How Augmented Analytics Will Transform Your Organization: A Gartner Trend Insight Report

Augmented analytics uses machine learning and artificial intelligence techniques to transform how analytics content is developed, consumed and shared. Data and analytics leaders should plan to adopt augmented analytics as platform capabilities mature.

Opportunities and Challenges

- Modern analytics and BI (A&BI) platforms characterized by visual-based exploration enable a wider range of users to author and interact deeply with data through visualization. However, preparing data, analyzing data and sharing findings remain largely manual, highly skilled, lengthy and bias-prone processes.

- Business people still struggle to know which insights to act on, because, even with modern A&BI platforms, insights are not contextualized or easily consumable.

- Code- and low-code-centric approaches to the data science and machine learning (DSML) model of development and management face similar challenges.

- Augmented analytics is transforming how business people explore, analyze and act on insights from A&BI and DSML platforms through machine learning (ML) and artificial intelligence (AI)-assisted data preparation, insight generation, model selection and insight explanation.

What You Need to Know

- We recommend introducing augmented analytics to make analytic insights accessible to all business roles as platforms' capabilities mature. Exploit the emerging capabilities of existing A&BI and DSML platforms, and experiment with those of specialist innovators in augmented analytics.

- Build trust in autogenerated insights and models by fostering collaboration between expert and citizen data scientists and by performing tests on historical data to prove accuracy and value. For machine-assisted models, favor proven algorithms over cutting-edge techniques.

- Explainability features that show the key factors behind an autogenerated recommendation, insight or model help increase adoption and build trust. These are becoming important capabilities to consider when selecting A&BI and DSML platforms.

- Introducing augmented analytics along with training to improve data literacy across an organization can accelerate adoption of augmented analytics capabilities within a business and increase their impact.

Insight From the Analyst

Don't Wait for Augmented Analytics to Become Mainstream — Start Today!

Rita L. Sallam, distinguished VP analyst

It's not a matter of if but *when* augmented analytics will become an expected part of the experience of using A&BI and DSML platforms.

> By 2021, augmented analytics will be a dominant driver of new purchases of A&BI and DSML platforms, and of embedded analytics.

Analytics has become a strategic component of how value is created in most businesses. However, it's at a critical inflection point. Business people are drowning in data and, especially as the complexity of data increases, they are struggling to identify what is most important and what are the best actions to take. Larger and more varied dataset combinations mean more variables and relationships to analyze, explore and test. The context of users — who they are, where they are, what they are asking, and when they are engaging — is crucial for presenting them with only what is important to act on at a particular moment. Extensive analysis is typically still required by a skilled person to identify what is happening, why and what to do about it.

Augmented analytics surfaces the most important insights and predictions in less time, with less need for DSML skills, and without the prior knowledge of the relationships between data required by manual approaches.

By automating many aspects of DSML development, management and deployment, augmented analytics makes expert data scientists more productive and extends the DSML model of development to a broader range of less skilled users, including new citizen data science roles (business analysts, developers and others).

Augmented analytics is complemented by natural language interfaces, including conversational interfaces that support text- and voice-enabled natural language queries and explanations. These

are making autogenerated insights from analytics more accessible and consumable by a broader set of users.

We're seeing established A&BI platform vendors complement and extend existing user experiences with augmented analytics to differentiate themselves and smooth the adoption process. For example, their users may now automatically generate an entire dashboard about a particular measure, such as attrition or order value. Alternatively, within an existing dashboard, users may identify a measure or dimension and let the system automatically generate new insights about that selection, such as identifications of drivers, segments and outliers. Some include natural language explanations.

Rather than extending current visual-based exploration experiences, innovators are introducing completely new user workflows. Some, for example, are replacing static dashboards with dynamic and autogenerated "stories" that use visualizations and natural language to identify only significant changes in data that are relevant to a particular user's role and context. Some are including the ability to interact with autogenerated insights visually and using conversational interfaces.

Most DSML platform vendors have either introduced some augmented DSML features or have them on their short-term roadmap. Innovative specialists are also introducing new automatic model-building workflows and other ways to optimize model selection, such as by business value, not just model accuracy.

