

# Advancing Business With Advanced Analytics

**Published:** 9 July 2015

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Business and IT leaders are boosting investment in advanced analytics, which can address business problems and provides business benefits far beyond conventional BI. We provide perspective into this complex, fast-moving field by breaking it down into seven key chapters.

## Analysis

### Advanced Analytics Has the Power to Transform

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Leading organizations in almost all industries are embracing advanced analytics as they start to realize the vast opportunities and impact it can bring to solving complex business problems.

Advanced analytics can save lives, reduce customer churn and make equipment safer. By achieving even single-digit percentage improvements in customer retention, marketing responses, fuel savings or quality defects, advanced analytics can realize big business impacts. In some cases, it can be genuinely transformational, enabling disruptive innovations in many areas, including new products in healthcare, automation, digital business, smart machines and robotics.

It is this potential that's fueling business spending. In 2014, advanced analytics was the fastest-growing segment (at 12.4%) as organizations continued to move beyond descriptive and diagnostic analytics into predictive and prescriptive analytics. This was driven by increasing interest in using big data, predictive analytics and machine learning to address problems presented by high-impact business use cases that were difficult to solve in the past (see "Market Share Analysis: Business Intelligence and Analytics Software, 2014").

Advanced analytics goes far beyond basic analytics, which derives insights by simply explaining what happened. By contrast, advanced analytics is about problem solving by diagnosing root causes and effects, and by anticipating and optimizing outcomes, behaviors and processes.

To show this distinction, let's take customer churn, which is an example that affects most firms. The basic analytics approach would simply seek to *quantify* the business problem by answering the question, "How many customers have we lost in the past three months?" But advanced analytics solves the problem by answering the question, "What must we do to prevent our most profitable customers from going elsewhere?" Only advanced analytics can provide a methodological solution to this.

Business and IT leaders face a complex set of decisions to realize the many business potentials from advanced analytics. This special report organizes the subject into seven chapters, providing links to over 1,000 pages of research and analysis on this emerging opportunity (see Table 1).

It brings together nearly 90 research notes that offer analysis and recommendations on the role of advanced analytics, the infrastructure requirements, the different analytics techniques, use cases, industry-specific lessons, vendors, strategies and organizational issues.

**Table 1. The Seven Chapters of the Special Report for Advanced Analytics**

Special Report Chapter Titles	Chapter Content
Get the Basics of Advanced Analytics	Introduces the advanced analytics discipline, explaining why you should use it and how
Create a Solid Data Infrastructure for Advanced Analytics	Discusses basic data infrastructure choices that support some of the advanced requirements
Choose the Right Advanced Analytics Techniques	Sheds light onto many advanced analytics techniques, including optimization, machine learning, and text, speech and image analytics
Let the Business Process Be Your Guide	Provides in-depth analysis into major use cases across industries
Explore Industry-Specific Lessons	Delves deeper into advanced analytics lessons from 12 industries
See Which Vendors Are Driving Innovation	Provides analysis of established and emerging vendors
Organize for Advanced Analytics to Accelerate Your Success	Gives advice to better organize your company for advanced analytics

Source: Gartner (July 2015)

## Research Highlights

### Get the Basics of Advanced Analytics

Traditionally, analytics has been associated strongly with reporting, performance monitoring and dashboards. However, this is only part of the story. We call this part "descriptive analytics," which is all about describing what happened in the past.

But advanced analytics, based on data science principles and methodologies, goes much further. It can not only answer more complex business questions, but is really more about solving business problems.

Table 2 contrasts "basic analytics" against "advanced analytics."

Table 2. Advanced Analytics Focuses on More Complex Questions

Basic Analytics Asks ...	Advanced Analytics Asks ...
How many customers have bought which kind of products in the past three months?	How can we target customers so that we can sell even more products, especially profitable products and those of which we have more inventory?
How many failures have we experienced in the past three months for different types of equipment?	How can we predict failures before they happen, enabling us to do predictive maintenance instead of routine maintenance?
What problems with quality have we experienced in the past month?	How can we influence the production process so that we can control quality more effectively?

Source: Gartner (July 2015)

### *Recommendation:*

Readers with a minimal background in advanced analytics should consider the following set of notes as a first starting point. They are not, however, meant as a substitute for data science textbooks. These notes offer guidance on the role and capabilities of advanced analytics and basic how-to recommendations for getting started.

"How to Take a First Step to Advanced Analytics"

"Ten Reasons to Reach Beyond Basic Business Intelligence"

"Extend Your Portfolio of Analytics Capabilities"

"How Data Science Projects Deliver Business Impacts"

"How to Get Started With Prescriptive Analytics"

## Create a Solid Data Infrastructure for Advanced Analytics

The velocity and volume of data streams from business operations are soaring. The Internet of Things, still in its infancy, will add even more. Advanced analytics increasingly will need special infrastructure to keep pace with this rapid change.

