# Trendlines: Intelligence meets design

1+1 = 3 when you unleash data science across your organization

# Executive summary

*The future-ready enterprise is curious, explores and iterates – and to do so, uses intelligence from data science as a business asset throughout the organization.*

In this age of algorithms, organizations can no longer treat data science as just a technical practice; rather, it's an organizational capability. Accordingly, leading companies are breaking down silos to unleash multidisciplinary teams whose members work together as creative problem solvers, leveraging emerging technologies including the latest advances in data science. MIT Center for Information Systems Research (CISR) finds that companies that take these kinds of approaches can boost margins 16 percentage points above industry averages. It's this type of diverse teaming that can unleash an organization's full potential.

How can you bring design and data science together to drive *your* business transformation? "Intelligence meets design" is the latest in the Avanade Trendlines series on emerging trends that impact the design, innovation and technology choices of large organizations.

# Data science and design for everyone

Researchers at MIT CISR find that companies undergoing business transformations don't all look alike because those companies don't all act alike, especially in the quality of the customer experiences they deliver and levels of efficiency with which they operate.

But companies that have transformed their operational efficiencies by digitizing their platforms, or are in the process of doing so, are asking what comes next. A big piece of the answer is the marriage of data science and design.

MIT defines data science as a way to improve decision-making through the analysis of data. While analytics derives insight from information, data science encompasses more disciplines, like data mining, statistical analysis and deep learning. It makes broader and deeper explorations to estimate the unknown while analytics uses well-defined sets of data to draw insights for human consideration and decision-making.

The intelligence that data science delivers has never been more important to business. It's at the heart of business models at Netflix, Capital One, American Express and elsewhere. Data science is behind virtually everything that Amazon does, including demand forecasting, product search ranking, product and deal recommendations, merchandising placements, fraud detection and translations.

avanade
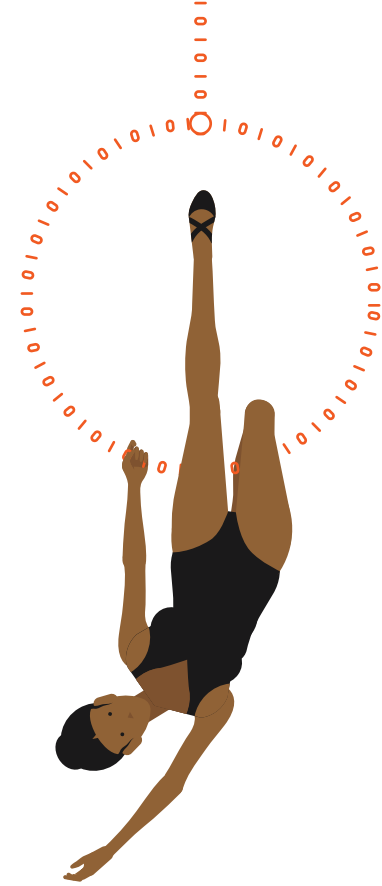
What about the companies that aren't digital first like Amazon? Using intelligence to fuel business transformation and growth is increasingly important not just to tech-based or born-in-the-cloud companies, but also to traditional manufacturers and service providers. Adopting new intelligence-driven models of their own is a crucial way to gain strategic advantage, stand out in a hyper-competitive crowd and triumph over disruption.

Consider The Washington Post. Forrester reports that the Post analyzes tens of millions of clicks nightly to understand and enhance reader engagement with content and ads. Reporters use data-driven intelligence to understand their readers and work more effectively, and executives use data analysis to drive strategy.

Global energy giant BP doesn't just use data science. It focuses on enhancing the careers of its data scientists, particularly the 20-somethings. The company knows it's competing for those data scientists against sexier companies in Silicon Valley and elsewhere, so it has to keep them motivated – for example, by having them serve as mentors to more senior executives. The effort may be unconventional, but it's well worth it: A single algorithm by one of those young data scientists helped BP identify 1.4 billion barrels of oil, according to Bloomberg.

Adopting a new intelligence-driven model is a crucial way to gain strategic advantage, stand out in a hyper-competitive crowd and triumph over disruption.

avanade

Data scientists can bring insight and perspective early in the creative process when it can do the most good. MIT CISR finds that this data-wrapping approach is the best way to maximize data monetization.

# Break the silos: The need to integrate

The Washington Post, BP and similarly data-savvy companies are in the forefront of maximizing data science in pursuit of growth and strategic success. But many companies struggle to join the new economy leaders. One reason: Traditionally, data scientists and their counterparts in product design, marketing and elsewhere throughout a company have operated separately from each other.

They haven't really shared a common perspective, a common understanding of customer and employee issues, a common set of goals. They haven't had the opportunity to combine their complementary roles and perspectives. As a result, the ability of data and intelligence to drive enterprise success has been limited.