> Early adopters of augmented analytics have the potential to realize more strategic and differentiating business benefits from their analytics investments than those who wait until these technologies are widely adopted.

Augmented analytics is transforming how analytical content is created and consumed, which is resulting in expanded adoption and greater business impact. Nevertheless, inhibitors to adoption remain: technological immaturity, organizational immaturity, low levels of data literacy, resistance to change, lack of trust in perceived "black-box" approaches, and concerns about the availability of data.

This document, and those it references, explores augmented analytics capabilities and their ramifications in terms of organizational and market disruption. It provides guidance to data and analytics leaders planning to adopt these capabilities in order to modernize and to drive business transformation and innovation.

Kind regards,

Rita Sallam

Executive Overview

This report will help you exploit the major market shift to augmented analytics sooner by offering insights into its three main dimensions (see Figure 1):

- **Capabilities transformation:** What core technical evolutions and advances are making augmented analytics, including augmented A&BI and DSML support, more powerful, accessible and explainable?

- **Market transformation:** Which vendors are creating potentially transformative augmented analytics capabilities? How is the technology evolving? Data and analytics leaders should track this innovation activity and align their investments to solve their most pressing business problems.

- **Organizational transformation:** Organizational readiness is crucial if you are to make the most of augmented analytics. But how do you start? How do you develop the right skills? How do you take advantage of existing investments? How do you expand adoption and derive value from augmented analytics?

