

The impact of analytics in 2020





More organizations are working their way up the maturity ladder an encouraging sign that analytics investments are paying off.

During a crisis, leaders look to the numbers to assess, analyze, and act. And 2020 has revealed just how valuable data can be when it comes to navigating uncertainty and forging new paths. The COVID-19 pandemic has accelerated the use of analytics, with 50 percent of organizations relying on data more than ever before. However, many are still struggling to measure the impact of their efforts: <u>47 percent</u> still don't have a clear, quantifiable analytics business case, which makes securing the investments needed to move forward difficult.

Executives are grappling with some important questions: Which areas within data and analytics should we focus on and invest in? How do we go beyond the buzzword of artificial intelligence and use it to drive real change? And how can we capitalize on the growing amount of data to which we have access?

To answer these questions and more, we created the Analytics Impact Index, a global benchmark to help executives understand their company's relative analytics capabilities and impact. Launched in 2018, the Index is a collaboration between Melbourne Business School, one of the world's top business schools, and Kearney, a leading global management consulting firm.

This year's Index validates some insights from 2019 and uncovers several new themes. We continue to see analytics maturity correlated with investment returns as well as targeted analytics investments resulting in greater profits. A well-developed analytics road map backed by C-suite leadership also persists as a key attribute of the most mature organizations. Based on input from more than 300 companies across the world, the 2020 Analytics Impact Index provides a deep dive into new focus areas, including the financial return on pilots based on artificial intelligence, the optimal investment in building data ecosystems, and the impact of the increase in the volume, velocity, and veracity of data and the challenges that come with that increase.

We also continue to examine the relationship between analytics maturity and profit and reveal some encouraging movement in analytics maturity levels as organizations start to see their analytics investments pay off.

> This year's Analytics Impact Index shows greater overall maturity, with more companies advancing as Leaders and Explorers.

The Analytics Impact Index

Building on insights uncovered in 2018 and 2019, this year's Analytics Impact Index gives organizations a better understanding of the potential of analytics as well as the capabilities needed to capture the most value. To create the Index, Melbourne Business School and Kearney surveyed more than 300 companies from 40 countries and 33 industries with a median revenue of \$300 million (see figure 1 on page 3).

The Index compares organizations on two factors: the **maturity** of the analytics operating model, or how advanced the analytics function is, and the **impact** of analytics on the organization's profitability. The maturity assessment provides a comprehensive view of a company's practices and processes and helps define the extent to which the company is analytically advanced.

Maturity is assessed along four dimensions (see figure 2 on page 4):

Strategy and leadership. This dimension looks at the company's strategic direction for analytics and who is driving it.

Culture and governance. This dimension covers the operating structure and processes that are in place to support analytics, including the company's attitude toward analytics and analytics change management.

Talent and skills. This dimension measures the human aspect of analytics—everything from recruiting the right people with the right skills to retaining, developing, rewarding, and working with them effectively.

Data ecosystem. This dimension relates to the technological infrastructure and data management framework that is in place to enable analytics, examining how a company develops and implements architectures, policies, practices, and procedures to manage their full data life-cycle requirements.

In addition to the maturity assessment, our study seeks to understand the impact of contemporary trends. In 2020, questions about data (value, velocity, variety, and veracity) and artificial intelligence (AI) have shed more light on the impact that data analytics is having within organizations.

Organizations can be grouped into four stages of maturity based on their analytics capabilities (see figure 3 on page 4):

Laggards. The organization makes basic use of analytics, usually limited to descriptive analyses of data, to retrospectively report on performance. They usually lack the analytics strategy and the culture needed to move forward.

Followers. The organization uses analytics to diagnose business problems and manage costs. This is largely made up of inferential modeling, and analytics is not used to inform strategic business decisions. There is no evidence of an analytics culture championed by top management.

Explorers. The organization uses analytics to optimize performance by diagnosing drivers and predicting outcomes. Although they have some analytics strategy in place, they don't have a well-developed culture of data-driven decision-making across the organization.

Leaders. The organization has a clearly defined analytics strategy that aligns with the overall business strategy. The C-suite has a clear commitment to analytics and fosters a culture of data-driven decision-making. They use real-time analytics to drive innovation and create a competitive advantage across all areas of the business.

