RESEARCH REPORT

DATA AND ARTIFICIAL INTELLIGENCE

Lessons from 2020, Implications for 2021

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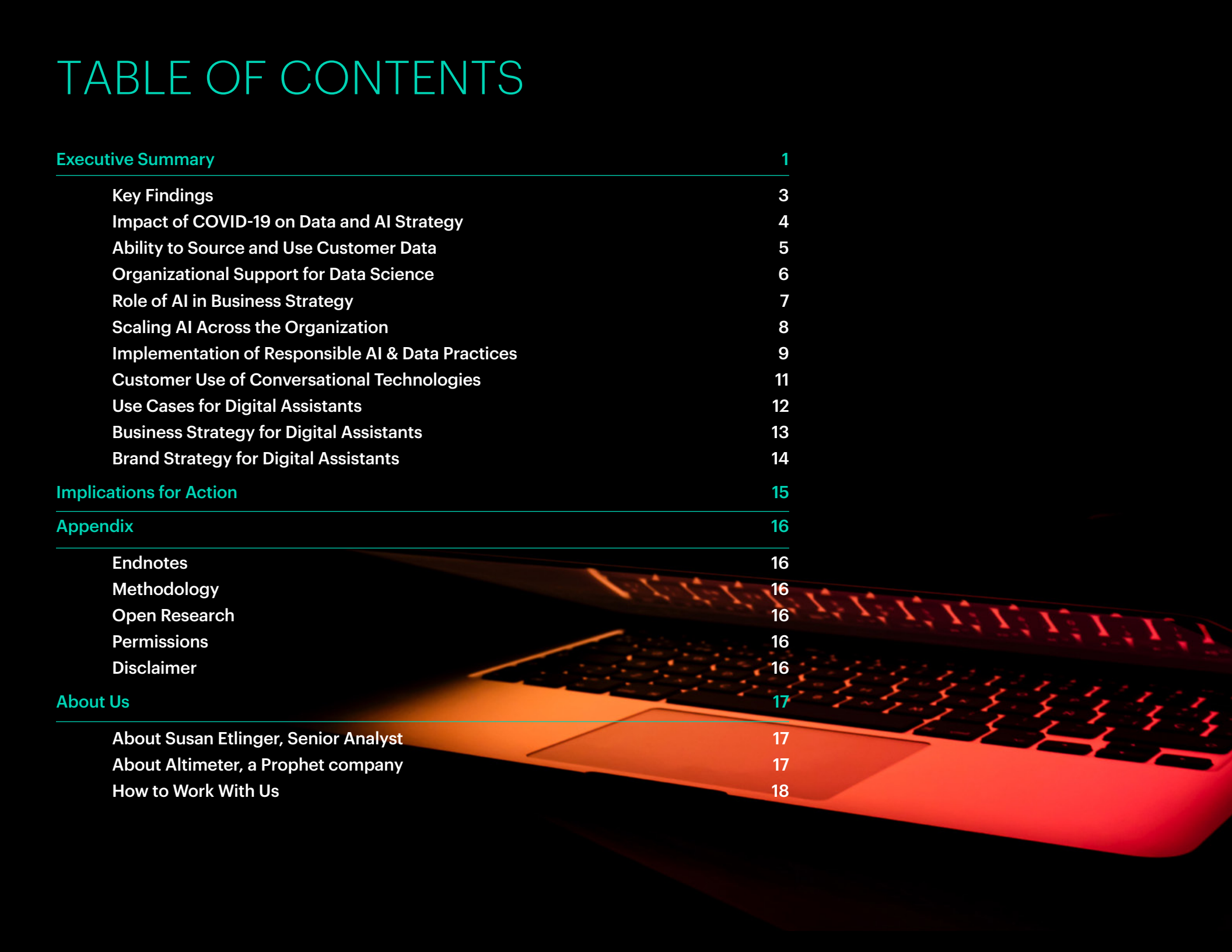
EXECUTIVE SUMMARY

One of the many things we will remember about 2020 is how completely it upended our beliefs about the way we work and use technology. In the space of a few days, organizations all over the world moved to a distributed work environment. In the space of a few months, companies and industries made more progress toward digital transformation than they had in years.

In this report, we examine how the COVID-19 pandemic affected the use of data and intelligent technologies. We looked at the increasingly strategic use of data science and artificial intelligence in organizations and how it is accelerating as a result of incremental and disruptive change. Finally, we reviewed how organizations are using conversational technologies — not only as a productivity tool, but as a way to connect previously disconnected parts of the organization.

While 2020 was a challenging year in most respects, it also provided a rare opportunity for organizations to align both on the value and the challenges of intelligent technology — a move that will become even more critical in an increasingly digital and distributed world.

TABLE OF CONTENTS



KEY FINDINGS

2020 was in some ways both an accelerator and an inhibitor of AI and data maturity. While organizations found themselves relying more on data to help them navigate an unprecedented set of circumstances, we also saw the brittleness of machine learning algorithms unable to account for sudden shifts in consumer and business buying behavior. A May 2020 article in the MIT Technology Review, "Our Weird Behavior During the Pandemic Is Messing With AI Models," showed how the changes in a single week at the end of February threw machine learning models, supply chains, and other business systems into disarray. That said, the fact that 2020 exposed business vulnerabilities may bode well for leaders intent on using data and intelligent technologies to build more sustainable and resilient digital organizations.