Figure 1. The Three Dimensions of the Augmented Analytics Transformation

The Three Dimensions of the Augmented Analytics Transformation

Capabilities Transformation

Market Transformation

Augmented Analytics

Organizational Transformation

Source: Gartner
ID: 441420
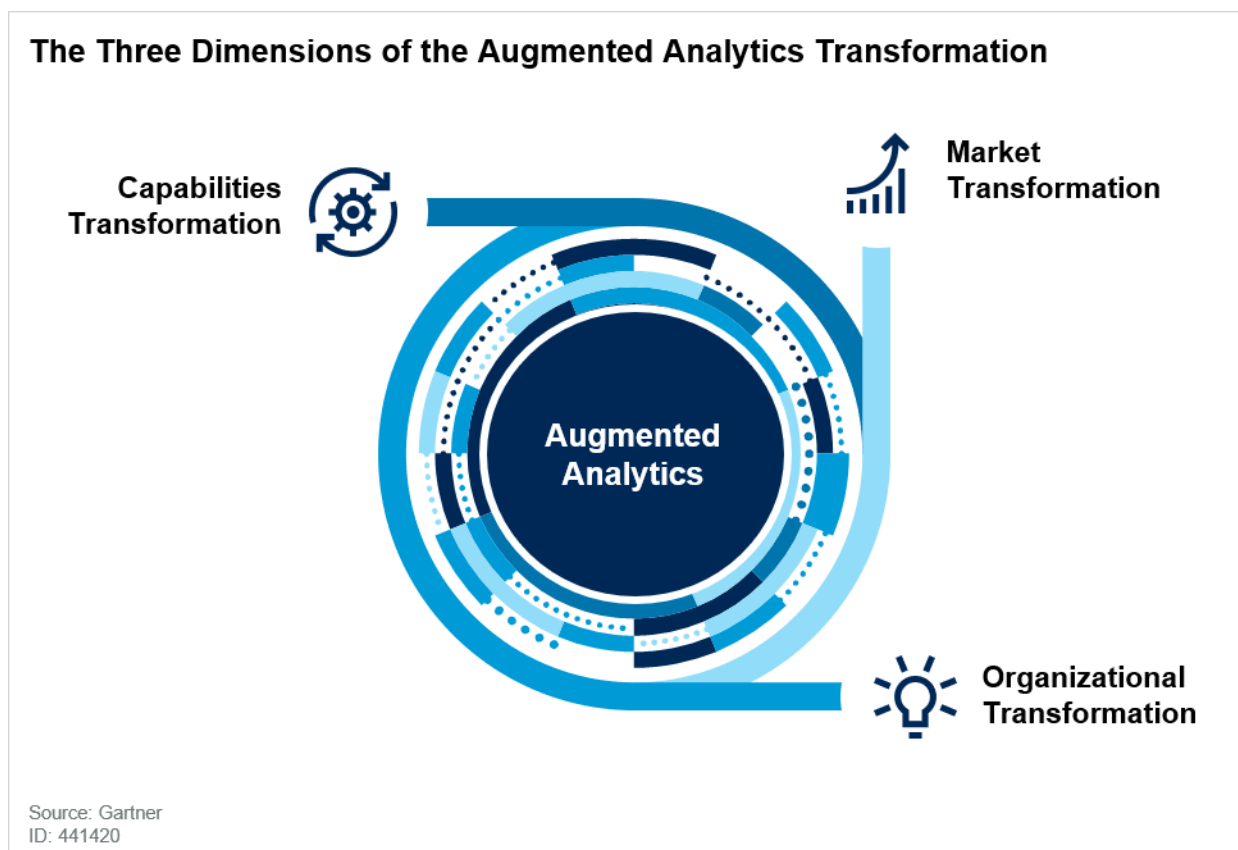
Definition

> Augmented analytics is transforming how organizations prepare data, find insights in data and share findings from those insights. It spans the three major components of the analytics workflow.

The three major components of the analytics workflow are:

- **Augmented data preparation:** This uses ML and AI automation to augment and accelerate the data profiling, data quality, harmonization, data modeling, manipulation, enrichment/inference, metadata development, and data-cataloging activities undertaken when using A&BI and DSML platforms and stand-alone data preparation tools. The dynamics affecting A&BI and DSML are also transforming data management. AI and ML techniques are automating many aspects of data preparation, data integration, data quality, master data management, metadata management, data cataloging and database management. For more details, see "Top 10 Data and Analytics Trends That Will Change Your Business."

- **Augmented analytics as part of A&BI platforms (augmented A&BI):** This enables ML- and AI-assisted data preparation, insight generation and insight explanation to augment how business people and analysts explore and analyze data when using A&BI platforms. With augmented analytics, business people and citizen data scientists automatically find, visualize and narrate relevant findings (such as correlations, exceptions, clusters, drivers and predictions) without having to build models or write algorithms. It can also be used by business analysts and citizen data scientists to analyze data, without preconceived notions of relationships between variables in data, to find previously unknown business drivers with less manual experimentation. Augmented analytics will transform how we interact with analytics content. Instead of accessing analytics content on static dashboards, the user will go to a dynamic, autogenerated dashboard or set of "stories" that reveals the most important insights in the user's context, such as drivers, explanations of changes and recommendations. The user explores data via visualizations and natural language processing-driven conversational interfaces, including natural language query technologies for asking questions and natural language generation technologies for explaining and interpreting results (such as the most statistically important findings in the user's context).

- **Augmented data science and machine learning (augmented DSML):** This uses ML and AI techniques to automate key aspects of DSML/AI modeling, such as feature engineering and model selection, as well as model operationalization, model explanation and, ultimately, model tuning and management. This reduces the requirement for specialized skills to generate, operationalize and manage an advanced analytics model. It opens up DSML content creation to citizen data scientists and application developers who must embed ML and AI into applications. This enables highly skilled data scientists to be more productive and gives them more time to focus on high-value tasks and on building and operationalizing the most relevant models.

Research Highlights

Capabilities Transformation: Assess Augmented Analytics Platforms

Innovative startups and large vendors that now offer augmented analytics capabilities are disrupting data and analytics markets ranging from A&BI and DSML to embedded analytics in enterprise applications.

Given the business impact and market potential of augmented analytics, together with recent market consolidation (Salesforce's acquisition of Tableau, and Google's of Looker), other vendors will themselves quickly introduce augmented analytics features. In this environment, innovators will have space to gain momentum, and adoption will accelerate as the technology matures.

This will force data and analytics leaders to reevaluate investments. Initially, most should look to complement modern A&BI and DSML platforms with the augmented analytics capabilities that are emerging within, or planned for, existing platforms. Alternatively, they should look to innovative specialists, depending on the urgency of their business need.

