



NATIONAL CENTER FOR
THE MIDDLE MARKET

A SPECIAL REPORT BY THE NATIONAL CENTER FOR THE MIDDLE MARKET

THE POWER OF BUSINESS ANALYTICS

Accelerating Growth
and Business Performance
in Middle Market Companies

IN COLLABORATION WITH



THE OHIO STATE UNIVERSITY
FISHER COLLEGE OF BUSINESS

CHUBB®

Contents

3	ABOUT THIS REPORT
4	EXECUTIVE SUMMARY
6	OVERVIEW: MIDDLE MARKET COMPANIES USE ANALYTICS TO INFORM A WIDE RANGE OF BUSINESS QUESTIONS
15	INSIGHT 1: ANALYTICS AND GROWTH GO HAND-IN-HAND
17	INSIGHT 2: SPECIFIC TYPES OF ANALYTICS TOOLS IMPROVE CORE FUNCTIONAL CAPABILITIES
20	INSIGHT 3: POSITIVE SYNERGIES EXIST BETWEEN DIFFERENT TYPES OF ANALYTICS TOOLS
21	INSIGHT 4: CHALLENGES WITH ADOPTING ANALYTICS FALL INTO FOUR CATEGORIES: DATA, RESOURCES, CULTURE, AND SKILLS
25	CONCLUSION
26	NEXT STEPS IN YOUR ANALYTICS JOURNEY

About This Report

Analytics is not new, but it is only now coming into its own as a business capability and strategic weapon.

In a January 2000 *Harvard Business Review* article, Thomas Davenport, the President's Distinguished Professor in Management and Information Technology at Babson College, described how a handful of companies including Amazon, Harrah's, Capital One, and the Boston Red Sox, were at the time "dominating their fields by deploying industrial-strength analytics across a wide variety of activities."¹ These pioneers were among the first to learn and exploit the value of using data to make better and more strategic business decisions and propel themselves to the head of their industries.

Since then, the analytics industry in the United States has grown to employ roughly three million people, according to estimates by PricewaterhouseCoopers and others. International Data Corporation (IDC) puts the total market for analytics-related hardware, software, and services at \$189.1 billion. Many companies have learned to use analytics as a strategic weapon, wielding the insights gained to innovate offerings, improve processes, and "outsmart" their competitors. As business analytics increasingly becomes a "must have" for organizations that wish to remain competitive and make more informed decisions across all areas of the business, these numbers will continue to escalate.

ANALYTICS IS A CRITICAL CAPABILITY WITHIN THE DIGITAL TRANSFORMATION FRAMEWORK

This report represents one of the first outcomes of the Center's ongoing and comprehensive exploration of digital transformation in the middle market. It illustrates how analytics is an essential capability within the Digital Transformation Framework presented in [The Case for Digital Transformation](#). As this report demonstrates, analytics has implications for every element of the framework and can help inform decisions at the enterprise level as well as within each of the functional areas of the business.

HOW THE RESEARCH WAS CONDUCTED

To better understand the analytics landscape in the middle market, the National Center for the Middle Market worked with its partners and Ralph Greco, Senior Lecturer and the Director of the Nationwide Center for Advanced Customer Insights, The Ohio State University Fisher College of Business, to query 1,000 middle market CEOs, CFOs, and other C-suite executives about the importance of analytics to their business and the analytics capabilities and tools they deploy. We asked about the kinds of business questions they answer with analytics solutions and explored the challenges associated with adopting and using the technologies. These questions were part of the Center's quarterly *Middle Market Indicator* survey.

This report shares the results and explores the characteristics of strategic analytics users as well as the impact of analytics on growth and business performance.

¹ "Competing on Analytics," Thomas Davenport, *Harvard Business Review*, January 2000. <https://hbr.org/2006/01/competing-on-analytics>

EXECUTIVE SUMMARY

Analytics unlocks stronger middle market performance

KEY TAKEAWAYS:



ANALYTICS AND GROWTH GO HAND-IN-HAND

There is a strong positive correlation between company growth and the use of analytics solutions. There is also, however, a large gap between current and potential use of analytics in the middle market.



ANALYTICS TOOLS IMPROVE CORE FUNCTIONAL CAPABILITIES

Analytics investments in specific areas (such as workforce optimization or marketing effectiveness) produce demonstrable performance improvements in those areas.



POSITIVE SYNERGIES RESULT FROM USING MULTIPLE ANALYTICS TOOLS

Middle market companies that use both outward-facing tools (demand planning and forecasting, marketing effectiveness, etc.) as well as inward-facing tools (such as workforce optimization, quality improvement) enjoy faster growth rates than firms that use only one type or the other.



ADOPTION CHALLENGES FALL INTO FOUR CATEGORIES

Formidable resource, cultural, and talent challenges stand in the way of full-force adoption of analytics, but these difficulties become significantly less pronounced as companies gain experience. Poor quality data is also a formidable obstacle, leading to both direct and opportunity costs for businesses. But good data has the potential to transform business performance.

WHAT DO WE MEAN BY ANALYTICS?

Analytics is an essential capability within a middle market company's digital transformation journey. For this report, we have adopted the definition from INFORMS, the world's largest professional association dedicated to best practices and advances in operations research, management science, and analytics. The organization describes analytics as "the scientific process of transforming data into insights for the purpose of making better decisions."²

The INFORMS definition of analytics includes three noteworthy elements:

- **Science:** Analytics follows the scientific method of question-hypothesis-experiment-observation-analysis-conclusion.
- **Insights:** Analytics transforms data into insights—"aha!" moments that reveal something not known before.
- **Actions:** Those insights lead to decisions that are better than they would have been without analytics.

Analytics capabilities are themselves agnostic. Their value emerges when they are used to advance a defined strategic purpose and, as INFORMS says, "empower an organization's vision." Given the investment in technology and talent analytics requires, middle market executives must be especially mindful of how they allocate their limited resources to make sure they are investing in tools that will help them make smarter decisions about key issues for their businesses. Analytics makes sense when it makes an impact.

Consider the New England Patriots, a middle-market-sized organization that uses analytics in novel and effective ways to help build and maintain a championship-caliber football team. The Pats have developed a proprietary database that the team uses for scouting purposes and to assess the effectiveness of its individual scouts. The organization also employs the NFL's only Player Personnel Engineer; when the team found the right candidate to staff the role, it was someone who was also entertaining an offer from Google. While the Pats' use of analytics in its business office has been heralded in numerous publications, during an interview early in the 2019 season, Coach Bill Belichick said he relies on analytics "less than zero" when making on-field decisions like whether or not to "go for it" on fourth down.³ This comment might have been somewhat disingenuous—hiding the football, so to speak; Belichick is, after all, the recipient of a lifetime analytics achievement award from MIT. Still, when he contends that "football is ultimately determined on the field," he is highlighting a crucial point: Analytics is an input to decisions, not the decision itself. Teams still need strategy and leadership to win.

In the game of business, too, analytics appears to affect results, particularly when executives use its insights strategically. Overall, the more a middle market company invests in analytics, the faster it grows. And when businesses use analytics for clear purposes—optimizing the workforce, demand planning, or optimizing revenue from a new product launch, for example—those areas of the business improve. Analytics also positively affects operational competencies, resulting in improved machine uptime, quality control, and supply chain management, as well as risk and compliance. And the benefits of analytics appear to compound; companies that use analytics for both outward-facing purposes (to gauge marketing effectiveness, for example) and inward-facing purposes (i.e. workforce optimization or quality improvement) grow faster than peers that use analytics for just one objective or the other. Heavy analytics users also predict much more aggressive growth for the year ahead than companies that use analytics sparingly or not at all.

However, there is an enormous gap between the current use and value of analytics and its potential contribution. Most middle market companies use at least one type of analytics tool. However, no one capability or tool type that we explored in our study is currently in use by a majority of all middle market firms. Embracing analytics full force, it appears, may take more effort than many companies have been willing or able to give. Indeed, many executives express desire to use more tools and expand their analytics capabilities, but issues such as data quality, resources, culture, and skills stand in the way.

Still some companies have found a way: Every one of the tools and capabilities in our study is currently in use by 50% or more of the subset of middle market organizations that consider themselves to be digitally strategic firms. And the performance of these companies consistently outpaces their peers.

By exploring solutions to adoption challenges, pinpointing the business goals where analytics can deliver the greatest value, and investing strategically, middle market organizations can unlock performance gains, increase profitability, and accelerate growth.