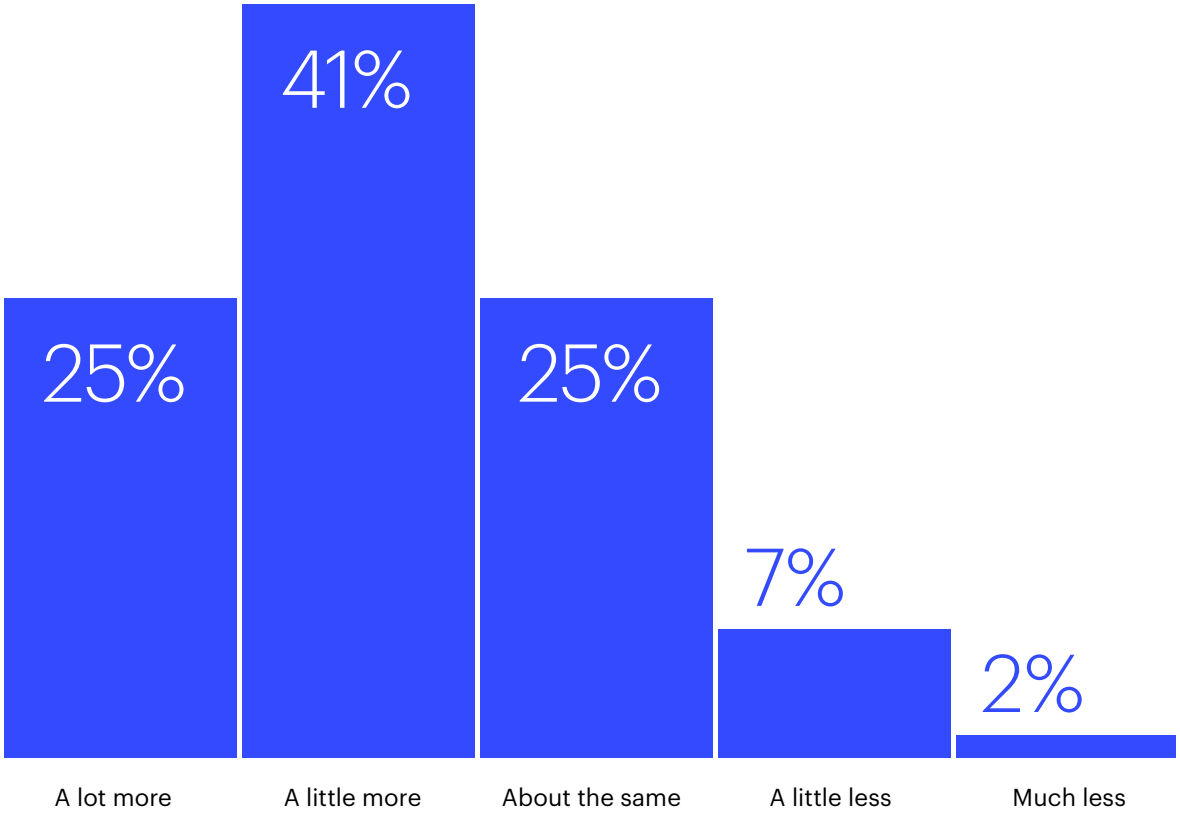
1. **The COVID-19 pandemic accelerated data use and data strategy.** The rapid shift to the cloud demonstrated that people and organizations can adapt to new ways of working and that cloud computing is now essential for business continuity.
2. **Larger companies still have the advantage when it comes to data science.** The leaders tend to be B2B2C organizations, underlining the importance of line-of-sight from consumers to customers to company. At the same time, advances in platform products will make similar capabilities available to a much larger spectrum of organizations over time.
3. **Data and AI are becoming critical enablers of business strategy, possibly accelerated by the COVID-19 pandemic.** If one of the primary goals of digital transformation is to enable business transformation, the ability of the organization to sense, learn, and act is critical, especially in times of economic, business, and market disruption.
4. **AI is becoming table stakes but without the scale needed for real transformation.** We are still in a relatively early stage of AI maturity. While the vast majority of organizations use AI in some capacity, most use cases are departmental, not scaled across the organization. This may shift more rapidly as organizations continue to seek ways to identify new sources of productivity, insight, and resilience, but cost containment is likely to be a barrier for some time to come.
5. **Conversational technologies are now mainstream, but their real potential is yet to be realized.** Customer service remains the most common use case for digital assistants, owing to their ability to deflect more expensive person-to-person interactions to a digital and automated channel, but that is by no means their only value. The nature of conversational interactions provides unprecedented insight into the literal "voice of the customer" — a capability that continues to develop rapidly.

THE COVID-19 PANDEMIC ACCELERATED DATA USE AND DATA STRATEGY

The rapid shift to the cloud demonstrated that people and organizations can adapt to new ways of working and that cloud computing is now essential for business continuity. The majority of companies (66%) are leveraging data and intelligent technologies for insight now more than they were before the COVID-19 pandemic. As most customer interactions have shifted online, insights about customer needs, behaviors, and preferences are now more generally available from digital sources, enabling insights into the organization (productivity, employee engagement, and sentiment), as well as customers and consumers (behavior, sentiment, trends).

FIG 1: Impact of COVID-19 on Data and AI Strategy

To what extent are you relying on data and intelligent technologies as a source of insight during the COVID-19 pandemic?