Figure 1 The Analytics Impact Index covers a diverse range of companies





Notes: FTE is full-time employees. Numbers may not resolve because of rounding. Sources: Melbourne Business School; Kearney analysis

Figure 2 Analytics maturity is measured in four dimensions

Maturity assessment framework Alignment of the analytics priorities Governance (cross-functional with the business strategy decision-making and prioritization) Articulated forward-thinking vision - Data-driven decision-making and culture Established road map based on a gap assessment between the current state - Integration of analytics capabilities and the vision with a defined strategy tal design focus Executive sponsorship and communi-**Strategy and** leadership Organization structure (roles and cation for analytics responsibilities) and resource configuration (make vs. buy and partnerships) **Culture and governance** - Technical skills for analytics — Data management and data quality (such as completeness, - Talent management for accuracy, accessibility, and development and progression master data management) along with resource utilization - Technology enablement (tools **Sophistication of models** and systems) and quality of the insights **Talent and skills Data ecosystem** (predictive vs. current state)

Sources: Melbourne Business School; Kearney analysis

within the business and an experimen-

Figure 3 Companies can be categorized into four stages of analytics maturity

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	Laggards	Followers	Explorers	Leaders
Analytics type	Descriptive	Diagnostic	Diagnostic and predictive	Real time
Primary purpose	Reporting	Managing cost drivers	Optimizing business performance	Innovating, driving competitive advantage
Analytics strategy	Nascent	Nascent	Basic	Clearly defined
Data decision culture	Nascent	Nascent	Partially developed	Fully developed

Maturity distribution over the past three years

We have seen positive movement in analytical maturity in 2020 (see figure 4). Our study reveals that 16 percent of organizations—up from 6 percent in 2019—are now considered Leaders and are extracting the full potential of analytics. This is mirrored by an almost equivalent decrease in the proportion of Followers. This is an encouraging trend for analytics-focused organizations, showing that investments in the right areas may be paying off.

Another way to interpret this result is that practices that were considered "leading" in 2018 are now the norm. Either way, in 2020, the bar has been lifted, and organizations will need to add new capabilities to be defined as Leaders.

Figure 4 **Analytics maturity has advanced over the past three years**

Laggards		<i>11</i>	Q	@
		Followers	Explorers	Leaders
2020	7%	29%	48%	16%
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2018	8%	37%	49%	6%
	8%	46%	36%	8%

What characterizes an analytics Leader?

A focus on strategy and leadership

Leaders differentiate themselves with a clear strategy, an analytics vision, and a well-defined implementation road map. Leaders are also efficient at tracking the success of analytics projects: 85 percent say their analytics KPIs are clearly defined, understood, and monitored, while only 20 percent of others claim the same.

Another defining characteristic of Leaders is their analytics operating model. A significant proportion about 84 percent—have a centrally led organizational model compared with only 28 percent of Laggards (see figure 5). Centrally led organizations also tend to have a better-articulated analytics vision and strategy.

Understanding the importance of culture and governance

We classify organizations as Leaders when their decision-making is primarily driven by data. Leaders are also characterized by a clear understanding of the benefits of analytics, and their decision-making processes are supported by robust data analysis.

Seventy-five percent of Leaders have a strong analytics-driven culture compared with 19 percent of other organizations. Leaders also differentiate themselves with a culture of experimentation, and a safe-to-fail attitude is entrenched at every level of the organization.

Eighty-three percent of Leaders have C-suite or director-level leaders heading their analytics operations compared with 22 percent of Laggards, a trend that is consistent with our 2019 study. Dedicated C-level executives, such as a chief data officer or chief analytics officer, act as sponsors to drive analytics efforts across the organization. These sponsors are involved in all communications and governing bodies across the organization to champion analytics-related causes.

Figure 5 Most analytics leaders have a centrally led organizational model





A fit-for-purpose data ecosystem

Analytics Leaders outperform Laggards in the effectiveness of their data policies, processes, and technology. Eighty-one percent have data infrastructure that sits across the organization with well-maintained data warehouses, as opposed to 27 percent for other organizations.