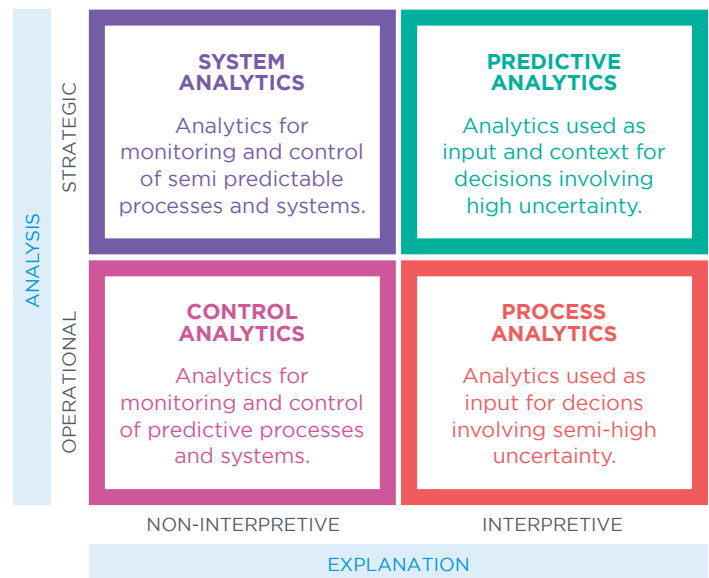
² <https://www.informs.org/Explore>

³ https://www.espn.com/nfl/story/_/id/27714071/belichick-usage-analytics-less-zero

Overview: Middle market companies use analytics to inform a wide range of business questions

Analytics can be used to study anything for which data exists. As this framework from MIT Sloan Management Review illustrates, the science can be leveraged for operational or strategic purposes and can be used to monitor and control processes and systems, or to provide input and context for decisions. Most companies first employ analytics in operational areas, to monitor and control equipment and processes. As they gain experience, executives discover opportunities to use analytics to gain insights that shape strategic decisions. The more uncertainty exists around a decision, the more valuable analytic input becomes. Indeed, many experts suggest that analytics should always be action-driven, providing insight for the purpose of making better decisions.

The Center looked at the middle market's use of analytics across a number of inward-facing, outward-facing, and foundational analytics tools and capabilities and explored how analytics can help business leaders answer questions within each area with a greater degree of accuracy.



Source: "Seven Technologies Remaking the World" by Al H. Segars, MIT Sloan Management Review, March 2018. sloanreview.mit.edu/x/59370

Types of analytics tools and the business questions they help answer

INWARD-FACING ANALYTICS

Workforce Optimization

- What talent and skills do we need?
- How do we best fill skills gaps?
- How many people need to be at work at any given time to meet customer needs?

Risk, Fraud, and Compliance Management

- What are our major areas of risk?
- How can we detect financial irregularities?
- Where do we need to invest in risk management?

Quality Improvement

- How can we reduce rework (manufacturing) or re-admittance (healthcare)?
- How can we “spot” product or service failures in a timelier manner?

Asset/Equipment Performance

- How can we ensure that equipment is available and working for the largest amount of time?
- Can we perform maintenance before it is required by the asset?
- How can we extend the lifespan of the asset?

OUTWARD-FACING ANALYTICS

Demand Planning and Forecasting:

- Who's buying what?
- How can we improve sales forecast accuracy?
- How do we optimize production, supply chain, and inventory to meet expected demand?

Marketing Effectiveness

- How do we best promote products? Which channels? Which messages?
- What's the customer experience like?
- What triggers will make people buy more?

Revenue Optimization

- What should we produce?
- How should we price our products and services?
- How do we best handle inventory, demand, and distribution channels to sell more?

New Product Launch Revenue Optimization

- Can we determine which customers to target for new products?
- Can we determine the best time or sequence for new product launches?

Customer Churn

- How can we learn which of our existing customers are most likely to cancel our service or leave us for a rival?
- What offers can we make to potential exiting customers to get them to stay?

FOUNDATIONAL TOOLS

Business Intelligence Reporting

Business Intelligence, or BI, encompasses the hardware, software, and services used to analyze business data and generate reports. Decision makers can use business intelligence reporting tools to ask a wide range of inward-facing and outward-facing business questions and gain insights that will help inform the answers.

Data Visualization

Data Visualization is the process of encoding information or data as visual objects, such as dots or lines used in charts, graphs, or maps. Data visualization tools convey and communicate information to decision makers in ways that are easy to interpret and apply.

Most firms use analytics now and plan on using more in the near future

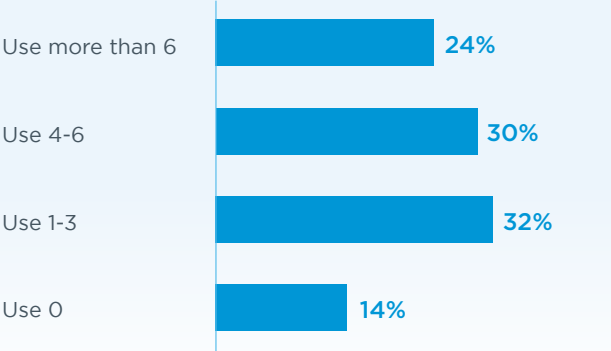
CURRENT USE OF ANALYTICS

Most middle market leaders believe analytics is important to business and will become increasingly so over the next five years. The vast majority (85%) of middle market companies currently use analytics to some degree; and most have adopted multiple

tools. Analytics is most popular for outward-facing activities, such as demand planning, forecasting, and marketing effectiveness. However, no one capability or tool is currently in use by a majority of middle market companies.

MOST MIDDLE MARKET COMPANIES CURRENTLY USE SEVERAL ANALYTICS TOOLS

Use some analytics solutions now	85%
Planning to use some analytics solutions	10%
Don't use and don't plan to use analytics solutions	5%

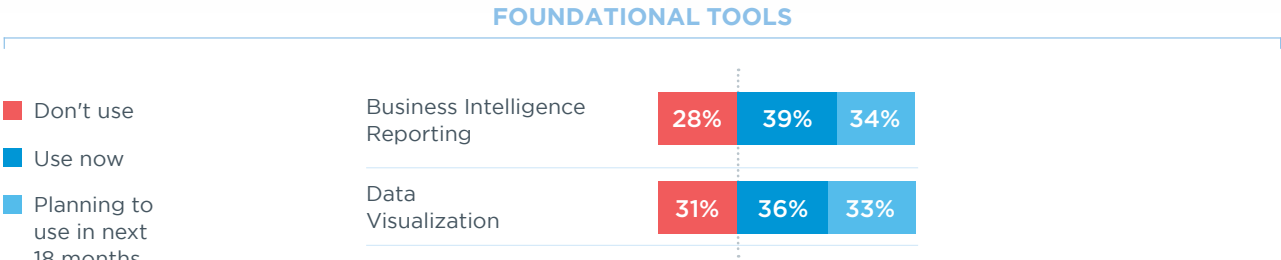
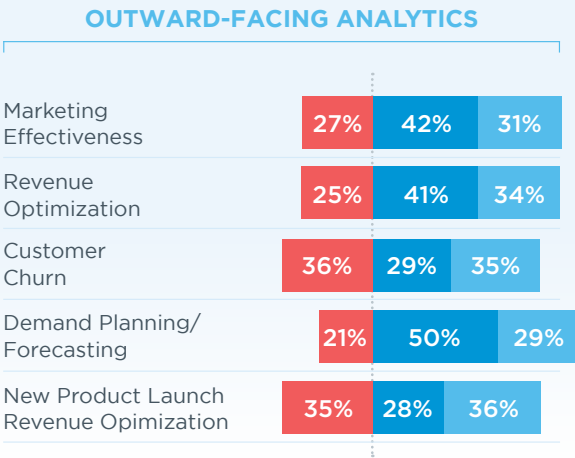
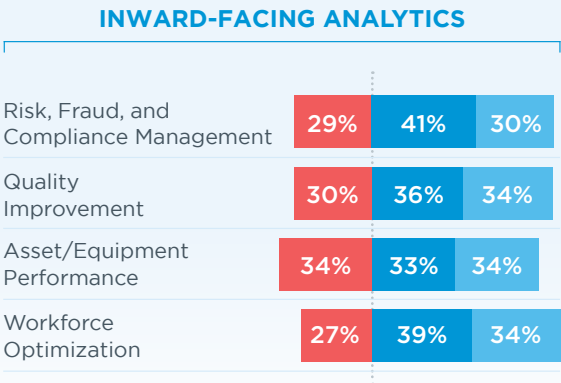