SOURCE: Altimeter Digital Transformation, base = 628

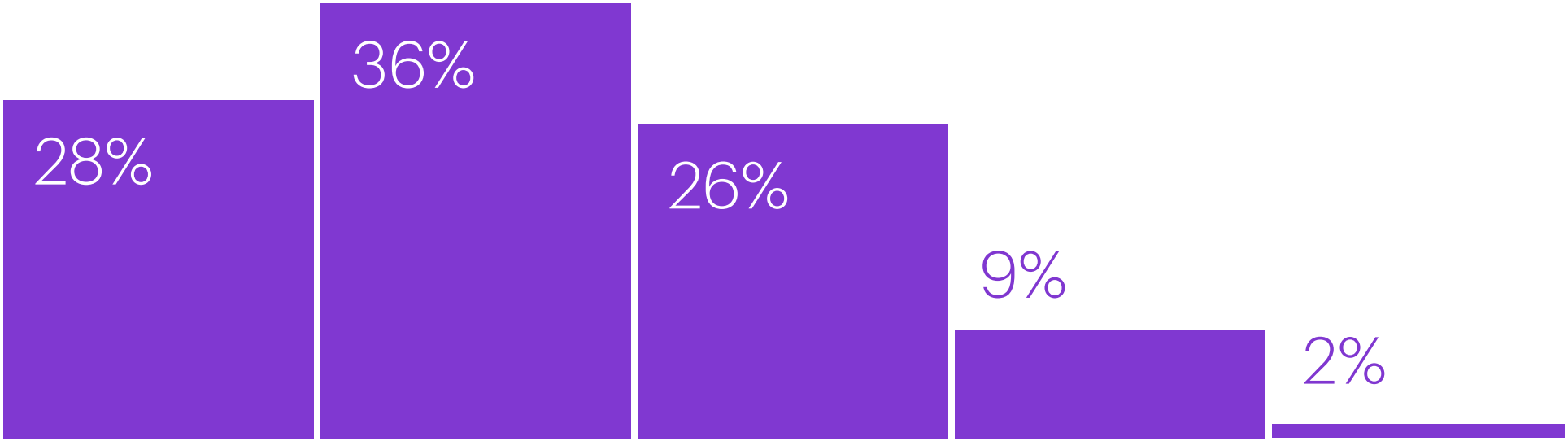
CUSTOMER DATA USE IS BECOMING MORE STRATEGIC, BUT SILOS REMAIN

More than a third of companies (36%) reported that they were able to provide clean data to all parts of the organization, while a further 28% said they are proactive in leveraging this widespread access to strategically discover and address business opportunities and risks.

Industries such as banking/finance (40%) and consumer products (36%) were the only verticals where the majority of respondents applied accessible data to discover and evaluate business opportunities and risks — an advantage in areas such as innovation, customer experience, marketing, and sales.

FIG 2: Ability to Source and Use Customer Data

Which of the following statements best describes how your company is able to use customer data?



SOURCE: Altimeter Digital Transformation, base = 628

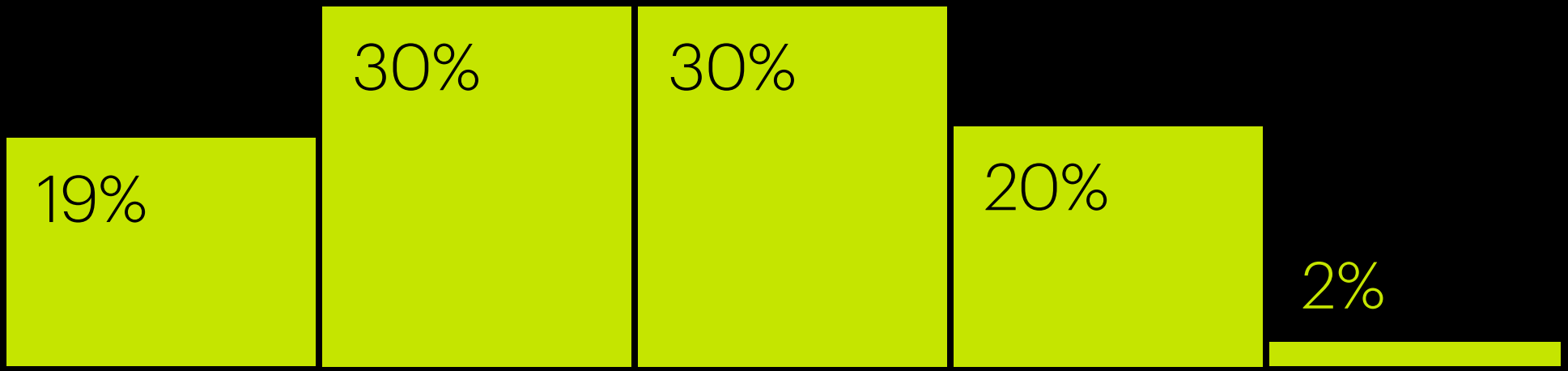
DATA SCIENCE IS BECOMING A CORE COMPETENCY, MAINLY FOR LARGER COMPANIES

While nearly half of respondents said that data science is, or is becoming, a core competency in their organizations (49%), the leaders in data science tend to be B2B2C organizations at (64%), compared to B2B (51%), B2G (50%), and B2C (43%). The greater focus on data science capacity among B2B2C companies underlines the importance of line-of-sight from consumers to customers to company; without that level of clarity, businesses struggle to understand the cause-and-effect or even correlated relationships between consumer behavior, customer needs, and business objectives.

In addition, company size is correlated with data science maturity: The largest companies (50K–100K and 100K+) are more likely to report that they are deriving ongoing value from data in their organizations, presumably because they are able to afford to attract top data science talent from leading universities. This may rebalance over time as data science becomes more integrated into data and AI platforms and therefore more readily available and evenly distributed.

FIG 3: Organizational Support for Data Science

To what extent do you have clean and accessible data, clear processes, and organizational support for data science in your organization?