Eighty-one percent of Leaders use and invest in sophisticated tools, programs, and platforms and use advanced technologies such as AI, natural language processing, and machine learning. These organizations have well-defined processes and regularly evaluate technology platforms to ensure they are meeting evolving needs. Leaders largely rely on unstructured data for analytics and have a high level of trust in its origin and movement.

The right mix of talent and skills

Analytics Leaders outshine Laggards when it comes to hiring, managing, and growing analytics talent. Analytics employees in leading organizations have well-defined roles and responsibilities with clear expectations of their output. Employees are assigned to projects that match their skills, and external contractors are on hand to fill any gaps.

The importance of training is well-understood, and the Leaders extend analytics training across the organization to foster a deeper understanding and appreciation of analytics. Training is tailored to each department to ensure programs are aligned with the analytics strategy and business needs. These characteristics have remained a consistent feature of Leaders since we started this study in 2018.

Leaders outshine Laggards when it comes to hiring, managing, and growing analytics talent.

The financial impact of analytics

The Analytics Impact Index provides an objective assessment of the return on analytics investments as a proportion of an organization's total profit. This proportion is calculated by modeling the profitability across all organizations after taking into account geographic region, industry, size, and the organization's profitability in the previous year.

Laggards could increase their overall profit by an average of 81 percent if they were to increase their maturity to the level of Leaders, holding all other factors constant (see figure 6). The potential overall profit increase for Followers has increased to 55 percent compared with 46 percent last year, while the profit potential for Explorers has doubled from 12 percent to 25 percent. Given that the return on analytical investment typically slows down once easy wins have been exhausted, Explorers have more of an uphill battle when it comes to growth. Laggards could increase their overall profit by an average of 81 percent if they were to increase their maturity to the level of Leaders, holding all other factors constant.

Figure 6 Returns are correlated with analytical maturity



¹Potential profit uplift refers to the increase in overall profit if a company were to increase its analytical maturity to the level of a Leader, holding all other variables constant. The 2020 result is calculated using 2019 and 2020 data, with variables and method as per 2019. Sources: Melbourne Business School; Kearney analysis

The value of artificial intelligence

Artificial intelligence: two words that independently have many meanings but when put together become a powerful force in today's increasingly automated world. From a smart thermostat that can detect ambient temperatures to a chatbot that can solve complex customer problems to a fully autonomous self-driving car, AI is working its way into our everyday lives.

Artificial intelligence is the ability of a computer program or a machine to think and learn. However, AI has evolved to become an umbrella term for many things. Put simply, AI is a collection of technologies that allow computers to think for themselves—that is, work out what to do—usually in the context of achieving a particular task.

And it is this "putting together" that holds real value. By connecting the dots between application and opportunity, organizations can start to use AI to optimize their processes and run more effectively and efficiently. We have seen recent examples of this "putting together" with AI technology being deployed during the COVID-19 pandemic. Industrial <u>robots have</u> <u>stepped in at scale</u>—not only to clean and sanitize surfaces, but also to scan for fevers and enforce wearing of masks, deliver food and medical supplies, and speed up processing of test results. Kearney recently helped a US-based care consortium navigate the COVID-19 pandemic with an online personal protective equipment exchange for donations, powered by analytics algorithms. We also helped the company manage its healthcare operations with real-time scenario planning using the power of data and visualization.

There is no doubt that AI has broad and promising applications for a range of organizations and industries. But how much do organizations think they really understand AI? And does this understanding correlate with a better return on investment?

There appears to be a clear link between understanding and action when it comes to AI: 82 percent of Leaders understand how and why to use AI to drive business outcomes, and 75 percent deploy AI (see figure 7).

Figure 7 Analytics Leaders understand how and why to use AI, which leads to action



In contrast, less than 25 percent of Laggards understand how AI can help, and only 9 percent have deployed AI technology. Leaders are also able to launch AI pilots much faster than Laggards. The average deployment time for Followers and Laggards is 10 months, while Leaders and Explorers spend half that time.