> The following Gartner publications describe the augmented analytics capabilities you should consider when evaluating platforms and architecting solutions, and identify current vendors. They include Market Guides, as well as Cool Vendors research on how startups are innovating in the field of augmented analytics.

Related Research

"Market Guide for Augmented Analytics Tools." Augmented analytic capabilities are disrupting analytics and BI and data science and machine learning markets. Tools leverage ML/AI to transform how analytics content is developed, consumed and shared. Data and analytics leaders should plan to adopt augmented analytics as capabilities mature.

"Augmented Analytics Feature Definition Framework." In the digital era, data and analytics leaders will leverage augmented analytics to drive improved customer experiences and valuable business outcomes. This research provides a structured five-step framework to define, assess and prioritize augmented analytics features in the product roadmap.

"Using Augmented Analytics to Boost A&BI." Organizations can use augmented analytics to boost the adoption and effectiveness of BI initiatives. This research helps data and analytics technical professionals evaluate, understand and incorporate augmented analytics in their A&BI environments.

"Augmented Analytics: Teaching Machines to Tell Data Stories to Humans." A lack of skills means that too few organizations use data storytelling techniques to increase decision makers'

engagement with data. Data and analytics leaders should plan for new ML/AI-based data storytelling capabilities that will automate these tasks and potentially change how analytics is done.

"Cool Vendors in Analytics." The complexity of many analytics portfolios leads to slow adoption and slow returns. Data and analytics leaders should consider these Cool Vendors as a complement to their existing architectures, with augmented analytics capabilities to mitigate complexity and achieve value faster.

"Toolkit: RFP for Data Science and Machine Learning Platforms." This Toolkit contains request for proposal templates for DSML platforms. These templates represent a starting point for companies defining their objectives and capabilities for selecting a DSML platform vendor.

"Critical Capabilities for Analytics and Business Intelligence Platforms." A&BI platforms are transitioning from delivering simple, manual self-service to supporting more advanced, automated analytic use cases via growing, augmented, ML-driven capabilities. Data and analytics leaders should enable broader use cases to increase their investments' business impact.

"Toolkit: Visual Guide to Analytics and Business Intelligence Platform Capabilities." This Toolkit gives data and analytics leaders a way of quickly navigating and communicating the functional capabilities of modern A&BI platforms. This can be helpful when selecting a technology or reviewing a portfolio of tools. Augmented analytics is among the capabilities accessed.

"Critical Capabilities for Data Science and Machine Learning Platforms." The functions and features of data science and machine learning platforms are evolving quickly to keep pace with a highly innovative space. This research helps data and analytics leaders to evaluate 19 of these platforms across 15 critical capabilities.

"Market Guide for Data Preparation Tools." Data preparation tools have matured from initially being self-service-focused to now supporting data integration, analytics and data science use cases in production. Data and analytics leaders must use this research to understand the dynamics of and popular vendors in this rapidly evolving market. This report includes a discussion of augmented data preparation market trends and features.

Market Transformation: Understand and Evaluate Trends You Can't Ignore

Augmented analytics is disrupting the A&BI and DSML markets and blurring the lines between them. Whereas visual-based data discovery with manual interactive exploration has defined modern A&BI platforms, augmented analytics characterized by ML/AI-based automation of insight discovery, exploration, explanation, prediction and prescription is a defining feature of a new generation of A&BI platforms.

The following Gartner publications assess key market and technology trends and identify key application areas for augmented analytics.

Related Research

"Augmented Analytics Is the Future of Data and Analytics." Augmented analytics is the next wave of disruption in the data and analytics market. It leverages ML/AI techniques to transform how analytics content is developed, consumed and shared. Data and analytics leaders should plan to adopt augmented analytics as platform capabilities mature.

"How Augmented Machine Learning Is Democratizing Data Science." Augmented analytics has emerged as one of the most transformational innovations in DSML. It helps expert and citizen data scientists more quickly build and deploy models. Data and analytics leaders need to understand the benefits and limitations of augmented DSML.

