

A hand is shown holding a glowing blue wireframe globe. The globe is composed of a network of interconnected lines and nodes, with some nodes highlighted in a brighter blue. The background is dark with a faint network pattern of white lines and nodes.

**The
Economist**

INTELLIGENCE
UNIT

The AI-enabled organisation of the future

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About this report

Truly disruptive new technologies have historically reshaped organisations, and on occasion the mechanisms of global trade, substantially. Experts expect this will undoubtedly be the case with artificial intelligence (AI). But the extent and nature of its impact will ultimately depend on the willingness of firms to embrace its potential, to co-operate in its adoption and, of course, the role of regulators in overseeing its use.

This report explores the likely impact of AI on future organisations in several areas:

- The central foundation of successful AI adoption—namely, data—in boosting insight and prediction, and the ramifications for how companies work with each other;
- Potential of AI to level the playing field in terms of company size;
- Impact of AI on workforce dynamics; and
- Regulatory challenges and potential solutions posed by AI.

The Economist Intelligence Unit would like to thank the following individuals who participated in the interview programme:

- John Seely Brown, co-chairman, Deloitte Center for the Edge
- Kay Firth-Butterfield, head of artificial intelligence and machine learning, World Economic Forum
- Jerry Kaplan, lecturer and research affiliate, Stanford University
- Ching-Fong Ong, senior partner and managing director, Boston Consulting Group, Kuala Lumpur, Malaysia
- Colin Parris, vice-president, software and analytics research, GE

Introduction

“We are walking into a fundamentally new kind of world, one hyper-connected and radically changing all the time,” says John Seely Brown, the Deloitte Center for the Edge’s co-chairman (and self-titled chief of confusion). “The practices of the 20th century may not carry us through much of the 21st.”

Artificial intelligence (AI) is set to be transformational. Until recently a niche field, AI is sparking accelerated business investment. In March 2018 IDC, a market intelligence firm, projected global business spending on AI overall would reach US\$19.1bn that year, a figure it revised in September to US\$24bn. It forecasts compound annual spending growth of 37% between 2017 and 2022.¹

Anticipation about the technology is also widespread: in a 2017 survey by Boston Consulting Group (BCG) and MIT’s Sloan School of Business, 63% of executives worldwide said they expected AI would have a large effect on their companies over the next five years.²

AI’s projected impact, though speculative, is huge. McKinsey Global Institute estimates that, even with incomplete adoption by 2030, the technology could add US\$13trn to the world’s economy. This would represent a greater relative contribution to prosperity than those brought by such transformative technologies as steam engines in the 1800s and the rapid spread of IT in recent decades.³

Despite high interest and investment, however, progress beyond pilot projects is still rare. A

2018 BCG-MIT survey found that only 5% of companies were using AI extensively, a result unchanged from the previous year.⁴ Similarly, a 2017 study from McKinsey revealed that just 9% of businesses had invested in machine learning and that for most this appeared to be still experimental.⁵

Currently AI usage is also concentrated in specific functions, notably customer-facing ones and operations;⁶ however, this is likely to be a temporary phenomenon. Eventually the technology will affect all organisational functions—particularly areas where prediction can improve performance. For example, procurement functions as a group have been slow adopters.⁷ But a 2018 Forrester Consulting survey of procurement and supply chain leaders found that 55% planned major AI investments over the next 12 months.

In aggregate, these innovations by companies, says Kay Firth-Butterfield, head of artificial intelligence and machine learning at the World Economic Forum, mean that “AI will transform the landscape of businesses” in ways both direct and indirect. Exactly how remains unclear because, Ms Firth-Butterfield continues, given the still early stage of technology adoption, “I don’t think most organisations [beyond technology companies] are well aware of either the potential benefits or challenges of AI. We will see huge churn and new business emerging in areas that we so far can’t even imagine.”

AI will transform the landscape of businesses.

*Kay Firth-Butterfield,
Head of Artificial
Intelligence and Machine
Learning, World Economic
Forum*

1 See 22 March IDC press release and that of 19 September.

2 Reshaping Business with Artificial Intelligence: Closing the Gap Between Ambition and Action, 2017.

3 Notes From the AI Frontier: Modeling the Impact of AI on the World Economy, 2018.

4 Artificial Intelligence in Business Gets Real, 2018; Reshaping Business with Artificial Intelligence: Closing the Gap Between Ambition and Action, 2017.

5 Artificial Intelligence: The Next Digital Frontier?, 2017.

6 Artificial Intelligence: The Next Digital Frontier?, 2017.

7 Tata Consultancy Services, Getting Smarter by the Day: How AI is Elevating the Performance of Global Companies, 2017.

Section I.