Investments in developing AI capabilities remain similar at all levels of analytics maturity. However, Leaders see four to five times more value from their AI deployment (see figure 8). This means it is less about the amount invested in AI and more about investing in the right areas and effectively leveraging those investments.

Having the right organizational DNA has the biggest net effect on the successful use of AI. Leaders are characterized by three success factors: a culture to experiment, CXO-level analytics leadership, and talent with not only the skills to understand the technology, but also the technical know-how to deploy AI pilots. The lack of these qualities is the biggest roadblock to AI deployment, along with the absence of the right data ecosystem to support AI pilots. Whether we are looking at the impact on profits or the results from AI, one thing rings true throughout the Analytics Impact Index: support and leadership from the top of the organization is crucial. If there is one thing large organizations should take away from the Analytics Impact Index study, it's that leadership buy-in and support ensures the success of data and analytics programs.

Figure 8 Despite similar investments in AI, analytics Leaders gain more value from their investments



Note: Out of the 123 respondents who deployed Al pilots, 58 measured value as revenue, 22 as profit, and 14 as cost-out. Sources: Melbourne Business School; Kearney analysis

Big Data analytics

The term "Big Data" has been around for some time now. But over the past five years, the convergence of the Internet of Things (IoT), high-speed 5G networks, and the proliferation of systems have accelerated the concept to a new level.

Big Data has huge potential for organizations to better understand and serve customers, identify new business opportunities, and generate more sales. Think Netflix or Amazon recommendations that are tailored to your preferences and behavior patterns or Uber's ability to predict demand, dynamically price journeys, and send the closest driver to the customer. These are all achieved with the help of Big Data.

When it comes to Big Data, there are four dimensions that matter:

Volume. The amount of data is crucial for data analysis, and thankfully, <u>we have an abundance</u>. By one estimate, if we take all the data generated in the world between the beginning of time and the year 2000, it is the same amount that we now generate every minute.

Velocity. This is the frequency at which data flow in from various sources. Consider how many text messages are sent every minute or how quickly social media content goes viral, and you will have a good appreciation of velocity. Having access to real-time data is a massive advantage, giving organizations a more complete picture and enabling them to make more accurate decisions.

Variety. This refers to the type of data you have. Ideally, data should come from a variety of sources and appear in many types for it to be representative. Structured data, such as financial data that fits neatly into a table or relational database, are generally easier to analyze than unstructured data (think photos or social media updates), a form more popular with organizations today. With Big Data analytics, we can now harness both these forms of data to extract rich insights.

Veracity. This is the degree of accuracy or truthfulness of a data set, including both the quality of the data and how trustworthy the source, type, and processing of the data is. Veracity helps screen data, filtering out the unimportant and highlighting the most relevant information—giving us a deeper understanding of data and helping us contextualize it in order to take action. While organizations at all levels of maturity have seen increases in the amount of data over the past five years, Leaders have increased the amount of data they use by more than 50 percent relative to others. In this complex environment, executives are grappling with some urgent questions about Big Data: Is it more important to invest in a collection of data? Or should we focus on improving reliability? Do we have the right talent to harness this power? And how can we effectively convert this data into insights? Over the past five years, organizations have been creating and storing more data than ever before, and we have seen this for all levels of analytical maturity (see figure 9). This increase has largely been driven by the explosion in the number of Internet users, the escalating interconnectivity of our IoT devices, and access to high-speed networks. However, these factors are largely beyond the control of organizations.

Leaders have taken a proactive approach to expanding the volume of their data by investing in two areas that are in their control: creating the right set of systems to support Big Data and moving to cloudbased storage to accommodate more volume. In addition, the cost of data storage has plummeted over the past few years, allowing organizations to stretch their data budgets even further. This investment has seen Leaders increase their data volume by 20x on average, while Laggards have only seen an 8x increase.

Figure 9 Organizations have seen a massive increase in data volume over the past five years



As we come to terms with this explosion in volume, data reliability becomes more important than ever before. Until now, veracity has been overshadowed by the other three "Vs" but is now emerging as the key to making sense of Big Data. The "garbage in, garbage out" mantra is still true: even if volume, velocity, and variety are at optimal levels, without veracity, organizations cannot unlock the real promise of Big Data.

