



IDC TECHNOLOGY SPOTLIGHT

Analytics Transformation: From Information Access to Decision Augmentation

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This Technology Spotlight examines today's requirements for a comprehensive decision support solution. It highlights the shortcomings of many "traditional" business intelligence (BI) software deployments and argues for the need to refocus on decision support functionality that not only delivers information to analysts and decision makers but also enables analysts and decision makers to assess the best possible decision alternative. The paper also looks at the role of BOARD International, a provider of enterprise performance management (EPM), business intelligence, and analytics software, in addressing this market need.

Introduction

There is no shortage of market jargon to refer to business data analysis techniques and technologies. Endless lists of acronyms, such as BI, EPM, AI, ML, and DW, are used alongside poorly defined terms, such as big data and predictive analytics.

However, this alphabet soup of terms fails to get at the underlying reason for all these concepts and technologies: *decision making*. Somehow, along the way of developing, marketing, buying, and installing technology to analyze business data, we have lost sight of the reason for doing so.

It's All About Decision Making

Decision making is and will continue to be a key input into the ability of your organization to succeed in fulfilling its goals and mission. Competition in business has always been about the ability to know something your competitors don't or to know it sooner and to act based on that information. In today's digital economy, the ability to make better decisions takes on new urgency and should be cultivated into a core competency.

Many organizations are in the midst of disruptive digital transformation efforts to position themselves for the data-driven future. In this environment of opportunity and uncertainty, organizations are faced with greater demands for actionable information. Yet, in a 2017 IDC survey of 120 heads of analytics and data management, less than half indicated that analytics results were very influential on the actions of executives, and less than a third said the same about the actions of frontline employees. Stakeholders from inside and outside the organization want information on demand to optimize their decisions.

So, what's the issue? Hasn't BI and analytics software been available for decades? Hasn't this software been tried and tested? Yes and no.

The Shortcomings of Business Intelligence Software

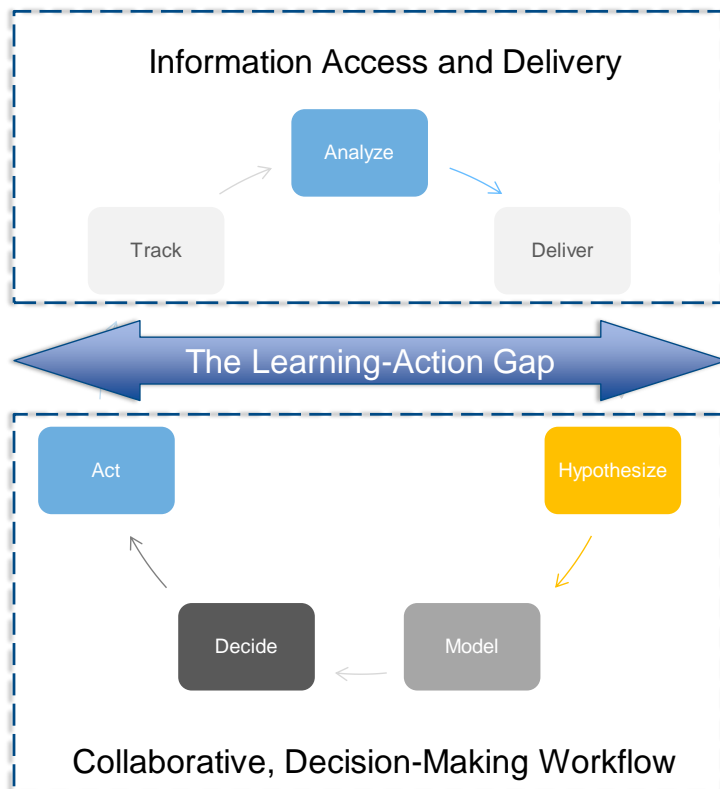
BI solutions have focused primarily on delivering information to individuals. This has been done in the form of reports, dashboards, and scorecards available as standalone software or embedded within a range of analytic applications. Although great progress has been made in the speed, accuracy, and presentation methods of delivering information to end users, there has been little progress in extending true decision support functionality to the broader organization.

Too often, BI software addresses only the activities shown in the upper half of Figure 1:

- **Track.** Results from business (transactional) systems or external sources are monitored to get a reading on the state of current operations. These results can be compared with established targets or goals.
- **Analyze.** Time-oriented data from multiple systems is integrated into a data warehouse/mart to support analysis of key trends. Deviations from expected results or targets are explored.
- **Deliver.** Reports or dashboards are published and delivered to business users based on the tracking activities and analysis of the data.

FIGURE 1

Decision Support and Optimization Framework



Source: IDC, 2017

As mentioned previously, the data visualization, alerting, and interactive analysis functionality has experienced especially favorable advances in recent years.