One key to success: removing the organizational barriers to integration between data scientists and product designers, customer experience designers, marketers and others. If data scientists are lodged in a distinct data science group, they're not as engaged with the business as they should be. It's generally better to create multidisciplinary or cross-functional teams where data scientists and designers and others work side by side, developing shared perspectives and common goals.

avanade

Consider this example. An auto manufacturer is having issues with failures in its engine parts that are being discovered in routine maintenance checks only after customers have brought their cars in for service on separate issues. This results in longer wait times and low satisfaction scores. A combined data and design team would tackle this issue by focusing on overall customer experience while leveraging data science to use the data from the engine to successfully predict the issues early and prompt the customer for service.

Each side benefits from the integration. The data scientists gain a keener appreciation for business needs and complexities, and designers, marketers and others gain a clearer understanding of how to best use data and intelligence. By integrating diverse perspectives, a company gets a better, more comprehensive, more layered understanding of what's really going on with its customers and employees – and better tools to interact with them. MIT CISR finds that this data-wrapping approach is the best way to maximize data monetization.

There are process benefits to the integration of cross-functional teams, too. By bringing together more expertise, the teams can focus on whole products or large portions of the customer or employee experience without necessitating handoffs to multiple groups. This results in a more seamless process and, ultimately, a more successful solution.

By integrating diverse perspectives, a company gets a better, more comprehensive, more layered understanding of what's really going on with its customers and employees – and better tools to interact with them.

avanade

# Innovate and operate everywhere

A cross-functional approach is how they do it at online apparel retailer Stitch Fix, a company that combines intelligence with style experts to deliver personalized clothing recommendations to clients. The company's algorithms team is engaged with virtually every aspect of the business, including marketing, managing inventory and operations, and helping stylists make choices for clients, according to Brad Klingenberg, vice president of algorithms at Stitch Fix.

"The best way for the team to improve the business is not to just provide insights into data for human consumption, but to integrate algorithmic products and decision-making into business processes,"

he says. "Data scientists contribute significantly as business partners with experience in thinking carefully about uncertainty, learning from data and taking a scientific approach to problems."

That contribution, at Stitch Fix and elsewhere, is far broader than the data scientist's traditional role of building statistical models and data visualizations. Instead, these data scientists contribute to a design-thinking approach, one that is inherently creative, practical, iterative and based solidly on understanding the customer or employee for whom the solution is being devised. To this process, data scientists bring insight and perspective that's traditionally unavailable to the rest of the team, and they bring it early in the creative process to do the most good, when it can guide the team's direction.

avanade

That's also what happened when startup Rise Science, which provides a science-based service for improving sleep, wanted to know how to make the data visualizations in its app easier for users to understand and act upon. Data scientists and IDEO designers applied a design-thinking approach. They discovered that the issue wasn't one of data visualization; it was one of user experience. That is, while users might have had difficulty identifying the data that was most important to them, their greater difficulty was in knowing how to act on that data. So, rather than emphasizing the data, regardless of how it was visualized, the data scientists and designers focused on giving users recommendations based on the data. A relaunched service based on the new approach proved a success.

Another way to successfully boost the customer experience – and, as a result, revenues – is by enhancing the *employee* experience. More effective, intelligence-driven tools empower employees to give customers more of what they want, more quickly and efficiently. For example, branch managers at global finance group BBVA used to call their small and

medium-sized customers to pitch "products of the month." Those calls became more effective after data scientists and designers created a dashboard that delivers individualized product recommendations to branch managers on demand.

The marriage of intelligence and design works for these companies, but how well can you expect it to work for you?

MIT CISR, for example, finds that future-ready companies – those that have addressed operational efficiency and employee and customer experience with tools including data science – achieve margins that are 16 percentage points higher than the averages in their industries. Forrester is even more positive, finding that public companies driven by intelligence will grow 27% annually, far faster than projected global GDP.

More effective, intelligence-driven tools empower employees to give customers more of what they want, more quickly and efficiently.

As data science tools become easier to use, look for your design and business people to start acting more like data scientists themselves.

avanade

# *What* not *to do*

**Don't mistake data science for analytics:** If you've implemented data analytics, don't assume you've got data science covered. As mentioned earlier, they're not the same. Data analytics provides quick answers to narrowly defined questions, such as "What's the correlation between beverage sales and regional temperature?" or "How does changing a product parameter change demand for the product?"

The insights from these queries can be important in driving better decision-making, but you know the relevant inputs and are looking for a specific quantification as an answer.