FUTURE USE OF ANALYTICS

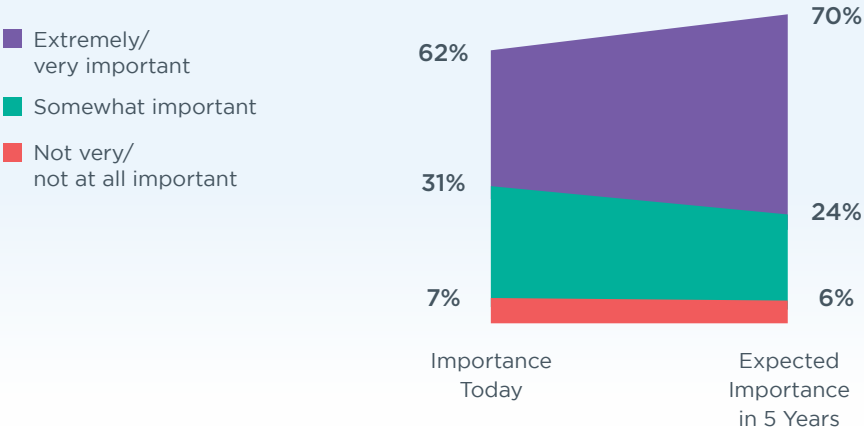
Many companies plan to begin using analytics technologies within the next 18 months. But for now, it appears that most mid-sized companies are in the beginning phases of analytics use or are focusing on one area or another rather than deploying tools across many activities. Even foundational tools like business

intelligence reporting and data visualization are only in use by a little more than a third of middle market organizations, and roughly another 30% have no plans to pick up these foundational tools in the near term, which may put them at special risk of falling behind in their digital journeys.

USE OF MOST TOOLS WILL NEARLY DOUBLE IN THE NEXT 18 MONTHS



THE IMPORTANCE OF ANALYTICS WILL ESCALATE OVER THE NEXT FIVE YEARS



Industry and company size shape analytics adoption and priorities

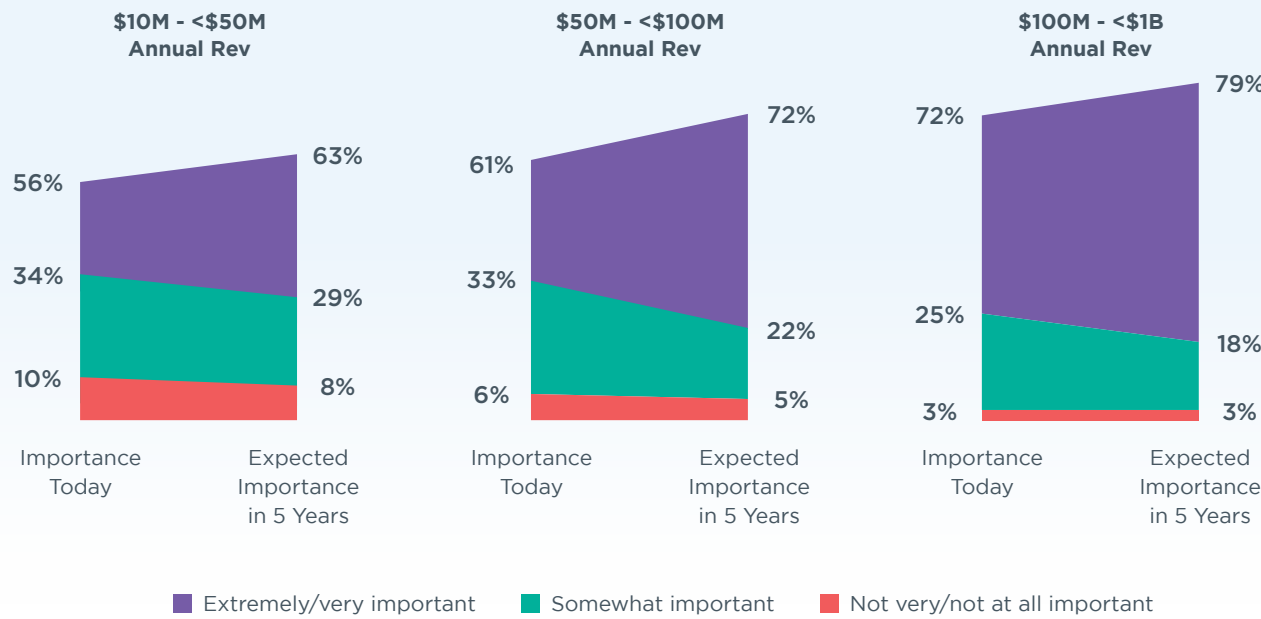
Middle market companies benefit from analytics in different ways and, accordingly, make different choices about what capabilities to use. Some of these decisions depend on the type, size, and digital attitudes of a firm:

- The digital intensity of the organization appears to be the single greatest factor in analytics use. Companies that say their digital vision is clear and comprehensive are by far the heaviest users of analytics. Among this subset of firms, every one of the analytics solutions we explored is in use by a majority of the firms. (See, pg 12.)

- Industry, too, has a profound impact on analytics use and specifically influences which business questions are answered and the types of tools deployed to glean those insights.
- Larger middle market firms are much heavier users of analytics than their smaller peers.
- Younger companies—those born in the digital era—are no more likely to be analytics users than older ones.

LARGER MIDDLE MARKET FIRMS PLACE MORE IMPORTANCE ON ANALYTICS

As firms grow larger, they have more complexity to manage, more business questions to ponder, and more resources to invest in analytics. And, because leadership can't see and talk to customers and employees as often, they increasingly use data and analytics to fill that void.



BIGGER COMPANIES ARE MORE LIKELY TO USE EACH TOOL TYPE

INWARD-FACING ANALYTICS

Risk, Fraud, and Compliance Management

\$10M - <\$50M	45%	28%
\$50M - <\$100M	57%	25%
\$100M - <\$1B	55%	32%

Quality Improvement

\$10M - <\$50M	41%	25%
\$50M - <\$100M	35%	36%
\$100M - <\$1B	46%	37%

Asset/Equipment Performance

\$10M - <\$50M	35%	32%
\$50M - <\$100M	41%	36%
\$100M - <\$1B	51%	36%

Workforce Optimization

\$10M - <\$50M	36%	27%
\$50M - <\$100M	43%	34%
\$100M - <\$1B	46%	34%

■ Use now

■ Planning to use in next 18 months

OUTWARD-FACING ANALYTICS

Marketing Effectiveness

\$10M - <\$50M	31%	36%
\$50M - <\$100M	31%	32%
\$100M - <\$1B	46%	32%

Revenue Optimization

\$10M - <\$50M	31%	33%
\$50M - <\$100M	28%	37%
\$100M - <\$1B	45%	32%

Customer Churn

\$10M - <\$50M	27%	31%
\$50M - <\$100M	35%	35%
\$100M - <\$1B	39%	36%

Demand Planning/Forecasting

\$10M - <\$50M	25%	30%
\$50M - <\$100M	26%	40%
\$100M - <\$1B	35%	40%

New Product Launch Revenue Optimization

\$10M - <\$50M	22%	35%
\$50M - <\$100M	20%	39%
\$100M - <\$1B	40%	37%

FOUNDATIONAL TOOLS

Business Intelligence Reporting

\$10M - <\$50M	32%	32%
\$50M - <\$100M	35%	41%
\$100M - <\$1B	49%	34%

Data Visualization

\$10M - <\$50M	31%	33%
\$50M - <\$100M	38%	38%
\$100M - <\$1B	50%	33%

ANALYTICS PRIORITIES BY INDUSTRY

Heavily regulated industries, such as healthcare and financial services, are the heaviest users of analytics overall and are specifically more likely to use risk, fraud, and compliance management analytics. Retailers prioritize outward-facing capabilities, especially marketing effectiveness and demand planning and forecasting analytics. Manufacturers invest in quality improvement and asset/equipment performance analytics, but they are one of the least likely groups to use analytics for marketing effectiveness. And workforce optimization is most important to professional service and healthcare firms that may have large staffs with varying skills and specialties that need to be coordinated, scheduled, and utilized appropriately. This suggests that companies looking to delve into new types of analytics tools may need to look outside of their industries for best practices. A manufacturer interested in customer analytics, for example, may want to study retailer or consumer packaged goods companies as opposed to looking at what other manufacturers are doing in that area.