However, what largely remains missing from most BI software is the ability to assess the relevance of information to a decision and to gain deeper and timely insights to inform decision making. The steps shown in the lower half of Figure 1 are essential to fostering a collaborative, decision-making workflow:

- **Hypothesize.** The problem is stated and alternative solutions are sought. There are software aids that help in searching for new decision alternatives, although human intuition still plays a role in most cases.
- **Model.** Models are built to predict the likely result of candidate solutions to a problem. The effects of variable factors on business results are explored or simulated; a key factor is the ability to deal with uncertainty.
- **Decide.** The results of the analysis and modeling work are considered along with constraints and human judgment to decide on changes or adjustments to business policies or rules. Often, decision making is a process that involves a group of people. Therefore, support for team collaboration is vital.
- **Act.** Making the decision is only the beginning. The results of the decision must be communicated to all people and applications that are responsible for execution. This can involve the translation of the decision into the form that a particular application requires. Strictly speaking, Act is not a decision-making function. Modern software solutions should enable the taking of action by allowing smooth integration with downstream systems.

The Learning-Action Gap

The disconnect between information delivery and the decision-making process is the basis for what IDC has defined as the "learning-action gap." This gap represents a pressing concern. Traditional BI stops at the information delivery stage, paying insufficient attention to forming a problem statement, searching for candidate solutions (hypothesizing), and evaluating the likely outcomes (modeling). The danger is that a decision maker, without information relevant to the decision at hand, is likely to rely exclusively on intuition — a notoriously unreliable practice.

Additionally, if decisions are not captured, there is no opportunity to use relevant data to determine whether or not those decisions were effective and to learn from similar previous decisions and experts within the organization.

The learning-action gap impedes the ability to optimize decision and business processes. It is exacerbated by the tendency to reuse industry-standard approaches to analyzing the unique opportunities that individual organizations present. An inflexible information platform will typically try to squash any unique aspects of a business model into a more standardized industry framework. This lack of a highly customizable model leads decision makers to ignore data when making key decisions on the basis that the data is not a perfect reflection of the actual situation. This leads to less data-driven decision making, even in organizations with widely available BI tools.

Benefits of a Decision-Making Software Platform

It is possible to close the learning-action gap and provide decision-making software that supports all steps in the decision-making process, not just information presentation. However, it's not always easy to accomplish this. As the economist John Maynard Keynes said, "The real difficulty in changing any enterprise lies not in developing new ideas but in escaping from the old ones." In this case, the concept from which most organizations need to escape is the focus on data rather than decisions, and this often starts with a poorly formulated end-user requirements gathering process.

First, there is no question that the "if we build it, they will come" strategy does not work. When IT groups deploy BI or analytics solutions without direct business end-user input, they find that these technology deployments remain idle or substantially underutilized.

Second, asking end users for their BI system requirements usually results in a question about what data is available, an unprioritized wish list of all possible information, or simply a request for newer versions of previously available reports. Our research shows that leading organizations focus on evaluating end-user decision-making processes, not simply data requirements. They ask not "What data do you need?" but "What decisions do you make?" They do so through a combination of interviews and systems monitoring, thus capturing information about ongoing decisions to help uncover opportunities for automating certain decision-making steps. Constant monitoring of transactional data as well as decisions helps organizations develop rules, as well as monitor and modify those rules, to increase the amount of automation in operational decision making.

A third issue has been the view that user groups and categories of requirements (core BI, planning, forecasting, advanced analytics) are completely independent. Individual business analytics processes differ, but there is much commonality in the data processing engines (for data ingestions and preparation, governance, calculation, and visualization). Standalone components that are not guided by central data governance policies and procedures may satisfy the needs of individuals, but they often do so at the expense of enterprisewide collaboration, knowledge sharing, efficiency, and risk management. Doing analysis faster on the wrong data, or recreating the analyses of others, doesn't add value.

This is where a decision-making software platform approach shines. A single platform does not mean a single data processing engine. We are not suggesting that a single relational data warehouse approach is the answer — it is not. The platform needs to enable different perspectives depending on the persona of the user. It also needs to provide purpose-built and optimized data processing engines — not just for data visualization — for simulation, ad hoc n-dimensional analysis, reporting, collaboration, customizable business modeling, what-if analysis, scenario planning, and predictive analytics and other related functions. Such a platform should support all steps of the framework shown in Figure 1.

Such a unified platform opens decision support and decision optimization functionality to a broader audience of business users. It is a key step in achieving pervasive decision support functionality, but it also raises new challenges. As more users who are not data analysis specialists are supported by the platform, the need for data governance becomes essential. Maintaining a balance between on-demand self-service and governance (to address internal policy and external regulatory requirements) can be greatly enabled by a unified platform that recognizes the discrete needs of its various user types.

Considering BOARD

BOARD International is an EPM, BI, and predictive analytics software vendor. Founded in 1994 in Switzerland, BOARD has over 3,500 customers as well as an ecosystem of partners across the world.

The BOARD platform is a single unified and programming-free environment supporting a wide range of analytics, information access, planning, forecasting, and other decision support requirements. Its software platform unifies a broad range of business analytics functionality on a single code base. The platform has been available for on-premises and cloud deployments, with existing clients actively using both deployment types.