SOURCE: Altimeter Digital Transformation, base = 628

MORE THAN HALF OF COMPANIES VIEW AI AS KEY TO BUSINESS STRATEGY

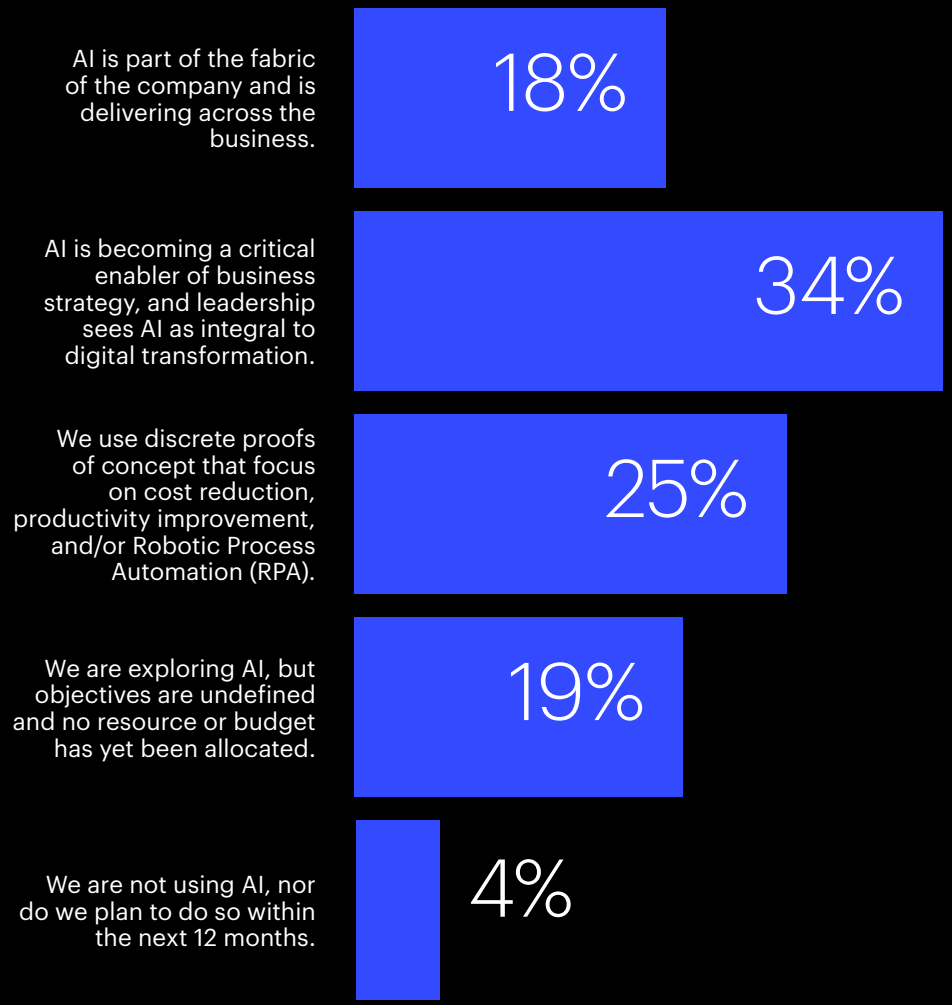
While clean data is foundational to AI and digital transformation overall, the cluster of technologies we think of as AI (defined for the purposes of this report as machine learning, computer vision, language technologies, robotics, and deep learning) activates it in ways that were unthinkable just a few years ago. As organizational capacity for data improves over time, it stands to reason that we would begin to see more AI experimentation, applications, and success stories emerge.

AI adoption and digital transformation are closely linked. If one of the primary goals of digital transformation is to enable business transformation, the ability of the organization to sense, learn, and act is critical, especially in times of economic, business, and market disruption. It is therefore heartening to see that while experimentation continues at most companies, 52% report that AI is becoming integral to digital transformation.

B2B2C organizations lead in their use of AI, with 66% reporting that it is, or it is becoming, a critical enabler of business strategy compared to B2B (51%), B2G (50%), and B2C (42%) organizations.

FIG 4: Role of AI in Business Strategy

To what extent do you use artificial intelligence to support business strategy?



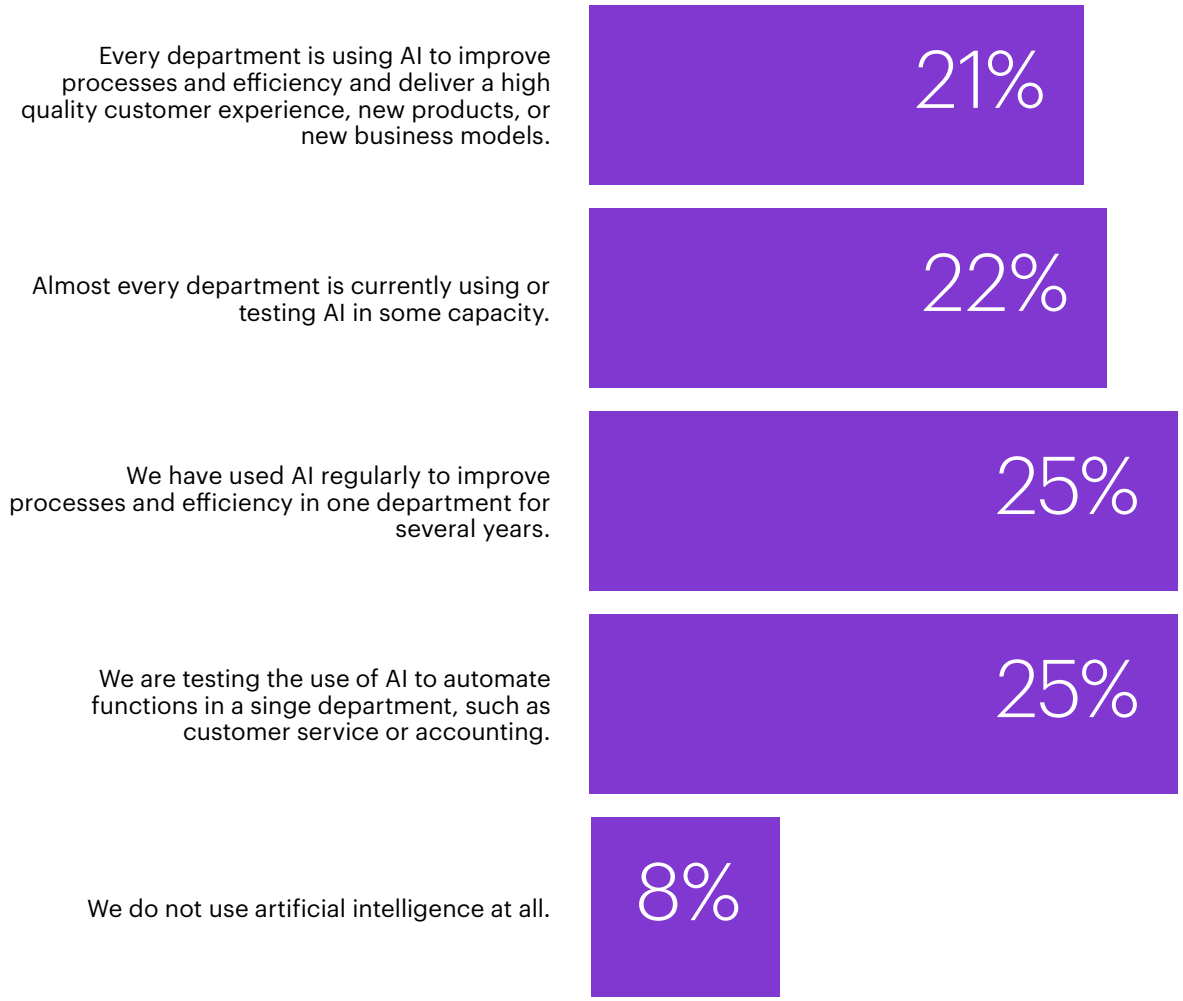
SOURCE: Altimeter Digital Transformation, base = 628