From conversations with heads of analytics functions, we know that data veracity is their biggest concern. In this context, Leaders invest 4x more than Laggards on improving data accuracy and reliability and this investment gives them 6x better outcomes (see figure 10).

By ensuring data veracity, companies are able to filter through to obtain deep insights on certain focus areas, such as customer purchase behavior or their supply chain. Managers across the business can then use these deep insights to inform their strategy and actions.

Figure 10 Leaders invest more in improving their data reliability and achieve better outcomes as a result



% spent on improving data reliability as a %

% of organizations that met their data accuracy and reliability objectives



This investment gives them a 6x better outcome than Laggards.

The path forward

The path to becoming an analytics Leader is not always smooth. Organizations that exhaust quick wins early on in their transformation find the rate of return on their investments slows down, as does motivation. The middle ground can be slow and frustrating territory. But this year's Analytics Impact Index shows that organizations that invest in the right areas of analytics are making significant gains.

It is important to note that capital investment alone will not get you to where you need to be. We know from years of studying this area that it takes a comprehensive approach to analytics investments for an organization to succeed. Having a strong data ecosystem is necessary but not sufficient. Enabling that transformation requires organizations to embed culture of curiosity and experimentation into the fabric of your organization, driven by leaders who understand the unique transformative capacity of analytics (see sidebar: Melbourne Water aiming to grow in its analytics journey on page 15).

Over the past 10 years, there has been rapid digital change within almost every industry around the world. However, nothing has prepared us for the pace of change that we have seen in 2020. The COVID-19 pandemic has turned the business world on its head, forcing many companies to accelerate their digital transformation plans.

Amid this flux and unpredictability, the dependability of data is reassuring. It is a steadfast reminder of the need to measure, reflect, and adapt in order to remain competitive. Although many organizations are scaling back their investments, analytics is not something you can afford to slow down on. In summary, the 2020 Analytics Impact Index reveals five findings:

- Survey participants advance toward analytical maturity, with 9 percent more categorized as Leader and Explorer compared with 2019 (64 percent versus 55 percent).
- Financial returns are correlated with analytical maturity, with Laggards potentially able to generate up to 81 percent more profit if they were to become as mature as Leaders.
- Mature participants invest similarly in Al capabilities but experience four to five times higher uplift in revenue/profit by focusing on value.
- Participants saw an increase in data volume by an average of 14x over the past five years. However, 50 percent of them struggle with data reliability issues.
- Leaders continue to differentiate themselves through organizational attributes such as a centrally led operating models and C-suite leadership.

The pace of change in analytics can be daunting. Leaders will need to stay ahead of the game by experimenting with rapidly evolving technologies such as AI, machine learning, and robotics while also deploying capabilities to address the growing need for data veracity. This imperative will result in better decision-making and an increase in profits, which is of course at the heart of investments in data and analytics.

The 2020 Analytics Impact Index survey is still open. If you would like to participate and receive a detailed and personalized report, please click **here**.

Melbourne Water aiming to grow in its analytics journey

Melbourne Water, a Victorian government-owned utilities company, manages the water system in Melbourne, Victoria, Australia, including the supply of water to residents, reservoirs, and the sewerage and drainage system that services the city. Identified among organizations with nascent analytics capability, Melbourne Water is striving to progress on its analytics maturity.

Interview with Paul Chisanga, a business performance and analytics manager with more than 15 years of experience across industries

What is the history of analytics at Melbourne Water?

A couple of years ago, Anthony O'Shannessy, the chief financial officer, initiated a discussion around the potential to harness analytics to ensure the residents of Melbourne are paying the lowest possible price for water utilities improving service levels. Realizing that we had little to none of the capabilities in terms of analytics, we started engaging different schools, one of them being Melbourne Business School, to understand how data and analytics could be used to solve the organization's pressing challenges.

How has your analytics capability evolved over years?

We completed the Analytics Impact Index survey in 2019 and realized the state of our analytics capabilities relative to other organizations. The 2019 survey identified our organization among the Followers and provided us with very practicable practices to help us grow our analytics maturity. It helped us develop a road map to improve our analytics capability and a framework that our CFO uses to obtain buy-in across the organization and lead our analytics journey.

