

Rotman

AI is a technology; diffusing it is management

Article by: Kevin Bryan

Monday, September 14, 2026



Share



A “Silicon Valley Consensus” has emerged that AI will be capable, perhaps between 2028 and 2030, of performing at a minimum any task a typical human can do on a computer. So, it may seem that the human manager will soon be obsolete. The opposite is true.

Why? Creating value from AI requires its diffusion across the economy – overcoming organizational bottlenecks, not just technological ones. In practice, the gap between technical possibility and widespread use can be very long. Forty years passed between when Edison’s first electric plant opened and when half of American manufacturing was electrified. Today is the age of Ozempic, but the GLP-1 hormone was described in the early 1980s, and a diabetes treatment using it was first approved in 2005. The first mobile phone call was made in 1973, right about the time you could first buy a suitcase with wheels.

What causes faster or slower diffusion? You can think of any technology as being adopted in four stages, ranging from easiest to hardest.

Stage one is individuals using it to do existing tasks. Consider a programmer writing code faster using an AI model or an admin doing a more advanced spell and grammar check. It doesn’t matter whether anyone else in the company uses AI – the individual still gets the benefit. And it doesn’t require anyone to do something new. None of a firm’s distinctive skills, routines or sources of differentiation need to change. This type of technology can be adopted very quickly. It is the AI equivalent of a crop seed that is less susceptible to disease but planted in the same way. One need not be a management genius to pull this stage off; indeed, management researchers have observed that even when bosses discourage AI use, individual workers who can use it surreptitiously to make their own work more productive do so.

Stage two gets a bit tougher. Here, teams or organizations use technology to perform existing tasks. The aim remains to improve what the organization already does, but team adoption is tougher because it requires coordination. For example, video-conferencing made meetings more efficient at exchanging knowledge, especially across offices. But one individual adopting Zoom doesn’t do much – you need the whole team to use it. Often this team adoption runs up against existing firm procedures. For example, software was traditionally bought via an IT department that had lengthy evaluation processes designed around multi-million-dollar software procurement with the assumption that anything bought would be used for years. When AI drops the cost of creating very specific software, a firm that keeps its IT procurement rules the same guarantees that it won’t be able to use many new AI-driven tools.

“The big gains from AI in finance, construction, medicine and education will all require adoption of new ideas well beyond the firm boundary.”

Stage three is where managerial skill shines. It is wildly difficult to pull off, yet precisely because of this difficulty it is a fantastic source of competitive advantage. Stage three is when organizations use AI to do entirely new things that weren't worth doing in its absence. This is hard for two reasons. First, while there is a finite set of things a firm currently does – and hence where we can look for efficiencies – there are infinitely many things it doesn't currently do. Second, even if someone has the creativity to identify valuable new activities, an organization's routines, processes, workforce and promotion practices are all built around the things it already does. Consider electrification again. The 19th-century factory was built around a central power source, with machines stacked in a multi-story building connected by belts. Electrified factories could spread out on one floor, with machines arranged in the order the work flows. Independent power and flexible factory layouts helped make assembly-line production possible. If you'd seen an Edison lightbulb turn on in 1882, would you have thought, “Aha! Let's reorganize the shop floor?” Would you have seen that the new factory form made economies of scale more important to competitive advantage? And if you'd seen that, would you have known how to get your existing workers to go along with the hard process of adjustment needed to make that change, including layoffs and short-term revenue declines? If so, congratulations: You would have been one of the great managers of the twentieth century. AI will be no different.

But the most visionary managers will go beyond this, to our fourth stage. In the fourth stage, we use the new technology to do new tasks that require outside organizations to change. This can include partners, customers, regulators and so on. It's hard enough to bring your own firm along through a costly process of adjustment with an uncertain payoff. It's even harder to bring the industry or the

government along. Malcolm McLean, who started his career with a single truck in deepest North Carolina, is a case in point. He saw goods brought from port to port, offloaded onto truck beds, then train cars, then warehouses. What if, he thought, we just put them in standardized containers, and moved the whole container from mode to mode? A great idea, except that to make it work, you'd need to redesign ports worldwide, get union buy-in, get the dominant freight rail companies to agree, redesign warehouses and even then, it's not obvious you would be the one to profit. McLean's efforts were 30 years of struggle.

Technologically, there is not much new here: it's fundamentally a metal box. The hard problem was managerial, designing an economic system around that box. The big gains from AI in finance, construction, medicine and education will all require adoption of new ideas well beyond the firm boundary.

What then is the manager's role in the world of AI? The 40-year lag in the diffusion of electricity was because many managers declined to reorganize their shop floors. Technologists invent the shipping container, but human managers create the global system of containerization. So, it will be today: The manager who figures out how to transform their organization to be carried alongside AI will earn the prize.

About the author



Kevin Bryan

Kevin Bryan is an Associate Professor of Strategic Management at the Rotman School of Management.



Rotman School of Management
UNIVERSITY OF TORONTO

105 St. George Street
Toronto, Ontario M5S 3E6
+1 (416) 978-5703

[Get Directions](#)

GET IN TOUCH

Contact us

Media Centre

Donate

Hire Rotman Talent

Accessibility

Website feedback

ABOUT ROTMAN

All our programs

Meet our faculty

News and stories

Upcoming events

Our purpose and values

Learn about Toronto

STUDENTS & STAFF

All login apps

Rotman Hub

Rotman Connect (Alumni)

Webmail

ESS

Marketing resources

© Rotman School of Management

Pause all motion 