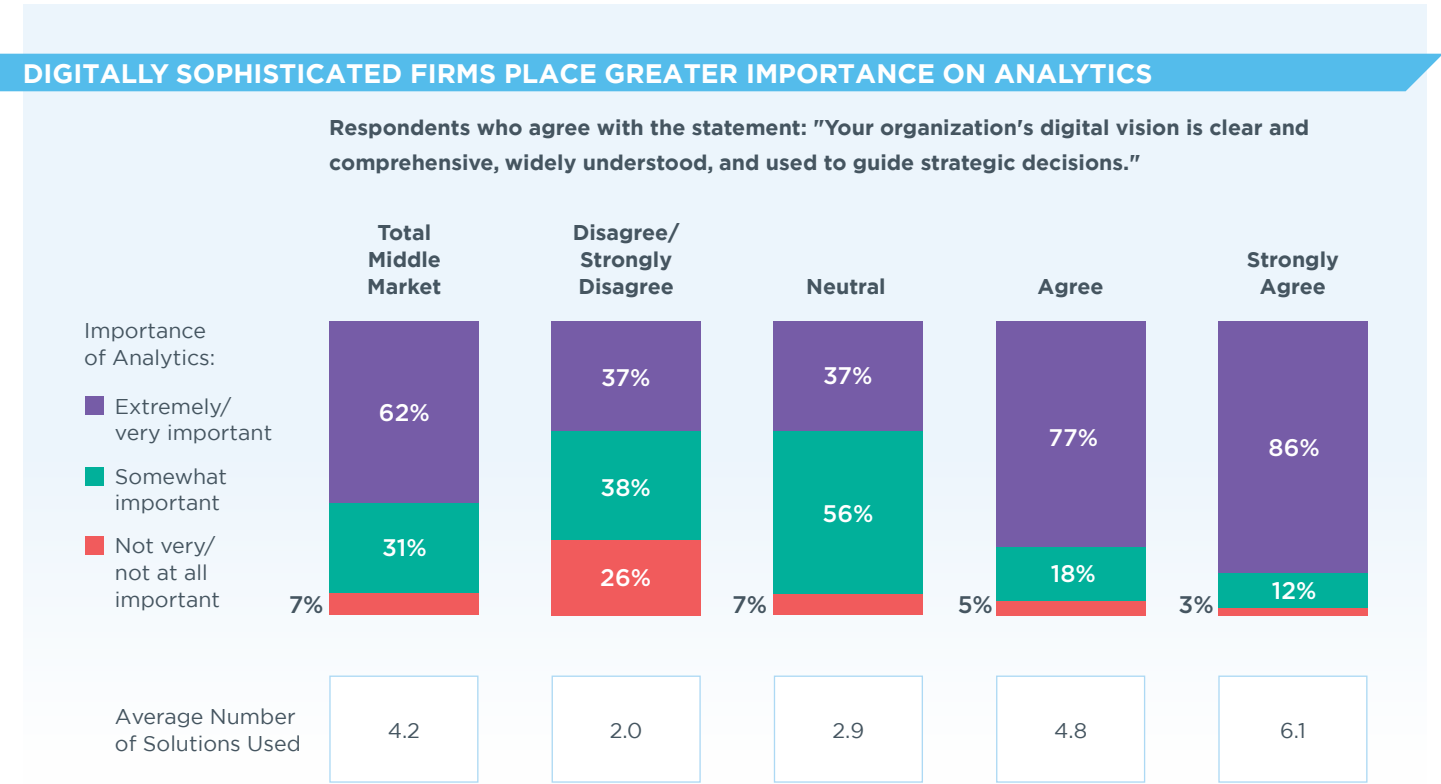
		Total Middle Market	Construc- tion	Financial Services	Healthcare	Manu- facturing	Retail Trade	Business Services	Wholesale Trade	Other
INWARD-FACING	Risk, Fraud, and Compliance Management	41%	37%	55%	49%	37%	39%	41%	27%	43%
	Quality Improvement	36%	29%	37%	51%	44%	36%	39%	22%	37%
	Asset/Equipment Performance	33%	28%	40%	35%	37%	32%	41%	22%	34%
	Workforce Optimization	39%	38%	46%	48%	36%	40%	49%	29%	34%
OUTWARD-FACING	Marketing Effectiveness	42%	22%	47%	43%	34%	55%	41%	35%	42%
	Revenue Optimization	41%	27%	44%	40%	35%	47%	40%	49%	37%
	Customer Churn	29%	31%	40%	33%	19%	27%	29%	26%	27%
	Demand Planning/Forecasting	50%	42%	51%	42%	51%	48%	52%	61%	49%
FOUNDATIONAL	New Product Launch Revenue Optimization	28%	20%	38%	33%	28%	28%	32%	25%	26%
	Business Intelligence Reporting	39%	31%	53%	38%	32%	36%	44%	43%	34%
	Data Visualization	36%	25%	49%	40%	22%	31%	50%	38%	32%
	Average Number of Analytics Tools Used	4.2	3.3	5.0	4.5	3.8	4.2	4.6	3.8	4.0

Digitally strategic firms combine vision with the right toolkit to drive growth

While size and industry correlate to analytics use, another factor supersedes these: the digital intensity of the organization. Across revenue and industry segments, middle companies that have a clear, comprehensive digital vision to guide strategic decisions grow, on average, 75% faster than less digitally sophisticated peers.

Companies with this vision and those that are pursuing digital transformation as a strategic priority place much greater importance on business analytics than others. They use more

tool types and they are heavier adopters of each type of tool they use. Among those companies saying their digital vision is clear and comprehensive, every one of the analytics solutions we explored—inward-facing, outward-facing, and foundational—is in use by a majority of the firms. These companies use technologies not only to drive efficiencies or automate manual processes, but also to better connect with and serve customers and set themselves apart from the competition.



Companies with a clear digital vision grow **75%** **FASTER THAN LESS DIGITAL PEERS**

FOUR KEY INSIGHTS

While analytics drive growth and value, there are challenges to adoption

As we've seen, the use of analytics tools by middle market firms, as well as the specific types of capabilities used, vary considerably based on a firm's digital intensity, industry, and size. While most middle market companies are at least dabbling in analytics and many have plans to expand use, the majority of mid-sized companies can be categorized as moderate analytics users; they have ground to cover to fully exploit the capability and achieve a state of analytics maturity. The exception to this is the subset of digitally-strategic firms, which have found ways to integrate the power of analytics throughout their businesses.

The next section of this report will focus on insights related to the impact of analytics as well as the challenges middle market companies must overcome in order to increase analytics use and take advantage of the benefits that come with it.

INSIGHT 1

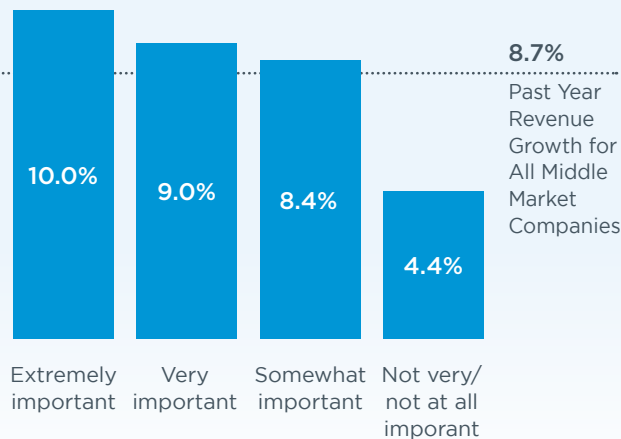
Analytics and growth go hand-in-hand

FAST GROWERS INVEST MORE IN ANALYTICS

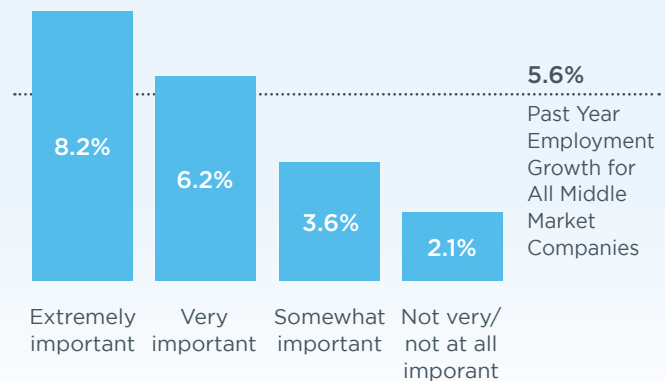
Middle market companies growing revenue at 10%+ per year are more likely to place high priority on business analytics than slower-growing peers. The correlation runs both ways: Businesses that say analytics is extremely important boast a revenue growth

rate that is more than double the rate of companies that pay little attention to their data. And they add employment nearly four times faster.