Analytics leaders face an array of infrastructure options to be understood and evaluated. The following research notes offer a foundation for identifying, clarifying and evaluating the upcoming data infrastructure choices:

### **Data lakes:**

"Defining the Data Lake"

**Data preparation:**

"Market Guide for Self-Service Data Preparation for Analytics"

**Distributed event streaming:**

"Move to New Technology for Analytics on Fast Big Data"

**Hadoop:**

"Market Guide for Hadoop Distributions"

"Survey Analysis: Hadoop Adoption Drivers and Challenges"

**In-DBMS analytics:**

"Why In-DBMS Analytics Deserves a Fresh Look"

**In-memory computing:**

"What Apache Sparks Means for Big Data"

"How to Select In-Memory Computing Technologies for Big Data"

"Architecting New Velocity Needs With In-Memory Computing and Big Data"

**Open-source software:**

"Benefits and Compromises of Open-Source and Corporate Software Suites for Advanced Analytics"

**Operational intelligence:**

"Market Guide for Operational Intelligence Platforms"

## Choose the Right Advanced Analytics Techniques

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A major benefit of advanced analytics is its flexibility. The sheer number of options can seem overwhelming. The research notes here explore the opportunities and impact of nine advanced analytics sub-disciplines, including image, video, machine learning, social and speech. For an overview of the advanced analytics trends and timelines, see "Hype Cycle for Advanced Analytics and Data Science, 2015."

**Embedded analytics:**

"Invisible Advanced Analytics: Coming to a Business Application Near You"

**Graph Analytics:**

"Making Big Data Normal With Graph Analysis for the Masses"

**Image and video analytics:**

"Market Trends: Video Analytics See Step Change to Smarter Cloud Solutions"

"Image Recognition: The Intersection of Digital Business and Analytics at the Store Shelf"

**Location intelligence:**

"Location, the Next Champion in Analytics"

**Machine learning/predictive analytics:**

"Machine Learning Drives Digital Business"

**Optimization:**

"Market Guide for Optimization Solutions"

**Smart data discovery:**

"Smart Data Discovery Will Enable a New Class of Citizen Data Scientist"

**Social analytics:**

"Technology Overview for Social Analytics Applications"

"Sentiment Analysis Cracks the Code on Unstructured Voice of the Customer Analytics"

**Speech analytics:**

"Are You Ready for Real-Time Speech Analytics?"

**Text analytics:**

"Technology Overview for Text Analytics"

## Let the Business Process Be Your Guide

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Different business use cases call for different analytics approaches. Use cases explain the real value behind advanced analytics. There are no predetermined ways for how data should move from its raw state to become an insight that results in a business outcome. By investigating real-world use

cases, business and IT leaders can understand and illustrate what are the key advantages of advanced analytics and the technologies driving these innovations.

The research notes that follow focus in depth on a broad range of business scenarios and the impact of advanced analytics.

**B2B CRM:**

"Predictive Analytics Are Transforming B2B Selling"

"Market Guide for SaaS-Based Predictive Analytics Applications for B2B Sales and Marketing"

**Behavior and security analytics:**

"Best Practices and Success Stories for User Behavior Analytics"

"Market Guide for User Behavior Analytics"

"Demystifying Security Analytics: Sources, Methods and Use Cases"

**Customer analytics and personalization:**

"Technology Overview for Customer Journey Analytics"

"Drive Customer Engagement With Advanced Analytics"

"Market Guide for Digital Personalization Engines"

"Market Guide for Loyalty Marketing Platforms"

**Failure prediction:**

"Using Advanced Analytics to Predict Equipment Failure"

"Improving Field Service Through Analytics"

**HR analytics:**

"Use Data Science to Address Employee Flight Risk"

**Internet of Things/operational technology:**

"OT Drives Smarter Advanced Analytics"

**IT operations analytics:**

"Organizations Must Sequentially Implement the Four Phases of ITOA to Maximize Investment"

**Logistics:**

"Market Guide for Vehicle Routing and Scheduling"

**Marketing analytics:**

"Advanced Analytics for Marketing: Five Representative Use Cases"

**Mobile data and analytics:**

"Market Insight: Leveraging the Early Implementations of Data and Analytics From the Telecom Industry"

"Use Mobile App Analytics to Drive Positive Change in the Digital Workplace"

**Sentiment analysis and audio analytics:**

"Sentiment Analysis Cracks the Code on Unstructured Voice of the Customer Analytics"

"Are You Ready for Real-Time Speech Analytics?"