"Recent Acquisitions Signal Big Changes to the Analytics and Business Intelligence Platform Market." Data and analytics leaders should expect the next era of analytics to shift focus from content authors to content consumers. Next-generation analytics platforms will emphasize lower prices, augmented analytics, natural language interfaces, and a user experience embedded in business applications.

"Top 10 Data and Analytics Technology Trends That Will Change Your Business." These data and analytics technology trends will have significant disruptive potential over the next three to five years. Data and analytics leaders must examine their business impacts and adjust their operating, business and strategy models accordingly. Augmented analytics is a top trend.

"Presentation: Top Technology Trends in Data and Analytics That Will Change Your Business." These data and analytics strategic technology trends will have significant impact over the next three to five years. Data and analytics leaders should use the slides in this presentation to educate and engage stakeholders for strategic and tactical planning.

"Hype Cycle for Analytics and Business Intelligence, 2019." This Hype Cycle will help data and analytics leaders modernize their analytics and BI programs. Key trends include the ongoing transition to augmented analytics, focus on building a digital culture, and the scaling and operationalization of analytics initiatives.

Organizational Transformation: Ready Your Organization to Exploit the Potential of Augmented Analytics

Many organizations have already made significant investments in self-service to expand adoption of analytics, but, despite these efforts, Gartner estimates that, on average, only 35% of people in organizations have access to A&BI tools. Despite the compelling benefits of augmented analytics, which can accelerate adoption well beyond this limited level, efforts to incorporate augmented analytics encounter resistance — beyond any technological challenges — for several reasons:

- The lack of data literacy in the broader user population that could access insights from augmented analytics.

- The perception that augmented analytics tools are not transparent and that they represent a black-box approach to decision making.

- Users' lack of trust in recommendations or insights, unless they see the reasons behind specific recommendations.

- The threat to job security as redivision of workloads and redefinition of work processes upset the status quo.

- Business leaders' reliance on intuition and traditional decision-making practices, and their resistance to change.

- The mistaken belief that analytics maturity follows a linear progression and maturation process, such that predictive and prescriptive analytics can be considered only once a solid data foundation has been established.

Overcoming these barriers will require effort from data and analytics leaders. They need to challenge current processes and approaches to analytics and create an environment and a culture that supports change. Understanding the impact of these new technologies and introducing new roles, processes and governance approaches to new autogenerated models will be crucial.

> The following Gartner publications analyze how an organization should evolve its strategy, skills and architecture.

Related Research

"Four Real-World Case Studies: Implement Augmented DSML to Enable Expert and Citizen Data Scientists." Augmented DSML not only gives citizen data scientists access to DSML capabilities, it also makes experts more efficient and productive. Data and analytics leaders should study these case studies to understand the business impact of augmented DSML.

"Build a Comprehensive Ecosystem for Citizen Data Science to Drive Impactful Analytics." Citizen data scientists have latent potential that can provide business value while driving analytical maturity. Data and analytics leaders must provide an environment that integrates and supports citizen data scientists by leveraging their skills and maximizing their contribution.

"Toolkit: How to Architect an Analytics Platform." This Toolkit helps data and analytics leaders to design, deploy and develop the architecture of an analytics platform, from data, to analytics, people and business outcomes. The downloadable slide deck can be customized and used as a framework and input for an analytics roadmap design.

"Leading Upskilling Initiatives in Data Science and Machine Learning." Despite tool enhancements and more data and analytics professionals, the talent gap is a top challenge for DSML initiatives. This is a high-level playbook to help data and analytics leaders develop in-house talent and improve DSML literacy.

"Grow Data Science and Machine Learning Success by Aligning Roles With Project Phases." Different resources and activities are required at each DSML project phase. Data and analytics

leaders should use this research to guide associated business, data science and IT resource and activity assignments.

"The Use of Augmented Analytics to Improve Analytics and BI Adoption in Low-Maturity Organizations." Adoption of analytics and BI within organizations is still low, even though organizations continue to invest in the technology. Data and analytics leaders should incorporate augmented analytics into the existing analytics landscape to drive adoption and enable more diverse users.