COMPANIES THAT PRIORITIZE ANALYTICS GROW THE FASTEST



PAST YEAR REVENUE GROWTH



PAST YEAR EMPLOYMENT GROWTH

Companies that
prioritize analytics
grow employment

4X

FASTER THAN FIRMS THAT
PLACE LITTLE IMPORTANCE
ON THE CAPABILITY

Current use of analytics will fuel tomorrow's growth

Fast growers use more analytics tools. They are especially more likely to use business intelligence reporting, a foundational tool, and somewhat more likely to have invested in many of the inward- and outward-facing analytics technologies.

Pronounced differences show up when looking at growth projections. Middle market companies with the most aggressive revenue growth expectations are much more likely than others to be current users of outward-facing analytics capabilities.

This suggests that middle market leaders have a high level of confidence in the insights they are gaining from their tools and the power of those insights to generate sales.

Those with the highest growth projections also use inward-facing analytics much more than their peers. The implication is that leaders of these companies have a more sophisticated understanding not just of their market, but also of the resources they need to mobilize to satisfy demand.

FIRMS WITH THE MOST AGGRESSIVE GROWTH PLANS ARE HEAVIER USERS OF ALL ANALYTICS TOOLS

		PAST FIRM GROWTH		FUTURE FIRM GROWTH	
		Revenue Grew 10%+	All Others	Expect Revenue To Grow 10%+	All Others
INWARD-FACING	Risk, Fraud, and Compliance Management	41%	41%	53%	37%
	Quality Improvement	38%	35%	40%	35%
	Asset/Equipment Performance	35%	31%	44%	30%
	Workforce Optimization	41%	37%	49%	36%
OUTWARD-FACING	Marketing Effectiveness	41%	42%	54%	38%
	Revenue Optimization	38%	43%	51%	39%
	Customer Churn	32%	27%	37%	26%
	Demand Planning/Forecasting	54%	49%	59%	48%
FOUNDATIONAL	New Product Launch Revenue Optimization	34%	26%	35%	27%
	Business Intelligence Reporting	45%	35%	45%	37%
	Data Visualization	36%	35%	45%	33%
Average Number of Analytics Tools Used		4.4	4.0	5.1	3.9

INSIGHT 2

Specific types of analytics tools improve core functional capabilities

Use of analytics appears to strengthen capabilities within the functions where it is used. For example, workforce optimization analytics makes companies stronger in many dimensions of talent management; marketing analytics improves both marketing and sales effectiveness.

WORKFORCE OPTIMIZATION

Workforce optimization helps companies get the most from their employees by having the right labor at the right place and time to meet the needs of customers and the business. Workforce optimization can include tools for helping managers develop staffing plans and determining the best times to schedule certain types of work, such as restocking or receiving inventory. It can help plan seasonal work. It can help with assessing employee performance while also driving higher employee satisfaction through tools that monitor employee engagement and help promote work-life balance. And it can help companies better respond to and prepare for the ways their customers want to do business. For example, in the retail industry, shifts to BOPIS (buy online, pickup in store) as well as BOSFS (buy online, ship from store) have required store staff to become pick/pack/ship experts. Retailers and other service businesses can also use analytics to determine the best mix of live, person-to-person interaction verses self-service activity and kiosks, such as offering customers the option of ordering different sizes off iPads in the changing room.

Like many tools, workforce optimization can be used for good or ill. Starbucks was heavily criticized in 2014 for its (software-driven) scheduling practices; but it has since made improvements, including adopting software that helps ensure employees get adequate breaks in between shifts.

Across all industries, companies that invest in workforce optimization analytics grow both revenues and employment faster than their peers and have much stronger predictions for future growth. They are also significantly more likely to rate themselves as very good or excellent on talent management metrics, including attracting top talent. However, even heavy analytics users report facing both long- and short-term talent management challenges. While analytics can and does help, companies still need strong leadership and vision to address strategic issues related to talent, including upskilling, outsourcing, and developing forward-looking versus reactive talent plans.

COMPANIES USING WORKFORCE OPTIMIZATION GROW FASTER THAN THEIR PEERS

	Past Year Growth		Expected Growth Next 12 Months	
Revenue Growth	9.5%	8.3%	7.3%	4.2%
Employment Growth	6.7%	5.0%	4.4%	2.8%

- Use Workforce Optimization
- Don't Use Workforce Optimization

WORKFORCE OPTIMIZATION APPEARS TO IMPROVE MANY ASPECTS OF TALENT MANAGEMENT AND PERFORMANCE

	Use Workforce Optimization	Don't Use Workforce Optimization
Having a high performing management team	70%	48%
Attracting top managerial talent	51%	40%
Ability to access a workforce that is affordable to our company	50%	41%
Providing career pathing for employees	50%	38%
Keeping talented employees	49%	44%
Having recruiting power to attract employees with the right set of skills	45%	35%

Percent of respondents who believe their organization is excellent or very good in these areas.

CUSTOMER-FACING ANALYTICS

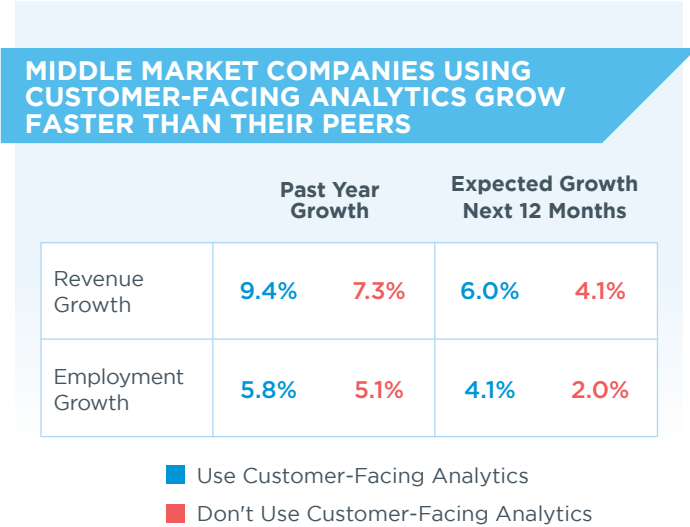
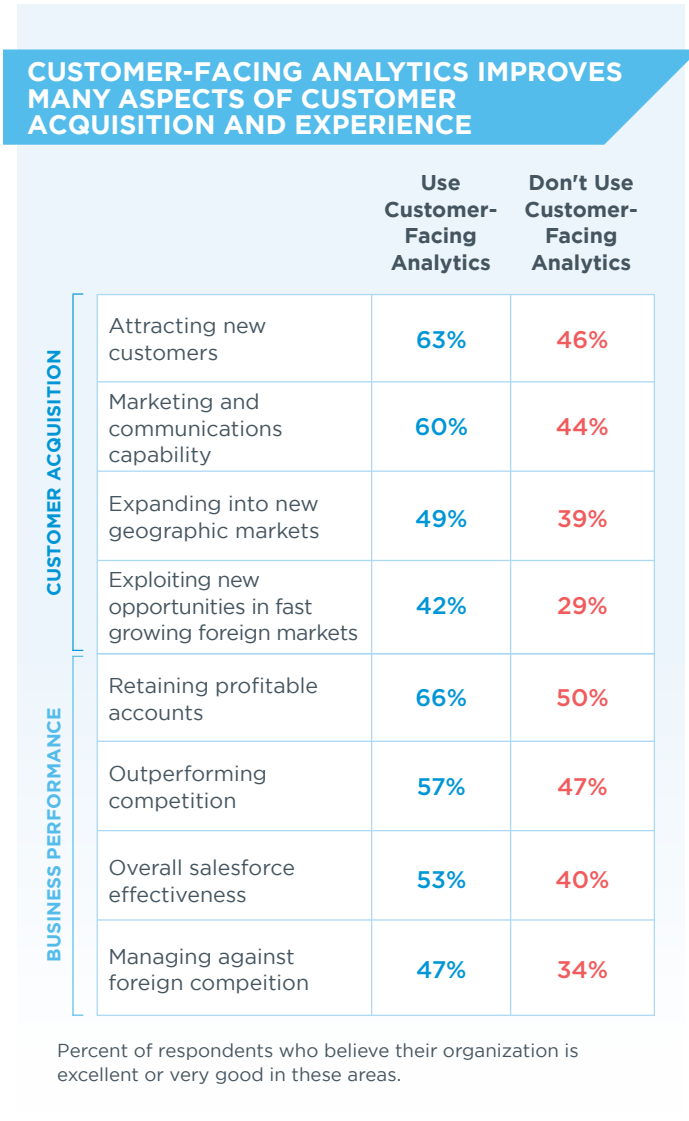
Customer-facing analytics is a complex set of outward-facing tools that includes demand planning and forecasting, sales and marketing effectiveness, and churn prediction and prevention. These tools allow companies to understand customer behavior with unprecedented detail, identify the most profitable customers and those most likely to jump ship, and make smarter marketing plans and pricing decisions tailored to different customer segments.