Data will truly be a resource

“The current wave of AI is not some kind of pixie dust that you sprinkle into infrastructure to make it smart,” says Jerry Kaplan, lecturer and research affiliate at Stanford University. “It is really a revolution in data analysis.”

Perhaps surprisingly, this revolution is not primarily one that arises from new technological tools. Ching-Fong Ong, senior partner and managing director of Boston Consulting Group (BCG) Malaysia, explains that AI’s two basic requirements are “algorithms and data. The algorithms were invented a long time ago. Data aggregation in an easily accessible form is the more recent phenomenon.” Thus the differentiator between companies will be data and, importantly, creativity. As a result, adds Mr Seely Brown, “everybody knows that data is the oil of tomorrow. It fuels AI.”

Data strategy as a key element in corporate strategy

AI will fundamentally affect how companies work with each other, notably in procuring services and goods, refocusing their value chains and how they share knowledge. AI will empower procurement to speed up the sourcing of professional services for legal, marketing, IT, consulting, HR and other key functions of the company, tapping into resources and providers that were outside of their network in the past.

Research by Forrest Consulting in 2018 highlighted the major impact that AI could have across supply chain and procurement, in particular in identifying new suppliers and determining best vendors. AI also offers opportunities to combat fraud and flags up supplier issues. These will enable companies

to rejig their relationships, thereby boosting competitiveness.

Yet this does not guarantee success. In particular, in order to benefit from better insight and prediction, the kind and quality of data available, and the creativity with which it is used, will be sources of competitive advantage. Successful companies will therefore need to create and execute strategies that harness their own internal data, both for the company’s use and to barter with other sources where needed. They will also need to actively manage identification and access to relevant data just like any other element of the supply chain. This will include sharing data strategically with other stakeholders and identifying useful data partners across the globe.

This latter prospect—namely, sharing and analysing together with data partners—could have exciting ramifications for uncovering new insights, says Mr Seely Brown. A good example is potential progress in so-called smart agriculture. In April 2018 the EU and leading agri-business firms agreed on a Code of Conduct to share farming data. Both companies and farmers can benefit from pooling and analysing detailed information about what is happening, literally, on the ground or even underneath it. Such data partnerships of actors large and small across industries, predicts Mr Seely Brown, “will reinvent the supply chain to become an idea chain”.

It is difficult to overestimate the importance of data strategy in an AI-enabled world, notes Mr Ong: “The companies that best harness data—they will be the winners. This cuts across every industry.” Rather than a simple IT issue, data management will be as strategic a consideration as procurement or human resource strategy.

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senior partner and
managing director of
Boston Consulting Group
(BCG) Malaysia*

Section II. Company size and AI

To date, bigger companies have proportionally shown more commitment to AI in terms of investment at scale and creation of formal AI strategies. Looking ahead, however, smaller firms are taking the plunge. Already, a survey by Emergent Research found two-thirds of US small businesses are using some form of automation. Meanwhile, 54% see AI as an opportunity; only 5% perceive it as a threat.

The real question is not who will use AI—eventually everyone will—but whether in the long term it will drive corporate integration or be a technological leveller.

Colin Parris, vice-president, software and analytics research at GE, acknowledges the difficulties in assessing AI's likely impact but believes that "size helps." One advantage is easier access to much more data than smaller firms. Facebook's and Google's insights into individual consumer's preferences, for example, dwarf those of most traditional media companies, let alone a start-up. Just as important, Mr Parris adds, are deeper pockets when something goes wrong.

However, it is equally important to note that smaller companies will not be powerless in countering this trend. In response, they will need to structure their activities to compensate for the potential advantages of bigger firms. In

this regard, one challenge already seems largely solved: the cost of AI infrastructure. The rapid spread of cloud-based AI off-the-shelf offerings and development services are making this aspect of the technology affordable.

Nonetheless, the key for small companies will be to design operations to obtain sufficient data, both internal and external, to use in ways that provide competitive advantage. Mr Ong explains that "start-ups should find ways to get ecosystem data, applications where consumers willingly share data, leveraging crowd-sourcing or partnerships—you can then start building and expand from that." Success or failure, he adds, is not the analysis and not just about the data, but about how you monetise that data and analysis to solve a business problem.

With all that in mind, it is clear that size and incumbency may not prove the ultimate enabler in fully exploiting AI: instead, as a special on AI written for the *Financial Times* in 2017 noted: "The winners in the automation race will be the fastest, nimblest and hungriest, not the big beasts."

Mr Ong appears to agree, asserting that the question of "big or small is not that simple. It is about harnessing data in an agile way to solve a business problem."

Section III.