Data science is broader, more complex, more ambiguous – and more unexpected. Algorithms represent probabilities, not certainties. They are the result of scientific exploration and a research mindset and need to be defined in terms of business outcomes. For these reasons, they take more time than analytics, which we often expect to yield real-time results. Not providing the proper supporting functions like data engineering and DevOps leads to data science processes that are challenging to operationalize. Your takeaway: Don't treat data science with the narrow, short-term focus you apply to analytics, or you'll miss opportunities, leave potential value unrealized and be frustrated by the lack of quick results.

avanade
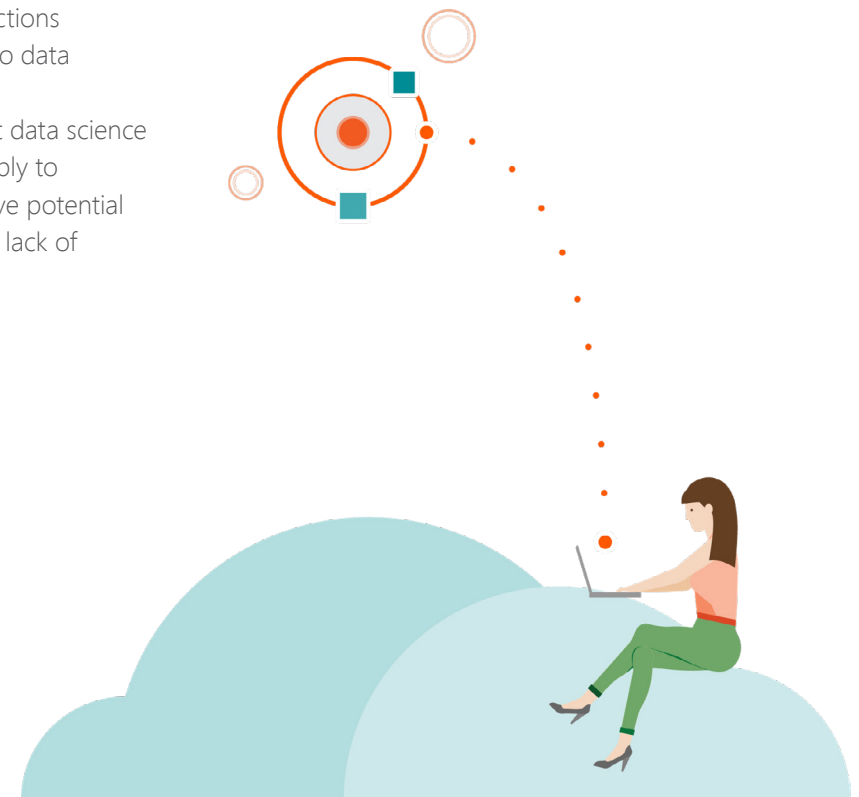
**Don't mistake data science for software engineering:** This is another understandable, common and costly mistake. They both depend on the development of software; they're both highly technical. But the same tools and infrastructure that work for one may not be the preferred tools for the other. Agile methodologies that support feature development can result in decentralized, siloed data. That's not necessarily an issue for a laser-focused software development team that often can work just fine with a limited dataset, but it's likely to be a significant problem for data scientists who need a holistic, comprehensive view of data.

**Don't be (over)ruled by your gut:** When data science works well, it's often by making completely unexpected connections among disparate data. Product designers, marketers and others, especially those who have been at their jobs for a while, don't like unexpected connections, particularly those that contradict their long-held "gut feelings" about what customers want. Some may rebel at the idea of "becoming a data company."

The marriage of data science and design is a culture change for most organizations; your people have to be encouraged to try it and trust it, rather than letting their instincts or feelings, and their lack of familiarity with how data science works, kill the initiative before it can bear fruit. One aid: When the results are counterintuitive, seek out actual examples or use cases that put faces and facts to otherwise abstract conclusions, making those conclusions harder to dismiss.

"The best way for the team to improve the business is not to just provide insights into data for human consumption, but to integrate algorithmic products and decision-making into business processes."

# What to do now

Here are some specific steps you can take now to elevate data science and design across your company:

**Explore the concept of data wrapping.** Working with data science and designers, product managers add data-rich features and experiences to their products or services as a way to use data to build different kinds of products and employee applications.

**Form interdisciplinary teams** with members from design, data and business development. Ask them to consider employee tools as well as customer products as they look across the enterprise for opportunities to improve the business. These teams are well-positioned to identify and address the roadblocks to employee empowerment. As data science tools become easier to use, look for your design and business people to start acting more like data scientists themselves.

**Foster greater creativity and exploration** across all business functions. Immerse your data scientists in design thinking to expose a different approach to solving problems. Take a leap of faith and trust employees will rise to the challenge even if their approaches differ from your expectations.

# What to do next

For those further along on their data science journey, here are additional steps to take:

**Initiate widespread education and culture change** around data science, the role of data scientists, and how design and business-side personnel can begin to collaborate with the data science teams. Help employees understand what they can expect – and what they can contribute. Identify employee champions in key departments and adopt a "train the trainer" approach so they can advocate for and support the change.