Netflix provides a textbook example. A digitally-born company, Netflix used analytics from the get-go to disrupt and transform the entertainment industry, almost singlehandedly putting Blockbuster out of business before moving into streaming content, and finally, original content generation. Today it uses what it learns about customers through analytics to gain and retain subscribers by suggesting microtargeted genres—they have created 76,897 different ways to describe types of movies specifically for this purpose!⁴—and pretest series ideas to ensure their success.⁵

Middle market companies, too, perform better when they leverage customer-facing analytics. The online stylist, Stitch Fix—which recently graduated from the middle market—has made it a critical component of its business model. Founder and CEO Katrina Lake wrote in a 2018 *Harvard Business Review* article, “The part of me that loves data knew it could be used to create a better experience with apparel.”⁶ She built her business around data with a human touch. Customers supply Stitch Fix with millions of data points each year by completing an initial style profile and subsequent reviews of each order. This information, along with data and measurements on each garment, are fed into a set of algorithms. The results are interpreted, reviewed, and

approved by a stylist, who is algorithmically matched with each client. The combination of the right data and the right expertise allows the company to successfully deliver personalized boxes of clothing and accessories to each of its two million-plus clients, driving the company’s revenues up each year.

Like Stitch Fix, middle market companies that use customer-facing analytics grow faster than those that don’t. And they self-rate themselves as more adept at customer acquisition and business performance competencies.



⁴ <https://www.theatlantic.com/technology/archive/2014/01/how-netflix-reverse-engineered-hollywood/282679/>

⁵ <https://www.nytimes.com/2013/02/25/business/media/for-house-of-cards-using-big-data-to-guarantee-its-popularity.html>

⁶ “Stitch Fix’s CEO on Selling Personal Style to the Mass Market,” *Harvard Business Review*, May-June 2018. <https://hbr.org/2018/05/stitch-fixes-ceo-on-selling-personal-style-to-the-mass-market>

NEW PRODUCT LAUNCH REVENUE OPTIMIZATION

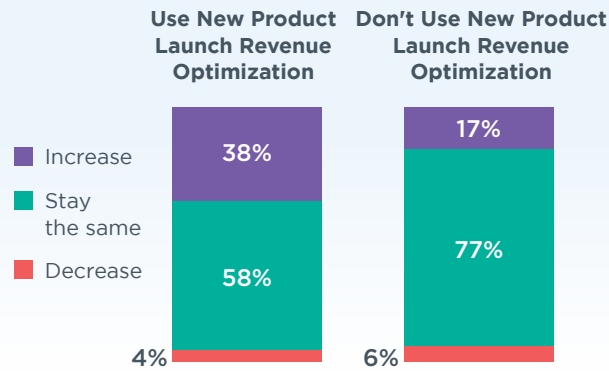
Another outward-facing tool, revenue optimization analytics focuses on maximizing revenue over the long term by looking at the relationships between pricing, inventory, demand, and distribution. It seeks insight into demand patterns and how pricing and other factors can help to influence and shape that demand. For example, retailers today use analytics to selectively distribute targeted ecommerce incentives. They use the data to understand what offers will entice which groups of consumers to sign up for their emails or rewards program and what offers are most likely to result in trial and repeat purchases. Over time, as they learn what a customer's email address is worth and analyze the behavior of individual customers, they are able to refine these offers even more.

Such knowledge becomes especially important when launching a new product and making decisions about where, how, to whom, and for how much to sell it. Among middle market companies, over a quarter (28%) currently use new product revenue optimization analytics tools. That percentage rises to 40% among the largest middle market companies.

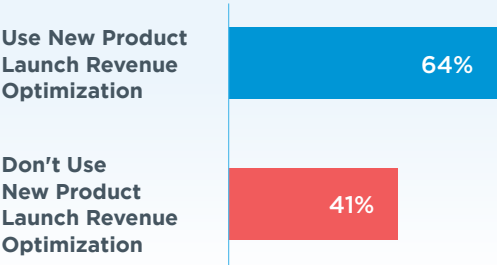
The insights these companies gain drive innovation and growth: Users are significantly more likely than peers who do not use revenue optimization analytics to have plans for introducing a new product service in the next year. They are more than twice as likely to have plans to increase their investment in R&D. They consider their businesses to be much more advanced than their peers in both innovation and customer acquisition.

NEW PRODUCT LAUNCH REVENUE OPTIMIZATION IS CORRELATED WITH INCREASED INVESTMENTS IN R&D AND MORE NEW PRODUCT AND SERVICE LAUNCHES

Expected change in % of company revenue invested in R&D



Likelihood of introducing a new product or service in next 12 months



COMPANIES THAT USE NEW PRODUCT LAUNCH REVENUE OPTIMIZATION ANALYTICS ARE MORE CONFIDENT IN THEIR INNOVATION AND CUSTOMER ACQUISITION CAPABILITIES

		Use New Product Launch Revenue Optimization	Don't Use New Product Launch Revenue Optimization
CUSTOMER ACQUISITION INNOVATION	Investing in innovation & new product development	61%	42%
	Innovating new products and services	59%	39%
	Attracting new customers	64%	48%
	Marketing and communications capability	58%	46%
	Expanding into new geographic markets	51%	40%
	Exploiting new opportunities in fast growing foreign markets	51%	28%

Percent of respondents who rate themselves as excellent or very good in these areas.

INSIGHT 3

Analytics increases in value when it is used organization-wide

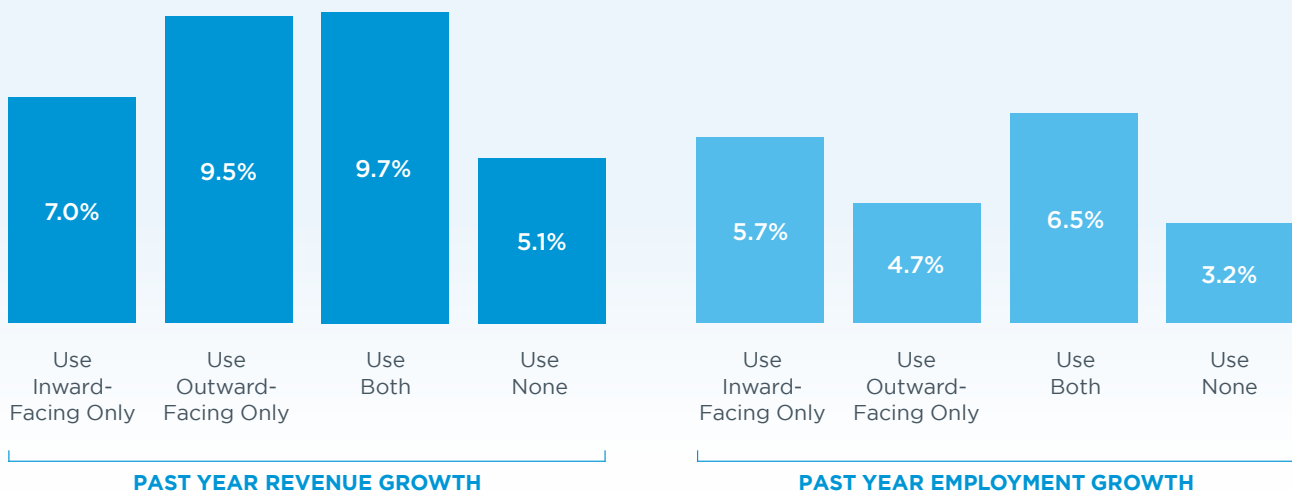
Middle market companies have many options when investing their analytics dollars. As we've seen, many companies are beginners, testing the waters by choosing to start with one type of tool or another rather than deploying analytics full force across business functions and activities.