"How Citizen Data Science Can Maximize Self-Service Analytics and Extend Data Science." Citizen data science fills the gap between mainstream self-service analytics by business users and the advanced analytics techniques of data scientists. Data and analytics leaders should use CDS to explore new data sources, apply new analytics capabilities and access a larger user audience.

"How to Enable, Expand and Evolve Modern Analytics Capabilities Throughout the Organization." Analytics and data science requirements often differ between business departments and the centralized data and analytics team. Data and analytics leaders must know how to engage with individual business units to deploy, grow and enhance analytics solutions that address business use cases.

"How to Enable Self-Service Analytics." There is a heightened interest in self-service analytics driven by augmented analytics and roles such as the citizen data scientist. Implementation best practices demonstrate that, for data and analytics leaders, enabling self-service involves far more than the provision of easy-to-use tools.

"Toolkit: Curriculum for Data Literacy Training Programs." The increasingly pervasive nature of data makes it crucial for all employees to learn to "speak data." This Toolkit outlines practical advice for data and analytics leaders to plan their data literacy training programs as a key enabler of successful data and analytics strategies.

"Insurers Should Adopt Augmented Analytics to Help Promote Analytics Capabilities to the Business." Gartner has named augmented analytics as one of the top 10 data and analytics trends that will change your business. As investments among P&C and life insurers continue to rise, CIOs should understand the transformational potential of augmented analytics and the impact on their road to data mastery.

Related Priorities

Table 1. Related Priorities

Priority	Focus
CRM Strategy and Customer Experience	CRM and CX are separate but overlapping and interconnected enterprisewide initiatives garnering a high degree of executive support and scrutiny. They are often key elements of digital transformation.
Marketing Data and Analytics	Data and analytics have become the foundation of marketing, driving efficiency and effectiveness through better data collection, modeling, optimization and greater relevance to the consumer.
Sales Technology	The sales technology research agenda focuses on the selection, delivery and maintenance of tools that optimize how sellers and managers conduct their daily sales processes.
Data and Analytics Strategies	Organizations need to set strategies and practices that fully exploit the combined forces of data, analytics and AI to deliver business value both within and beyond their business.
Customer Service and Support Technology	Many technologies and best practices are needed to create a leading customer service and support organization and its associated operational, customer experience and employee experience aspirations.
Digital Workplace Program	A digital workplace program is a business strategy to boost workforce digital dexterity through an engaging and intuitive work environment.

Source: Gartner

Gartner Analysts Supporting This Trend

Austin Kronz

Carlie Idoine

Joao Tapadinhas

Related Resources

Gartner Webinars

Get practical advice in 60 minutes from the world's most respected experts. Keep pace with the latest issues that impact business.

"Top 10 Data and Analytics Trends That Will Change Your Business"

"Data and Analytics Governance: What's Broken, and What We Need to Do to Fix It"

"Why Chief Data Officers Should Lead Digital Transformation"

"How Augmented Analytics Is Transforming Data and Analytics"

"Build Blockchain Into Your Data and Analytics Program"

"Data and Analytics Key Roles, Responsibilities, and Organization"

"Best Practices to Negotiate With Data and Analytics Vendors"

"What the Internet of Things Means for Your Data and Analytics Capabilities"

"Effective Data and Analytics Governance — Finally!"

"How to Put Data and Analytics at the Heart of Your Digital Platform"

"Digital Platforms: The Role Data and Analytics Plays in Their Success"

"Data Literacy: Foster Information as a Second Language"

Gartner Events

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Gartner Articles

"Use Data and Analytics to Tell a Story"

"First 100 Days of a Chief Data Officer"

"CDOs Must Take the Lead to Improve Data Literacy"

"Build a Data-Driven Organization"

"Analyst Answers: How IT Leaders Should Invest in Data and Analytics"

Gartner Video

"The Future of D&A"

Gartner Peer Connect

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Corporate Headquarters
56 Top Gallant Road
Stamford, CT 06902-7700
USA
+1 203 964 0096

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AUSTRALIA
BRAZIL
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