AI IS TABLE STAKES, BUT SCALING IT IS STILL A WORK IN PROGRESS

Even with the advancements over the past several years, we are still in a relatively early stage of AI maturity. As a result, it's notable that 92% of organizations use AI in some capacity and, to be expected, most use cases are departmental, not scaled across the organization. As we've seen elsewhere, B2B2C and B2B companies tend to be further ahead with regard to enterprise adoption (29% and 26%, respectively, compared to B2G (22%) and B2C (11%).

FIG 5: Scaling AI Across the Organization

To what extent do you use artificial intelligence within your organization?



SOURCE: Altimeter Digital Transformation, base = 628

SOME COMPANIES ARE BEGINNING TO BUILD ORGANIZATIONAL CAPACITY FOR RESPONSIBLE USE OF AI

While digital governance is still nascent, there is a growing realization, especially among B2B organizations, that data governance is essential to securing customer trust, protecting brand, and fueling growth in our increasingly distributed world.

To date, the majority of news stories on the responsible use of AI have focused not on global business, but on the large social media platform companies, such as Facebook, Amazon, and Google. But global businesses, exemplified by large technology platforms such as Microsoft and Salesforce, have begun to look at responsible technology use as a business imperative for which they need to build organizational capacity.

Generally, organizations begin with a set of ethical principles from which to work. The next step is to define, implement, and track processes and practices, such as impact assessments, disclosures, and methodologies to reduce bias and increase transparency, and relevant updates to service agreements.

While most organizations report that they have developed and begun to roll out ethics principles and processes for AI, B2B2C organizations lead; 37% report implementing responsible AI processes and practices across the business, compared to 23% of B2B organizations.

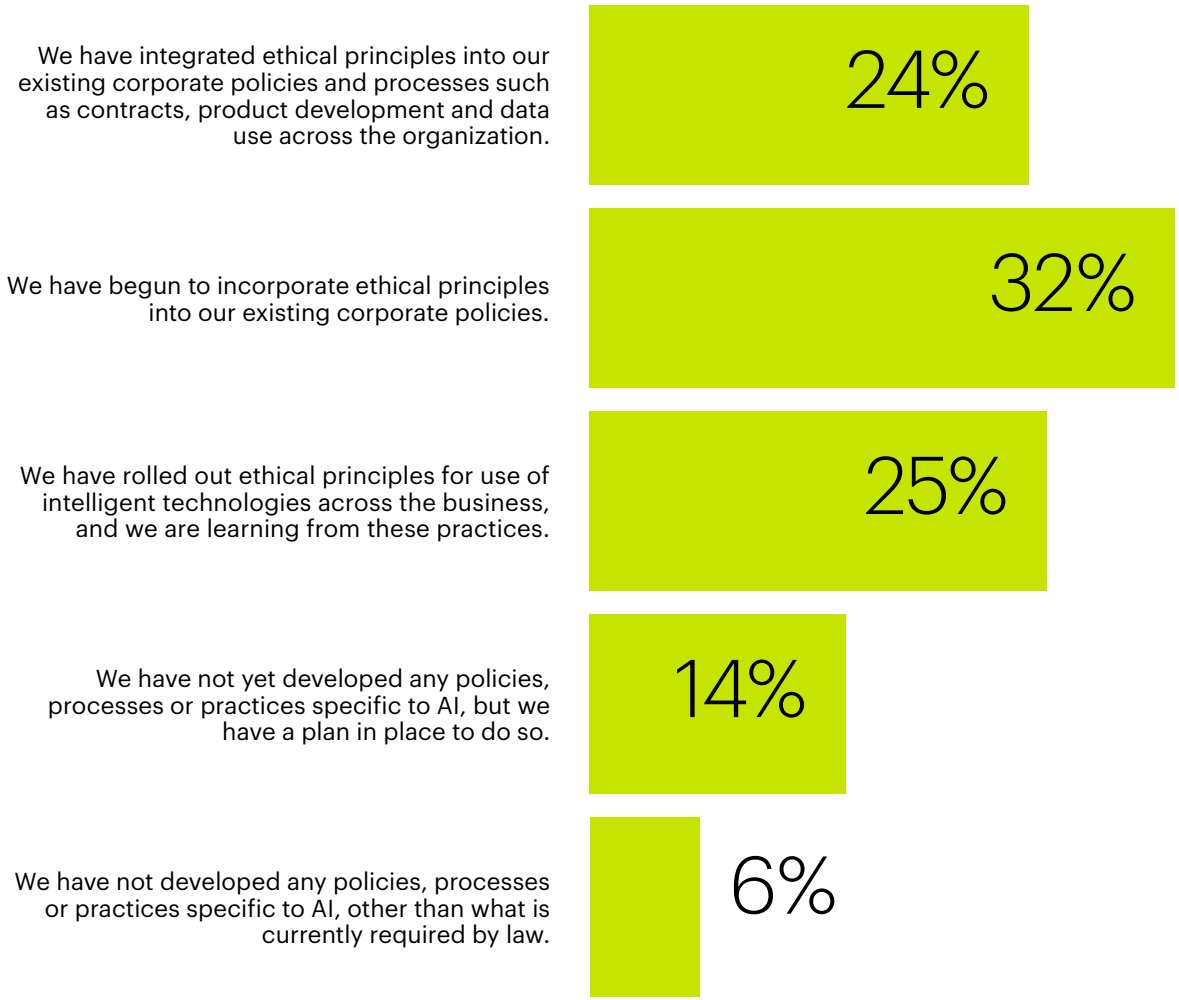
Across geographies, Southeast Asia tends to lead on AI governance (35%), compared with Europe (20%), North America (19%), and China (13%). Admittedly, this has much to do with government structures, technology adoption trends, and cultural norms, but it is important under any circumstances to acknowledge that any function powered by automated intelligence will require oversight and a set of culturally appropriate policies and processes to ensure that it is fit for purpose.