Our company has been working on two key aspects since then: refining our organizational structure for analytics by engaging multiple senior leaders at the C-suite and board level to champion for analytics and being more experimental and innovative with data by making efforts to use data to make decisions.

How does Melbourne Water envision its analytics capabilities in the upcoming years? How long do you think it will take for Melbourne Water to move from being a Follower to an Explorer?

Melbourne Water is rigorously working to advance on its analytical maturity, focusing our efforts on key aspects as the company aims to become an Explorer within the next 24 months:

- Executive sponsorship. Led by the CFO, Melbourne Water is working toward increasing the engagement from leaders in the C-suite and also at the board level. This would help foster a culture for data. Executive sponsorship is also beneficial as it enables funding and investment into analytics projects.
- Building analytics talent and skills. Melbourne Water is also directing its efforts toward harnessing its existing analytics capability while simultaneously creating a pipeline for analytics talent. In the past few months, we have identified individuals with a quantitative mindset and rechanneled their efforts into analytics projects. We are also working with human resources to recruit individuals with analytics skills to ensure we have the right talent to grow on the analytics maturity ladder.
- Advancing data management and infrastructure.
 Our organization is also investing in building tools and technologies that enable the use of data in an optimized fashion. We are setting up a data management team to ensure seamless flow of data.
- Embedding a data culture. We are rigorously vouching for a data culture by promoting the use of data in departments and functions. For example, most of our leaders now use data visualizations to gain full visibility into the working of the company, which is a refreshing for a company that has traditionally used intuition and experience rather than data for decision-making.



With the combination of efforts from leadership, coupled with great talent and data management, I am confident that Melbourne Water will become an Explorer in the next two years. It is not a quick journey, but it will bring great outcomes for us.

You mentioned that Melbourne Water is using descriptive analytics and visualization within its organization. Is your organization also using predictive modelling or advanced analytics capabilities in any way?

Yes, we are well on track and are advancing from using descriptive to predictive analytics. In fact, our organization has recently engaged with students at the Centre for Business Analytics at Melbourne Business School to help us optimize costs for our company using advanced analytics. We are also working on predictive maintenance modeling to reduce inefficiencies with repairs and maintenance. We are also in talks to explore further potential of how advanced analytics can help our organization.

Where do you see the barriers that might hold back Melbourne Water from growing into an analytics leader?

Lack of data culture could be one of the key hurdles in Melbourne Water's growth. Often, employees rely on their experience and are hesitant to use data and technology for decision-making. However, we are earnestly working toward changing this mindset through quick analytics pilots. It is also promising to see leaders being so receptive to this experimentation, which makes me confident about our capabilities to fulfill our vision. The Analytics Impact Index study has shown that leadership and strategy is the key enabler of analytics value, and we certainly see sufficient evidence in our organization that senior leaders are championing data for decision-making.



Authors



Ujwal Kayande Professor of Marketing, Director of the Centre for Business Analytics, Melbourne Business School u.kayande@mbs.edu



Enrico Rizzon Partner, Melbourne enrico.rizzon@kearney.com



Mohit Khandelwal Principal, Melbourne mohit.khandelwal@kearney.com

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About Melbourne Business School

Melbourne Business School has a proud history of advancing quality business education in Australia. The school is home to Australia's first MBA program, launched in 1963. The Centre for Business Analytics was founded by Melbourne Business School in 2014 to address the worldwide demand for analytics research and knowledge. Its mission is to be a key catalyst to help Australian businesses gain a distinctive competitive advantage through harnessing the trilingual insights of business, mathematics and technology. The Centre manages educational programs including Melbourne Business School's Master of Business Analytics, which is ranked 15th in the world by QS and recognised as the top program in Asia and Oceania. The Centre's partners include Suncorp, Victoria Police, Kearney, National Australia Bank, AGL, Downer, Siemens, ANZ Bank, Melbourne Water, SAS Institute, and SEEK. To learn more about the Centre for Business Analytics, please visit cfba.mbs.edu.

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