**Prepare for the future enterprise model** in which technology will be AI-supported, intelligence-driven through APIs and built by empowered citizen designers and developers. Elevating design and data science capabilities is the first step, but organizations need to have the right tools and talent to operationalize them.

**Establish a single Design and Data Science Center of Excellence.** Centralizing design and data science resources and expertise might seem counterintuitive when the goal is getting those experts to integrate with the rest of your business staff. But a center of excellence complements and educates, rather than frustrates, this goal by actively promoting those integration efforts and providing guidance on how to implement them.

avanade
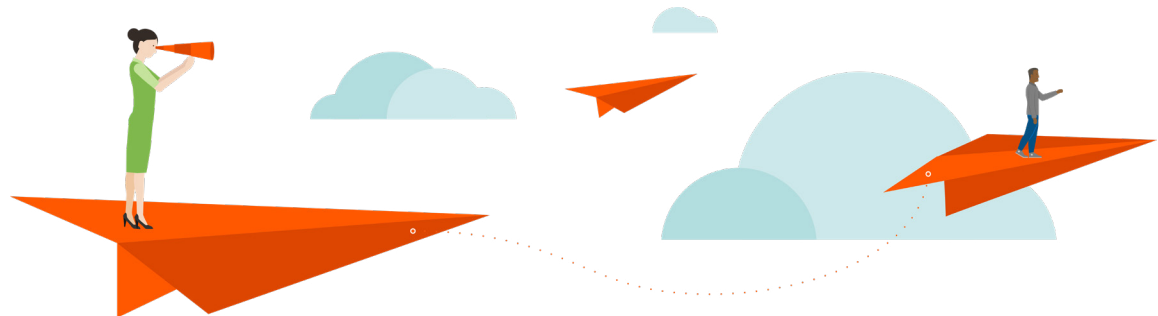
## Ready to learn more?

Contact us to help you embark or take the next steps on your future-ready enterprise journey. For more information about data science integration and other trends that will affect you and your business over the next 12 to 18 months, visit us at Avanade Trendlines.

Read the Trendlines executive summary and the digitial ethics report.

References

Bloomberg, "BP Hopes Young Recruits Can Make It Cool," March 18, 2019

Domino Data Lab, "Managing Data Science in the Enterprise," Strata Conference, March 2019

Domino Data Lab blog, "On Collaboration Between Data Science, Product, and Engineering Teams," February 20, 2019

Forrester, "Insights-Driven Businesses Set The Pace For Global Growth," October 19, 2018

Harvard Business Review, "Do Your Data Scientists Know the 'Why' Behind Their Work?" May 16, 2019

Harvard Business Review, "What Happens When Data Scientists and Designers Work Together," March 5, 2018

Harvard Business Review, "Why You're not Getting Value From Your Data Science," December 7, 2016

IDEO, "IDEO's Beliefs About Creating Value Through Augmented Intelligence," June 2018

Inc., "How This Restaurant Chain Built a Data Culture to Design a Better Customer Experience," January 22, 2017

LinkedIn, "Data Science from Scratch at Trunk Club: Lessons learned so far," January 29, 2017

Medium, "A Design Thinking Mindset for Data Science," March 22, 2019

MIT Center for Information Systems Research, "Accelerating Data-Driven Transformation at BBVA," July 19, 2019

MIT Center for Information Systems Research, "Future Ready? Pick Your Pathway for Digital Business Transformation," September 2017

MIT Center for Information Systems Research, "Learn From Hypotheses. Not Failure," May 16, 2019

MIT Center for Information Systems Research, "Making Money from Data Wrapping: Insights from Product Managers," December 20, 2018

The MIT Press, Data Science, April 2018

MultiThreaded, "Let Curiosity Drive: Fostering Innovation in Data Science," January 18, 2019

Quora, "Session with Brad Klingenberg, Stitch Fix VP of Algorithms," April 16, 2019

Venture Beat, "Stitch Fix's chief algorithms officer on when to become a data-driven business," August 22, 2018

Avanade is the leading provider of innovative digital and cloud services, business solutions and design-led experiences on the Microsoft ecosystem. Our professionals bring bold, fresh thinking combined with technology, business and industry expertise to help make a human impact on our clients, their customers and their employees. We are the power behind the Accenture Microsoft Business Group, helping companies to engage customers, empower employees, optimize operations and transform products, leveraging the Microsoft platform. Avanade has 36,000 professionals in 24 countries, bringing clients our best thinking through a collaborative culture that honors diversity and reflects the communities in which we operate. Majority owned by Accenture, Avanade was founded in 2000 by Accenture LLP and Microsoft Corporation. Learn more at www.avanade.com.

avanade