In December 2020, Timnit Gebru, renowned AI ethics researcher at Google and co-founder of Black in AI, reported that she had been fired from Google over a dispute about an academic paper she had co-authored. The paper, which has not yet been released, reportedly warned about risks inherent in large language models, according to a Bloomberg News story.

Gebru's departure from Google (the company contends that she resigned) and the immediate and broad condemnation from the responsible AI community, illustrate the scope of the organizational commitment required to develop responsible AI products and services, as well as the importance of protections for the people tasked with identifying potential harms.

FIG 6: Implementation of Responsible AI & Data Practices

To what extent have you implemented policies, practices and processes to promote responsible use of AI within your organization?



SOURCE: Altimeter Digital Transformation, base = 628

CONVERSATIONAL TECHNOLOGIES HAVE OFFICIALLY GONE MAINSTREAM

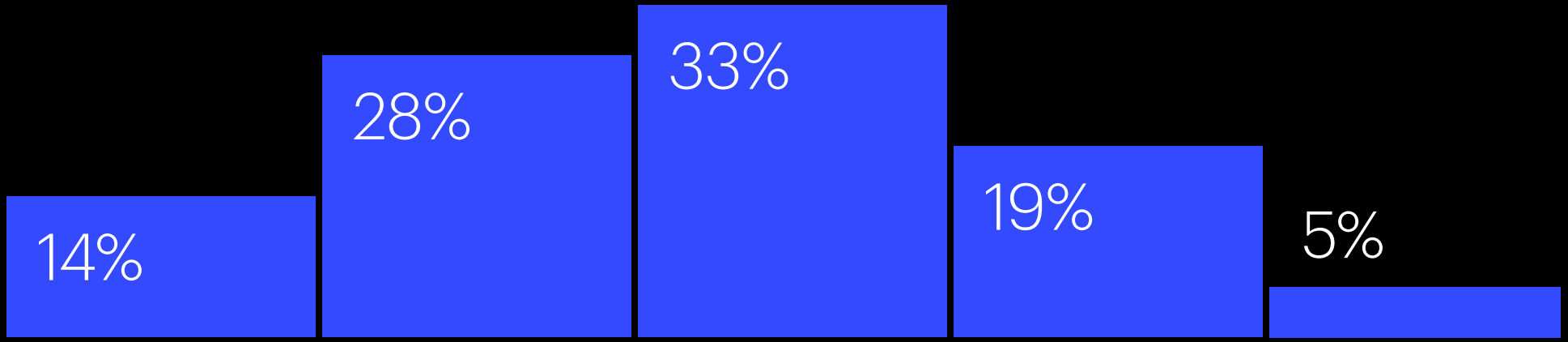
Conversational technologies (digital assistants, chatbots, and voice agents) have come a long way since the first chatbots hit the market around 2016. This is due to a combination of technology advancements in the area of natural language, broader use cases, and an emerging understanding that conversational technologies enable companies to hear and learn from the literal voice of the customer.

In this market, as in many others, the proof is in the use case. Seventy-five percent of companies surveyed reported that they are using conversational technologies to some extent, but it is the long tail that is most interesting right now, who are experimenting not only with the customer-facing aspects of the technology, but with its potential to enrich and add context to other data sources.

From an industry perspective, the banking and finance industry is the most advanced in terms of conversational technology use across the business — just surpassing the technology industry at 49%. Retail (42%) and healthcare (33%) lag their industry peers, likely owing to lower investment and data access challenges, respectively.

FIG 7: Customer Use of Conversational Technologies

To what extent has your company implemented conversational technologies as a customer and/or consumer touchpoint?