Successful leaders will use data creatively

Clearly, if firms are to truly exploit AI, then they will need to implement it effectively across their workforces. In this regard, arguably the lowest hanging fruit in terms of boosting company productivity is the suite of AI tools being rolled out to take on the more repetitive and administrative tasks of employees—a potentially enormous time saver (according to an Accenture survey published in the *Harvard Business Review*, managers spend over half their day on administrative chores).

Empowered by the loosening of the administrative burden, the workplace can then transition to becoming a place of constant learning. Curiosity and experimentation will be key to workplace success—employees will need to constantly consider how to use AI tools creatively. This will inevitably require teams comprising varying areas of expertise and collaboration.

What Mr Parris sees at GE convinces him that AI has brought “us to an inflection point where the nature of the job is changing.” Mr Seely Brown agrees, adding that the idea of training in specific skills is now “fundamentally false. Soon, if an activity is just formulaic, our robots will do it.”

Instead, he and most other interviewees say that the human contribution to work will be to bring novelty, creativity, empathy and judgement—areas where people surpass machines. This, in turn, will make the workplace

a scene defined by constant “learning and learning and learning”, in Mr Parris’s words.

This will not be self-education. As Mr Seely Brown explains, “We learn better with each other. Tomorrow’s work will be improvisational, involving a group of people reflecting together.” He and Mr Ong add that, in order to address business problems, these teams will need to bring together people from different parts of companies, with different expertise, to engage in a common search for value.

Further driving this increased collaboration will be the fact that, in an AI-enabled workplace, the information monopoly is likely to disappear; those who rise to the top will not necessarily have the best intuitive sense. Instead, new leaders will need to win the hearts and minds of a workforce that has access to almost as much data and analysis as senior management, which could require different skills and styles.

Notably, managers will need to focus on connecting their people with those in other parts of the organisation to form teams that improve results in the manager’s areas of responsibility as well as elsewhere. In the wake of this improved transparency—the democratisation of knowledge, as Mr Ong refers to it—the reliance on managers’ “gut instinct” will wane, with potentially positive ramifications for overall workforce cohesiveness.

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*John Seely Brown,
 Co-chairman, Deloitte
 Center for the Edge*

Evolution of the regulatory environment

The speed of change enabled by AI will likely alter the mechanisms through which governments regulate, creating new approaches to compliance. Among the many areas likely to be scrutinised by governments will be privacy and bias, while the reputational challenges of errors arising from the use of new technology could well presage the advent of specialist AI risk and reputation officers.

Amid the potential confusion likely to emanate from regulators who are struggling to keep up and legal experts battling to codify the nascent new rule book, Ms Firth-Butterfield urges businesses to get ahead of the issue: “Companies need to know these problems exist, to be aware of the consequences [both for compliance and potentially damaged reputation]. They need to deal with them now when thinking about deploying AI.”

One possible example to follow is that of Salesforce which, in December 2018, created a new C-suite position—the chief ethical and humane use officer. The company’s website says that the purview of the new executive, Paula Goldman, will be to “merge law, policy and ethics to develop and implement a strategic framework for the ethical and humane use of technology” across the business.

In the desire to get ahead of any potential future regulatory melee, however, it is worth noting that AI in itself could provide a partial solution to complying with this added scrutiny. For example, AI can now trawl through reams of financial documentation and identify compliance issues with anti-money-laundering legislation or bank secrecy rules, which would otherwise prove excessively time consuming for existing systems.

Finally, taking a proactive approach to countering possible AI regulatory concerns is not just a legal or ethical imperative. As the EIU identified in its Business Reality Check for American Express, those firms that are able to stay ahead of both regulator and popular concerns can also engender a substantial competitive advantage, built on trust and reliability.

Conclusion

Artificial intelligence will transform companies into the businesses of tomorrow. It seems clear that AI, if properly used, could prove a powerful tool to both boost business performance and strengthen partnerships.

Admittedly, corporates are in the early stages of this transition, and the final contours of the future company remain unclear, but four areas are set to be central in AI's organisational reshaping:

- Data strategy will be a core part of corporate strategy and companies will organise to maximise their ability to harness information.
- AI may not end up favouring one size of firm, but it will reshape small companies in particular as they seek the best way to benefit from the technology. Small firms will rely increasingly on outsourcing and partnerships to achieve non-core activities.
- The leaders of tomorrow will need to win the hearts and minds of a workforce that has access to almost as much data and analysis as senior management.
- A host of new legal and regulatory questions will make the ethics of AI deployment a key boardroom issue.

Companies have a limited time in which to address these challenges and the other AI-induced changes that are yet to fully emerge. Those tempted to delay should listen to Mr Kaplan: "Looking back in ten years' time, the biggest surprise will be how mundane and commonplace this technology will seem compared to how mysterious it is today. It will be in everything."



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*Jerry Kaplan,
lecturer and research
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