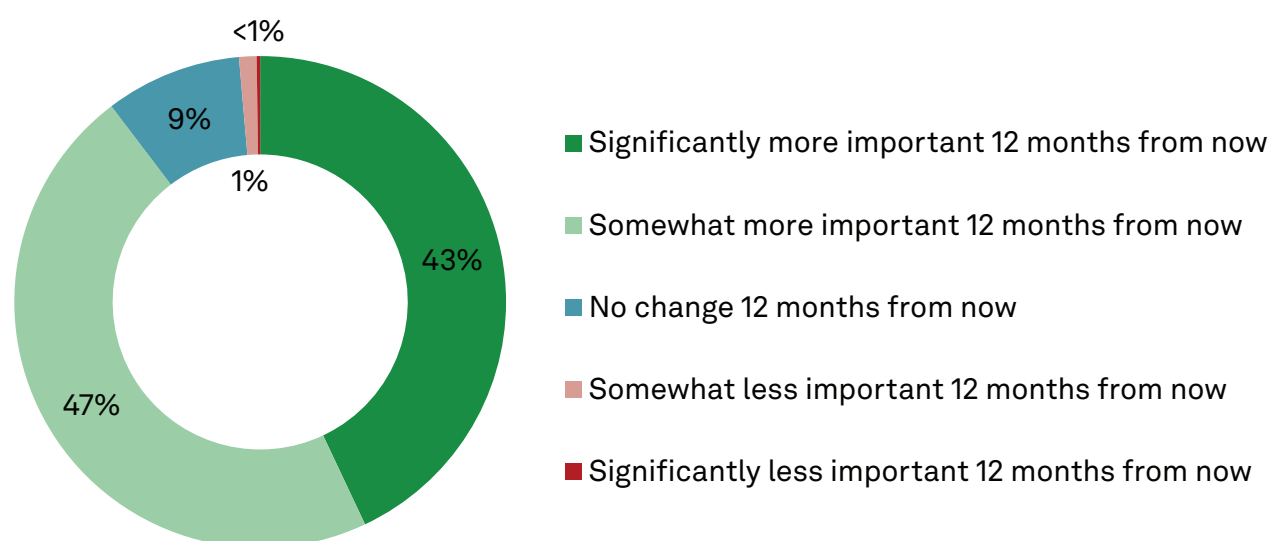
Machine learning underpins other capabilities, such as narratives to ensure prescriptive insights are easy to understand, and natural language queries to ask further questions without knowledge of SQL. Narratives succinctly explain the system’s insights in context, so individuals understand their business impact. A natural language query interface enables users to easily ask questions in phrases and sentences to further refine and customize insights.

As part of its proactive value, a decision intelligence platform should notify individuals to insights it generates so they do not have to waste time hunting for them. Furthermore, the alerting engine needs to balance sophistication with simplicity so that alerts are easy to set up and customize and are therefore useful, rather than irritating or overwhelming.

A dearth of data management capabilities will result in poor-quality insights unfit to be used for data-driven decisions. AI-assisted data prep and blending, for example, is a must-have as it enables individuals with few data manipulation skills to wrangle their data. The ability to profile, blend, transform, integrate and catalog datasets using machine learning to automate certain steps and augment others – by enabling the user to accept or reject them – is also critical. Moreover, it must exist in tandem with a comprehensive semantic layer to translate data into commonly understandable and consistent business terms.

To live up to its billing as a self-service decision-making framework for everyone, a decision intelligence platform must address the specific needs of data and analysis experts including data scientists and analysts, as well as non-experts such as marketers and sales executives. Moreover, it must do so using a governed self-service approach because this will provide freedom to non-technical users while meeting the security requirements of IT. Support for both experts and non-experts is increasingly necessary as data-driven decision-making appears to be rising across all roles and personas. According to a recent 451 Research survey, 90% of all respondents agree that data will become more important to decision-making in the next year (see Figure 2).

Figure 2: Increasing Importance of Data in Decision-Making



Q. Looking ahead 12 months, do you think data will be more important to your organization's decision-making, less important or will there be no change 12 months from now?

Base: All respondents (n=435)

Source: 451 Research's Voice of the Enterprise: Data & Analytics, Data Management & Analytics 2021

Experts tend to be code-loving user personas, so they should be able to code data management and analysis steps, as well as take advantage of the machine learning in a decision intelligence platform to assist them when necessary. Furthermore, coders frequently require more sophisticated functionality than less expert users, which necessitates homegrown functionality and integration with third-party tools, where appropriate. For example, experts will likely want to code extract, transform and load jobs to create data pipelines, so a programmatic approach is critical. Data scientists – and many analysts – like to draw on their coding expertise to build and tweak models, so they should be able to do that, too. Moreover, they should be able to do so without having to learn new coding skills.

Non-experts will require the contextual insights provided by narratives driven by natural language generation and the ability to query data using a natural language interface. AutoML (to assist in model building) and automated anomaly detection (to uncover the “unknown unknowns” in datasets) are other vital capabilities to insulate non-experts from underlying data and analytic complexity.

At the same time, all user personas need to be able to rely on the same decision intelligence platform, which calls for collaborative capabilities to enable them to work together as well as interfaces geared to their skill level – so non-experts can use a low-code/no-code approach, while experts can code. In addition, comprehensive, governed, role-based access and user management are necessary to ensure everyone can work together without breaching their organization’s data security and privacy policies.

Also essential is the ability to process and analyze data in a variety of formats and states, in recognition that effective data-driven decisions often require information sources other than numerical datasets alone. A portfolio of connectors to hook up to all requisite data in the cloud and on-premises, as well as an array of processing options to query it, are therefore very important. Direct query processing is mandatory for very large datasets, which would otherwise be unfeasible to move into a decision intelligence platform because they would introduce additional cost in addition to security issues. However, in-memory and local query processing are also needed to balance query performance and cost.

Furthermore, decision intelligence needs to be explainable, able to adhere to an organization’s compliance and governance mandates, as well as understandable if there is a problem with its insights. Organizations need to understand what data has been used to generate which model, as well as which models are being used to make what decisions. Moreover, the workflow and explanations must be comprehensible by both business decision-makers and expert users. Business decision-makers will be held responsible for the decisions they make using a decision intelligence platform, so they need a good grasp of the steps involved.

The ability to infuse decision intelligence insights into day-to-day applications and workflows already in use is central to making them easy to consume, act on and operationalize. Functionality, such as well-documented APIs, is therefore another must-have.

Finally, a flexible deployment model is necessary to meet each company where it is today, and to remain relevant and applicable in the future. Public cloud implementations will suit some companies. However, cloud-averse organizations, including those operating in highly regulated industries, may require an on-premises installation or a hybrid deployment model, which should also be supported.

Conclusion

Decision intelligence can make successful data-driven decisions a more achievable goal through the involvement of a broader set of stakeholders – if it has the correct technical foundation. As a horizontal software platform, it can support a myriad of vertical use cases, though we have yet to see the full spectrum appear as decision intelligence is still nascent. Processing credit, mortgages and car loans in financial services, adjusting inventory to align product supply chains with real-world demand, and optimizing trucks and freight to address logistics more accurately are some prevalent usage scenarios. However, as adoption grows, so will use cases, which will help root decision intelligence more deeply by providing examples of real-life decision-making situations in which it has been adopted. This will in turn bring additional clarity to the value it offers. Decision intelligence will evolve as more vendors deliver software platforms to enable it, which will expand the capabilities it provides further, even as many of the underlying technical foundations remain the same.



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