SOURCE: Altimeter Digital Transformation, base = 628

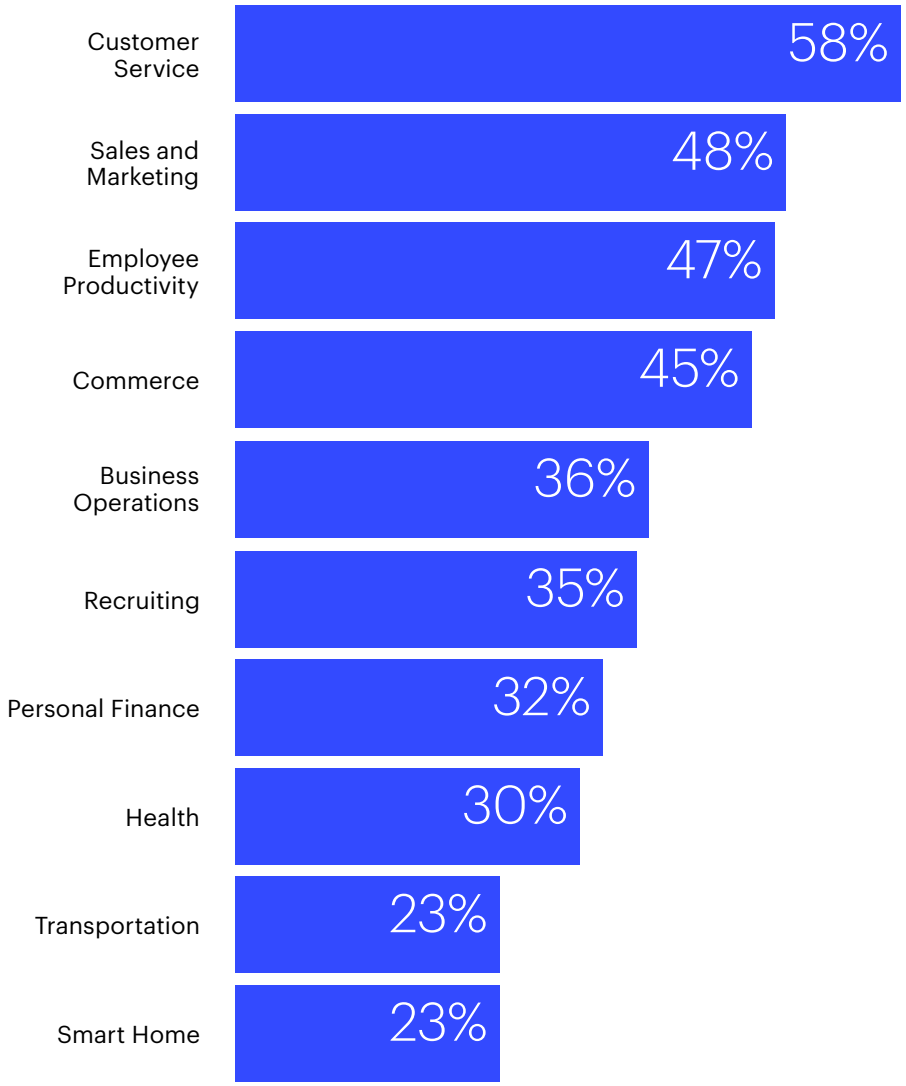
CUSTOMER SERVICE REMAINS THE MOST POPULAR USE CASE FOR DIGITAL ASSISTANTS

Customer service remains the most common use case for digital assistants, owing to their ability to deflect more expensive person-to-person interactions to a digital and automated channel, but that is by no means their only value. While 58% of respondents use digital assistants for customer service, almost half of respondents said that they also use them for sales and marketing (48%), employee productivity (47%), and commerce (45%).

One of the most interesting new applications for digital assistants is recruiting; 35% of respondents included it as a current use case. Smart homes and environments are also ones to watch, as conversational technologies become embedded in more devices around the home and elsewhere.

FIG 8: Use Cases for Digital Assistants

What are the use cases for digital assistants at your company?



SOURCE: Altimeter Digital Transformation, base = 628

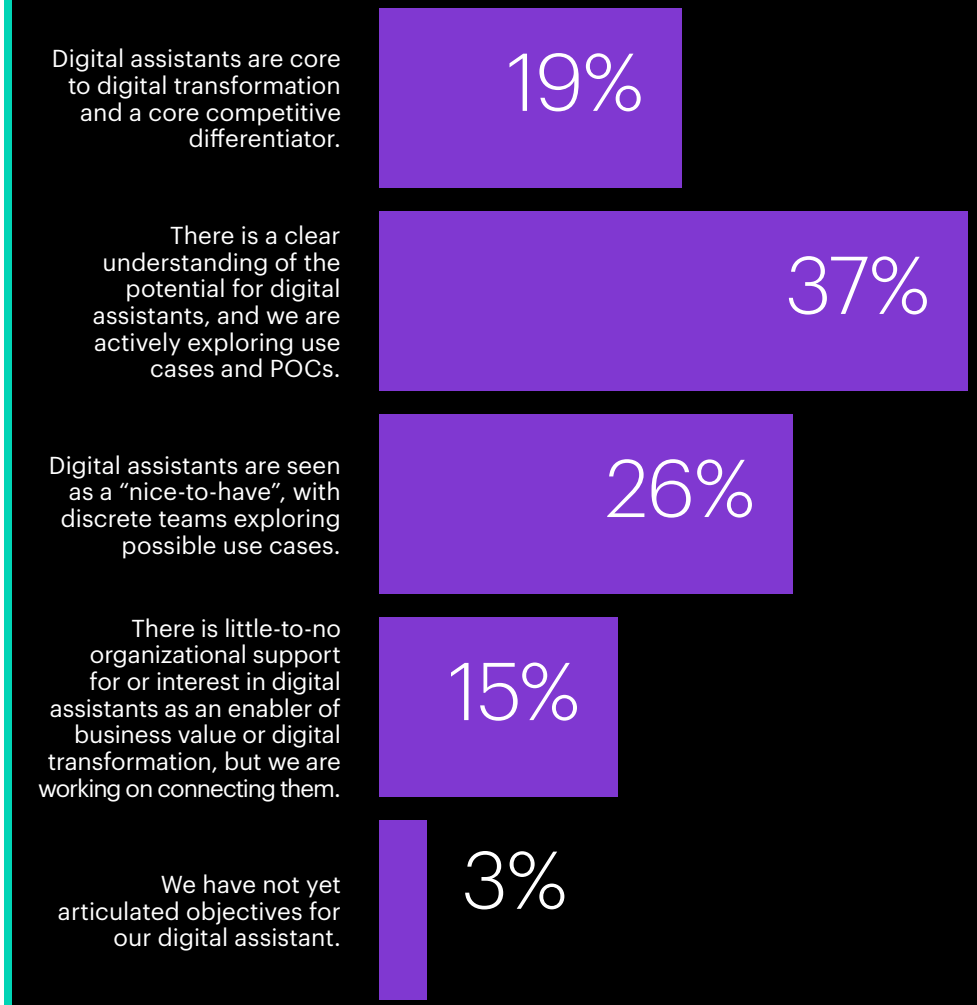
USE OF DIGITAL ASSISTANTS IS STILL EXPERIMENTAL, BUT SOME INDUSTRIES USE THEM STRATEGICALLY

One of the greatest assets of any AI-enabled project can also be its greatest challenge: the desire and capacity to experiment, test, and learn. For example, while digital assistants are widely used, only 56% of companies report that they clearly understand their potential. This isn't necessarily a bad thing, since part of the desired outcome is learning, which can take time — especially across a large and complex business.