Where they start often comes down to the types of business questions a company wants to inform as well as the company's overall objectives. Businesses looking to maximize revenue growth may naturally gravitate toward outward-facing tools. And the data suggest that's a smart move: Companies that use only outward-facing analytics grow revenues considerably faster than business that use only inward-facing tools. On the other hand, companies looking to expand their workforce or improve labor productivity may fair better by choosing inward-facing tools. Employment growth is higher among companies that only use inward-facing analytics compared to those that use only the outward-facing set of tools.

Combining the tool types, however, may increase the return on investment in each of the individual tools. Businesses that invest in both outward- and inward-facing tools post the highest revenue and employment growth rates. This suggests that positive synergies exist between different types of analytics tools and that the value and impact of analytics compounds and accelerates in a virtuous circle. As we will show in the next section, the more analytics tools a company uses, the more it reduces the challenges to analytics adoption, and the more it improves overall data quality, ultimately making the outcomes more valid and more useful.

So, while many companies appear to want to start slow, it is worth considering the impact of a broader approach to analytics adoption: Use the right outward- and inward-facing tools (i.e. make an investment in analytics across your organization as opposed to one specific area, or, better, include analytics at the Enterprise level of your Digital Transformation framework) and you can position your business for improvement across multiple dimensions, unlocking the full potential impact of analytics as a strategic digital capability.

USING BOTH INWARD- AND OUTWARD-FACING ANALYTICS TOOLS CAN ACCELERATE REVENUE AND EMPLOYMENT GROWTH



INSIGHT 4

Challenges with adopting analytics fall into four categories: data, resources, culture, and skills

Growth and business performance data make a clear case for the adoption of analytics to improve both outward-facing and inward-facing decisions. However, no more than 50% of middle market companies currently leverages any one analytics tool; there is not a majority even for foundational tools like data visualization and business intelligence reporting. It's not that executives don't want access to data for analysis and action. So what holds them back? Middle market executives point to four groups of challenges standing in the way of analytics adoption: data, resources, culture, and skills.

DATA

Assessing and aggregating multiple sources of data is a challenge for companies of all sizes, but data quality issues appear to compound as a company grows. This is likely because larger middle market businesses have more customers, more employees, and, as a result, more data to manage. Quality issues can be as mundane as variances in how customers are listed—IBM, vs. I.B.M. vs. International Business Machines, for example—which can keep a company from seeing a comprehensive view of its business with a particular organization. Other problems, such as incompleteness, or, worse, inaccuracy, also detract from the value of analytics. (The High Cost of Bad Data, pg. 24.)

RESOURCES

From our digitization trends study,⁷ we know that middle market companies are most likely to give themselves average scores in terms of digital readiness. Interestingly, large and fast-growing companies are more likely than their smaller and slower-growing peers to say limited IT resources hold them back—perhaps because they also are the companies with the biggest analytics appetite. As companies do more analytics, the costs also grow faster as strategic complexity, computational requirements, and the need for more talent escalates. Only 12% of all middle market companies point to budget as a deterrent to analytics adoption. But this percentage jumps to 20%, or 1 out of 5 companies, with revenues between \$100M and \$1B and 16% for companies growing revenues at an annual rate of 10% or more.

CULTURE

In general, companies that don't see the business need for analytics, have a siloed as opposed to an organization-wide approach to technology, or look for the immediate ROI instead of appreciating the strategic, long-term benefit afforded by the insights, will have a harder time justifying an investment in analytics. In companies that just are not digitally intensive, the culture obstacle exacerbates all of the other challenges—data, resources, and skills—and makes each harder to surmount. Curiously, culture-related issues appear to be bigger challenges for faster-growing firms, particularly the ability to measure ROI. The explanation for this, too, might be a question of priorities all jostling for management and employee attention: Open a new facility or invest in analytics? Analytics can help companies make smarter growth decisions, but when you are head-down running the business, it can be difficult to look up to examine ways to change it.

SKILLS

Study after study of digital transformation shows that lack of digital skills is a challenge for middle market firms. Forty percent of middle market companies claim that talent gaps slow their adoption of analytics. The problem is most acute for the largest middle market firms, which, again, have the biggest appetites for analytics. Companies that are growing at a modest rate feel the greatest pinch when it comes to the skill level of their current workforce.

⁷ "How Digital Are You? Middle Market Digitization Trends And How Your Firm Measures Up," National Center for the Middle Market, 2016.

DATA ISSUES AND SKILLS ARE THE GREATEST HURDLES TO ANALYTICS ADOPTION FOR LARGE AND FAST-GROWING MIDDLE MARKET COMPANIES

Percentage of companies citing each challenge as a hurdle to analytics adoption and use.

Challenge	\$10M - <\$50M Annual Rev	\$50M - <\$100M Annual Rev	\$100M - <\$1B Annual Rev	10%+ Past Year Revenue Growth	<10% Past Year Revenue Growth	Total Middle Market
Data	37%	39%	45%	43%	38%	40%
Skills	40%	39%	36%	42%	39%	40%
Culture	36%	38%	40%	33%	41%	34%
Resources	35%	29%	40%	42%	37%	34%
No current challenges	18%	19%	20%	14%	22%	19%

Analytics use can help solve analytics-related challenges

The more essential executives say analytics is, the more challenges they say they face in adopting and utilizing analytics solutions. Perhaps this is because they take a more strategic approach to analytics and, like teachers who demand more of a student with great potential, they ask analytics to do more complex things, and they place more value on the outcomes.

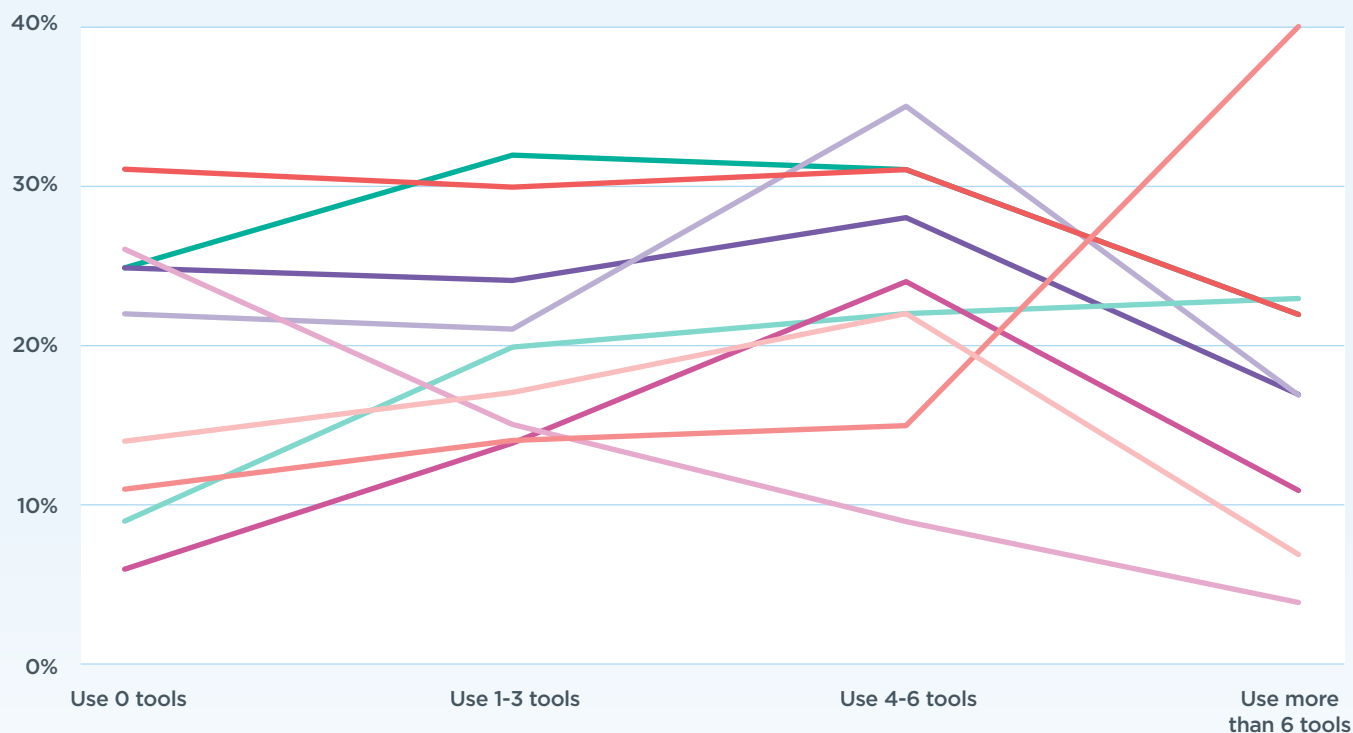
However, as companies integrate analytics into their businesses, using a greater overall number of tools as they do so, virtually all the challenges become less pronounced. It appears that the

very act of using analytics can help with issues such as improving data quality, measuring ROI, and improving a company's ability to aggregate its data. The more the data is used, the cleaner it becomes, and the more useful the outcomes, creating both a learning curve and a virtuous circle.