BOARD's software platform is based on the company's own in-memory database, data integration and preparation functionality for structured and unstructured data, business rules, security, and application development functionality. The latter has allowed BOARD to develop some of its own analytic applications for such EPM use cases as financial consolidation or financial planning and analysis. In addition, the flexible application development environment enables BOARD's partners

and customers to develop their own customized analytic applications that can be based on HTML5, Windows clients, Microsoft Office, or a mobile user interface (UI).

The platform's predictive analytics functionality exists in support of BI and EPM use cases. BOARD does not claim or attempt to be a replacement product for data scientists. Instead, predictive analytics is exposed to business users and analysts through specific algorithms for forecasting or optimization.

The latest version of BOARD's platform, released in 2017, includes a range of features to improve decision support functionality by adding and/or improving:

- **Cognitive/AI functionality.** New software features include the following:
 - Voice- and text-enabled natural language searching spans the entire platform.
 - Search results are informed through analysis of existing analytical assets and their ranking based on relevancy (including assessment of other employees' activity with any given analytic asset (i.e., report, dashboard, algorithm, visualization)).
- **Collaboration functionality.** The latest features include in-context chat among two or more users, annotation around analytic content visible on screen, and sharing of analytic content by embedding it into chats as a live asset, not as a screenshot.
- **Storytelling.** This new presentation capability allows users to assemble analytic content from multiple screens/views and customize it in the form of a presentation to be shared with others. Storytelling allows BOARD customers to create a bridge between organizational and individual BI and analysis needs.
- **User interface.** An all-HTML5 UI is now available for business end users and analysts and is coming shortly for administrators. It uses natural language generation to help describe and explain on-screen results in human-readable, machine-generated comments. The interface also exposes contextual features to the end user based on the specific task being performed (e.g., when data entry functionality is used in the context of what-if analysis, the user is presented with different options on right-clicking than when the same user is in the process of creating a visual storyline for others).

An upcoming addition to the platform will include support for big data and the Internet of Things (IoT), meaning the ability to integrate sensor-initiated (semistructured) IoT data into planning processes, automatic identification of significant events, and algorithms that allow software to drive decisions/actions based on these actionable events.

Challenges

BOARD presents its customers with a range of BI, EPM, and predictive analytics functionality to address their decision-making software support needs. It has a strong opportunity to help clients address some of the shortcomings of many existing BI and analytics tools deployments. The company continues to enhance its software products by incorporating the latest functionality in cognitive/AI software, collaboration, and information presentation. Organizations should evaluate BOARD's solution in the context of their decision-making requirements and as always perform appropriate due diligence.

At the same time, BOARD operates in a highly competitive environment where large technology vendors compete along with start-ups. BOARD needs to demonstrate that it continues to invest in R&D to enable augmentation of human decision makers — whether they are executives, managers, analysts, or line-of-business staff. This augmentation can take the form of automation of specific tasks within the data integration, analysis, and presentation workflows as well as inclusion of prescriptive functionality that provides users with either one optimized recommendation or multiple recommendations based on the probabilities of proposed outcomes.

Conclusion and Recommendations

Many organizations have become very efficient at capturing data but not at delivering actionable information to enhance the overall decision-making ability of their employees. If data is indeed an asset, market research suggests that a large amount of it remains dormant and therefore falls short of its full potential in generating new value. Organizations that are looking to pervasively deploy software solutions and practices that are effective in enabling better decision making should:

- **Eliminate the disconnect between technical users (BI staff) and decision makers.**
BI developers and data engineers have a role in ensuring that the relevant data is available within the organization and that the data is accessed only by those with the appropriate rights to do so; that recurring, fixed-format reports are available on a timely basis; and that certain BI functionality is embedded in enterprise applications. For all other needs, on-demand, self-service access to relevant information, governed based on organizational policies, must become the norm.
- **Support collaboration.** Many BI solutions have focused on the individual decision maker, yet decision making is often a collaborative process. The software should coordinate team collaboration for decision making by facilitating communication in the context of BI and analytics attributes such as charts and tables, by helping identify experts within the organization, and by exposing business metadata about BI and analytics attributes to all users so collaboration can be effective and efficient.
- **Enable customization.** As businesses strive to define their differentiation in narrower niches, the BI solution they deploy needs to be highly customizable. Long-term competitiveness will be sustained only by matching the peculiarities of a business model in the data from that business and then capturing and reflecting this uniqueness back to the decision makers. Rigid or highly formulaic ways of looking at data will hinder this competitiveness.
- **Track decisions and capture best practices.** Most BI solutions don't focus on tracking decisions, making it difficult to know which decisions were effective, nor do they capture how decisions are made. The best performers in an organization use information to make better-quality decisions. Capturing decision-making processes addresses the fundamental goals of preserving and sharing employee expertise and corporate knowledge.

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