The challenge creeps in when companies get stuck in perpetual beta tests (aka "analysis paralysis") and fail to scale the technology, which then can undermine an attempt to monetize it or understand its greater potential. This can become a vicious cycle; when permanent beta is the norm, it's unrealistic to expect massive growth. Most often, a compelling business case plus early success are enough to propel the technology into wider use; industries that report using digital assistants most strategically are banking/finance (67%) and retail (61%), followed by technology (54%) and healthcare (50%).

FIG 9: Business Strategy for Digital Assistants

To what extent have you articulated clear business objectives for your digital assistant?



SOURCE: Altimeter Digital Transformation, base = 628

FEW COMPANIES HAVE INTEGRATED DIGITAL ASSISTANTS WITH BRAND

Another critical success factor for conversational technology is how it aligns with the brand, both from a functional and expressive perspective. It's important that any customer-facing technology feel consistent with the brand for a range of reasons: credibility, marketing, and security, as poorly designed digital assistants or chatbots may not be taken seriously. But the most important reason is that while digital assistants or chatbots may internally be viewed as experiments, customers and consumers experience them as products, with all the expectations that products entail.

Generally speaking, companies understand the value of aligning their digital assistants — whatever form they take — with brand strategy. While only 18% of companies have fully aligned their digital assistants with brand, the majority of companies plan to do so. Again, banking and finance leads, with 31% reporting that they have fully aligned their digital assistants with their brand. Only 19% of companies in retail and technology and a mere 4% of companies in healthcare reported having done so.

FIG 10: Brand Strategy for Digital Assistants

To what extent have you considered the relationship of the digital assistant to the master brand and other relevant product and service lines?

SOURCE: Altimeter Digital Transformation, base = 628

IMPLICATIONS FOR ACTION

One of the hallmarks of 2020 will be the way it accelerated digital transformation across industries. The sudden and prolonged shift to distributed work and the adoption of cloud computing meant that people and industries that initially resisted digital transformation found themselves converts in the space of a few short days or weeks. “We made more progress on digital transformation in the past five months than we did in the past five years” was a common refrain.

But adapting in a crisis is not the same thing as organizational resilience. To be truly resilient and foster growth for the long term requires not only will, but the infrastructure needed to perform at scale. Intelligent technologies can show promising results in controlled trials, but used across the business, drawing from multiple data streams and types, they can be truly transformative.

To do that requires breaking data siloes and establishing data and AI competency across the organization. It requires a clear understanding of the capabilities and constraints of these technologies, the use cases that best utilize them, and the willingness to adopt agile methodologies that enable the organization to test and learn. It requires digital governance structures and processes that focus on more on human than public relations impact. Most importantly, however, it requires a concerted effort to view these technologies not as an end in themselves, but as a tool to support both human potential and business value.

ENDNOTES

[1] Heaven, Will Douglas. "Our Weird Behavior During the Pandemic Is Messing With AI Models." MIT Technology Review. May 11, 2020 (https://www.technologyreview.com/2020/05/11/1001563/covid-pandemic-broken-ai-machine-learning-amazon-retail-fraud-humans-in-the-loop/).

[2] For more about how enterprise-class companies are implementing responsible AI, see "Innovation + Trust: The Foundation of Responsible Artificial Intelligence". https://www.prophet.com/download/innovation-trust-artificial-intelligence/

METHODOLOGY

This report is based on data from our research report, "The 2020 State of Digital Transformation". We surveyed 628 professionals from brands, consulting firms, and other organizations with at least 1,000 employees, across four geographies: North America (U.S. and Canada); Europe (U.K., France, and Germany); The People's Republic of China; and Southeast Asia (Indonesia, Singapore, and Vietnam). The respondents from these organizations included in-house and agency digital strategists and C-suite or other executive-stage leaders. Our sample includes a fixed quota of respondents from five industry verticals: Banking/Finance, Consumer Products, Healthcare, Retail, and Technology. We asked each respondent multiple choice answer questions about digital transformation at their respective organizations or organizations they serve. Digital maturity was scored across 26 criteria in five areas. More details about the criteria are available in the online version of the report here.

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Susan Etlinger is a globally recognized expert in digital strategy, with a focus on artificial intelligence, technology ethics, and data. In addition to her work at Altimeter, Susan is a senior fellow at the Centre for International Governance Innovation, an independent, non-partisan think tank based in Canada, and a member of the United States Department of State Speaker Program. She works with clients to assess the impact of AI and other advanced technologies on business and to identify use cases, opportunities, risks, and organizational and cultural considerations. She also works with technology vendors to refine product roadmaps and strategies based on her independent research.

In 2020, Susan was named one of 100 Brilliant Women in AI Ethics by Lighthouse3, a strategic research consultancy focused on AI. Her TED talk, "What Do We Do With All This Big Data?" has been translated into 25 languages and has been viewed more than 1.3 million times. Her research is used in university curricula around the world, and she has been quoted in numerous media outlets, including *The Wall Street Journal*, *The Atlantic*, *The New York Times*, and BBC. Susan holds a bachelor's degree in rhetoric from the University of California at Berkeley.

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