**Supply chain:**

"Advanced Supply Chain Analytics: What It Is and Why It's Important to Understand"

"Deconstructing Supply Chain Analytics"

## Explore Industry-Specific Lessons

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Different industries have their own terminologies. Their business processes differ and so do the signals in their data. But the differences can illuminate new opportunities for process change and innovation through advanced analytics. The research note "Lessons Learned From Advanced Analytics in Action" spells out several best practices based on hundreds of advanced analytics deployments, including "Become inspired by and adapt innovative analytic ideas from leading organizations in other sectors."

The following research notes provide in-depth analysis of advanced analytics use cases in 12 industries. (Note that some documents may not be available as part of your current Gartner subscription):

**Asset-intensive industries:**

This includes energy, manufacturing, oil and gas, mining, transportation, healthcare, and utilities.

"OT Drives Smarter Advanced Analytics"

"Using Advanced Analytics to Predict Equipment Failure"

"Improving Field Service Through Analytics"

**Banking:**

"The Taxonomy of Banking Analytics Value"

"Analytics Heat Map in Banking, 2015"

**Consumer goods:**

"Retail Activity Optimization Can Boost Sales Force ROI in Consumer Goods"

**Healthcare:**

"Market Trends: Applying Analytics in Healthcare"

**Insurance:**

"Technology Overview for Advanced Analytics in P&C and Life Insurance"

**Manufacturing:**

"Helping Manufacturers Move Beyond Visibility to Advanced Analytics"

**Oil and gas:**

"How Advanced Analytics Can Amplify the Impact of Digital Oil Field Solutions"

**Public sector:**

"Market Trends: Predictive Policing — A Growing Area in Proactive Public Safety"

"Use Big Data to Fuel Big Change in K-12 Education in 2015"

**Retail:**

"Retailers Find Success Using Self-Service and Advanced Analytics"

"A Real-Time Store Monitoring Platform Is Critical for Digital Business"

"Image Recognition: The Intersection of Digital Business and Analytics at the Store Shelf"

**Telco:**

"Market Insight: Leveraging the Early Implementations of Data and Analytics From the Telecom Industry"

**Transportation:**

"Market Guide for Vehicle Routing and Scheduling"

"How to Derive Value From Big Data in Transportation"

**Utilities:**

"Top Use Cases for Meter Data Analytics Across the Utility Value Chain"

"Invest in Analytics to Improve Utility Customer Engagement"

"Expand Utility Analytics to Optimize Your Grid"

## See Which Vendors Are Driving Innovation

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In the realm of analytics, there has never been such a volume or pace of innovation — from processing and data storage paradigms to an array of evolving products and services — from every type of vendor from established companies to startups.

Gartner's vendor research helps organizations with their buying decisions, identifies emerging innovative vendors and assesses the vendors' capabilities. Gartner Magic Quadrants create a broad overview of vendors in a specific market.

Cool Vendors reports identify technology vendors that have strong market vision and offer unique and innovative products and services that have real market impact. Market Guides define emerging markets and explain what IT and business leaders can expect it to do in the short term.

"Market Guide for Advanced Analytics Service Providers"

"Magic Quadrant for Advanced Analytics Platforms"

"Cool Vendors in Data Science, 2015"

"Cool Vendors in Information Innovation, 2015"

"Cool Vendors in Smart Machines, 2015"

"Cool Vendors in Big Data, 2015"

"Cool Vendors in In-Memory Computing Technologies, 2015"

"Cool Vendors in IT Operations Analytics, 2015"

## Organize for Advanced Analytics to Accelerate Your Success

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Analytics leaders in particular have to overcome organizational obstacles that can block companies from getting the most out of advanced analytics. They need to understand how to build up skills

(even if those skills are scattered throughout the enterprise), create better communications, and tailor the organization through better process and governance that focuses on advanced analytics.

The following recent research notes explore a range of organizational challenges and how to overcome them:

"Organizing for Big Data Through Better Process and Governance"

"How Data Science Projects Deliver Business Impacts"

"Seven Best Practices for Your Big Data Analytics Projects"

"Staffing Data Science Teams"

"Organizations Will Need to Tackle Three Challenges to Curb Unstructured Data Glut and Neglect"

"Five Reasons Why Big Data Needs Metadata Management and How to Leverage It"

"Answering Big Data's 10 Biggest Planning and Implementation Questions"

"Big Data Business Benefits Are Hampered by 'Culture Clash'"

## Gartner Recommended Reading

*Some documents may not be available as part of your current Gartner subscription.*

"Predicts 2015: A Step Change in the Industrialization of Advanced Analytics"

"100 Information and Analytics Predictions Through 2020"

### More on This Topic

This is part of an in-depth collection of research. See the collection:

- Entering the Smart-Machine Age

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