The major exception to this trend is the resources problem. The more analytics solutions a company adopts, the more resources it needs.

AS MORE TOOLS ARE ADOPTED, MOST CHALLENGES BEGIN TO DISSIPATE

As firms increase their investment in analytics tools their challenges actually seem to increase—at least temporarily. Eventually, however, when a company gets beyond 6, most challenges seem to dissipate. The notable exceptions to this rule appear to be capital expenditure budgets and access to talent. Perhaps as firms increase their investments they come to recognize the need for follow-on investments in additional tools and talent to realize the full benefits of their strategy.



DATA

- Poor quality of data
- Difficulty accessing or aggregating multiple data

SKILLS

- Lack of analytical skills
- Difficulty attracting/hiring appropriate talent

CULTURE

- Approach to analytics
- No clear business need

RESOURCES

- Limited IT resources
- Limited capital expenditure budget
- Inability to measure ROI

The High Cost of Bad Data

Data quality is an issue for middle market firms, regardless of which end of the revenue spectrum they fall on or how quickly they are growing. Middle market firms are not alone in this challenge. According to findings from Dun & Bradstreet's B2B Marketing Data Report, only 51% of respondents are confident of the current quality of sales and marketing data, down from 75% the previous year.⁸ Findings from IBM data scientists reveal that one out of three business leaders don't trust the data they use to make decisions and that more than a quarter are unsure of the "veracity" or accuracy of their data.⁹

These misgivings are well-placed. According to 2017 Deloitte research, data provided by U.S.-based big data brokers is only 50% accurate at best. Across categories, including economic, vehicle, demographic, interest, purchase, and home, 71% of consumers judged that the data collected about them was somewhere between dead wrong and only half right (0-50% correct).¹⁰

The impact of bad data is significant. Gartner's Data Quality Market Survey put the average annual financial cost of poor-quality data at \$15 million in 2017. Inaccurate data can cause companies to miss opportunities or, worse, to offend or alienate their customers. In healthcare, inaccurate data can lead to errors in as many as one in four explanation-of-benefits claims,¹¹ degrading the patient experience and leading to confusion and delayed payments.

Good data, on the other hand, can transform a business and give it insights to more accurately forecast demand, optimize revenue and workforce, target and build customer relationships, manage risk, identify fraud, and comply with regulatory requirements. Validating the quality of data, then, should be a key part of any company's analytics journey. (See Next Steps, pg. 26.)

⁸ <https://www.dnb.com/perspectives/marketing-sales/5-shocking-stats-about-b2b-marketing-data.html>

⁹ <https://www.ibmbigdatahub.com/infographic/four-vs-big-data>

¹⁰ <https://www2.deloitte.com/us/en/insights/deloitte-review/issue-21/analytics-bad-data-quality.html>

¹¹ https://orbograph.com/wp-content/uploads/2017/03/Why_Posting_Errors_are_the_Norm_in_EOB_Processing_Final_v5.pdf





CONCLUSION

Finding ways to embrace analytics is vital to continued growth

Analytics adoption does not always come easy to middle market businesses. Formidable challenges associated with a company's data, available talent, culture, and resources stand in the way of widespread use of analytics in both outward-facing and inward-facing areas of the business, where the insights could surely lead to better decision making and, ultimately, improved performance and faster growth.

However, companies that take a slow or scattershot approach to analytics do so to their own detriment. Our data show that middle market companies that use analytics outperform those that don't, and the more capabilities they use, the faster they grow and the better they cope with the challenges of using analytics.

Those middle market companies that have found ways to overcome the hurdles and put strategic analytics capabilities and tools into place have seen the impact in their top line revenue, their employment growth, and their key business functions. And they are anticipating even stronger growth in the year ahead, likely fueled in part by the knowledge they will gain from their data analysis efforts.

Next Steps in Your Analytics Journey

Middle market businesses looking to increase their investment in analytics, or to derive more values from the analytics investments they have already made, can start by taking the following steps:

1. SELF-ASSESS WHERE YOUR COMPANY STANDS ON THE JOURNEY THAT IS ANALYTICS.

Several tools exist that will provide your company with its current analytics “maturity” rating, typically on a scale from 1 to 5. One such model is the [Analytics Maturity Model from INFORMS](#). This assessment can be completed at no cost. The questions focus on three areas: Data, Skills, and Corporate Structure, which align with the challenges most middle market companies face in adopting analytics. Once you have completed the AMM, you can benchmark yourself against others in your industry to see what gaps exist. The results of this exercise can go a long way in gaining C-suite support for the use of analytics in your business and further investment in the area.

2. IDENTIFY YOUR SKILLS GAPS AND FIND WAYS TO ATTRACT AND RETAIN EMPLOYEES WITH THE RIGHT DIGITAL SKILLS TO SUPPORT YOUR ANALYTICS JOURNEY.

Measure the skills of the employees currently working in analytics as well as the skills of the employees who will be utilizing the output of the analytics. This will take time and effort; however, it is key to ensuring success with analytics. Again, there are multiple tools available to assist in this step. Once you have an understanding of your in-house skills, you can better determine where you may need to upskill current workers or look for new hires. And you can start to flesh out a plan to build and maintain the digital skills your firm needs.

3. VALIDATE THE QUALITY OF YOUR DATA—AND THE PROCESSES FOR COLLECTING AND STORING IT.

Companies need to be vigilant about understanding data sources. This starts with determining what business questions you want to ask, and then seeing if data are available to help you answer them. Leaders then need to get a sense of how accurate a data set is before relying upon it to inform critical decisions. For most middle market firms, financial and systems data tends to be strong, especially data that needs to be reported per any regulatory requirements. Customer and HR data, however, can be weaker.

Leaders can use their business acumen and expertise to help gauge if a specific data set is valid or not. If the insights you’re receiving seem “off,” consider evaluating your processes for how you collect and store data, looking for weak spots that could compromise its integrity. External data experts can help with your assessments as well as with putting processes in place to help improve overall data quality. Keep in mind, however, that just because the data don’t gel with what you were expecting doesn’t mean they’re wrong. Analytics could simply be doing its job—opening your eyes to issues that need to be examined.

4. DETERMINE WHICH ANALYTICS PROJECTS YOUR COMPANY WILL HAVE THE MOST SUCCESS WITH COMPLETING AND IMPLEMENTING RIGHT NOW.

Since analytics use in and of itself appears to mitigate many of the challenges associated with adoption, simply getting started may be the best place to start. You’ll want to strategically select an analytics solution or two that can inform issues that are critical to your business and industry, and then ensure that you have the right skills and data available in order to effectively use these tools. Once you begin the journey, the benefits will compound from there in several ways. First, the more you use your data, the cleaner it gets. And second, you’ll begin to generate important insights that inform new business decisions, including where to best invest future analytics or digital dollars, ultimately driving analytics maturity and making your business smarter and stronger along the way.





The National Center for the Middle Market is the leading source of knowledge, leadership, and innovative research focused on the U.S. Middle Market economy. The Center provides critical data, analysis, insights, and perspectives to help accelerate growth, increase competitiveness, and create jobs for companies, policymakers, and other key stakeholders in this sector. Stay connected to the Center by contacting middlemarketcenter@fisher.osu.edu.



From business as usual to business unusual, Fisher College of Business prepares students to go beyond and make an immediate impact in their careers through top-ranked programs, distinguished faculty and a vast network of partnerships that reaches from the surrounding business community to multinationals, nonprofits and startups across the globe. Our students are uniquely prepared and highly sought, leveraging Fisher's rigorous, experiential learning environment with the resources of Ohio State, a premiere research university with 500,000 proud Buckeye alumni.



Chubb is the world's largest publicly traded P&C insurance company and the largest commercial insurer in the U.S. With operations in 54 countries and territories, Chubb provides commercial and personal property and casualty insurance, personal accident and supplemental health insurance, reinsurance and life insurance to a diverse group of clients. As an underwriting company, Chubb assesses, assumes, and manages risk with insight and discipline. Learn more at chubb.com.