

News

Guest Column: Information technology is a double-edged sword

John Hagel III and John Seely Brown SEPTEMBER 28, 2010

Too many senior executives are tempted to hand IT strategy to their chief information officer and forget about it.

CIOs certainly have a significant role to play, but a profound change in the infrastructure of business – what we call the “Big Shift” – has made IT central to the entire board of directors.

If executives of all stripes do not engage with IT strategy, they will probably fail to navigate the profound dislocations ahead.

That’s because IT is destroying business value, as well as providing an opportunity to create it. IT is a double-edged sword.

A Steady Erosion of Profitability

The Big Shift is a fundamental reordering of the way we live, learn, play, and work. A new technology infrastructure is a big part of this transformation. Consider technology platforms such as Amazon Web Services, Google Apps, Android, Facebook, Twitter, the iPhone App Store, and now the iPad.

These technologies are profoundly destabilising to companies—and the profits that fuel them. Our research has found that IT is intensifying competition and reducing barriers to entry in ways that are putting extreme pressure on profitability over the long term.

Despite gains in labour productivity, corporate financial performance has steeply declined over the past four decades. Recent findings from the Center for the Edge’s Shift Index have showed a significant deterioration in return on assets, which have declined more than 75 per cent for all public companies in the US since 1965.

Moreover, the gap between the most and least successful businesses has increased. The “winners” in aggregate are barely maintaining their previous ROA levels, while the losers are experiencing mounting losses. Our research shows this long-term pattern was in evidence well before the recession began in 2007.

The breakdown of corporate ROA coincides with the introduction decades ago of two innovations: the microprocessor and packet-switched network standards.

These technologies are the foundations of a digital infrastructure that continues to transform the business and social landscape.

Just as the telephone, automobile, and aeroplane reshaped society in the first half of the 20th century, the digital infrastructure is reshaping life in the 21st. There is a key difference, however, between this technology revolution and previous ones.

In past upheavals, new technologies launched with a burst of innovation, experienced rapid performance improvements for a short time, and then witnessed a flattening of the performance-improvement curve. Stability followed the initial disruptive innovation.

As the performance curve of a technology flattened, innovators learnt the best ways to organise the infrastructure so as to deliver the distinctive capabilities of the new technology.

But for the first time in history, we are dealing with a technology infrastructure that shows no sign of stabilising. In fact, the exponential rates of improvement in the three building blocks of today’s digital infrastructure – processing, storage, and transport – are likely to continue indefinitely. Improvements are coming ever faster, leaving us with little time to figure out how to capitalise on them.

Digital technologies are also systematically reducing global barriers to entry and movement. Thanks to digital networks, even the smallest companies can now reach a worldwide market.

Meanwhile, competition is intensifying on a global scale. Companies face new competitors from unexpected quarters. They are discovering that rivals can more rapidly copy even their most innovative moves.

New Sources of Business Value

At one level, therefore, IT represents a powerful force to erode and destroy economic value.

At the same time, it offers powerful new sources of value creation. It can enable much deeper and more scalable relationships with customers and a growing array of third parties, as well as fuelling network effects for performance improvement and learning. In fact, for the first time IT offers the potential, along with new management practices, to turn performance curves with diminishing returns into ones with increasing returns, where everyone learns faster as more participants join in.

But to create the most value, companies need to view enterprise IT in a different way. The primary thrust of enterprise IT investment over the past several decades has been to standardise business processes and automate activities to remove people from processes.

In a shift, the primary focus of IT innovation is now about connecting people, and helping them to improve performance more rapidly through working together. And more and more, it is about connecting people across institutional boundaries.

As we describe in our recent book, *The Power of Pull*, innovation is now largely concentrated along various edges, from geographic edges, such as emerging economies, to demographic edges – the new generations entering the workforce and markets.

For example, some of the most profound institutional innovations are being pioneered among entrepreneurial companies in China and India, which are developing management techniques to break up tightly integrated and specified business activities into more loosely coupled and scripted modules of activity across large global networks of diverse participants.

So far, these innovations have been implemented without a lot of support from IT, because previous generations of IT have been regarded as too rigid.

As newer generations of more modular systems architectures become available, there is an opportunity to integrate these with the management practices emerging in China and India.

In addition, innovations such as cloud computing and social networks have empowered people operating at the edges of companies – in remote branch offices or in business initiatives – to accomplish things that were unthinkable a few years ago.

These people are taking advantage of the scalable, on-demand infrastructure of the cloud to gain access to sophisticated IT resources and analytical tools for ambitious experiments, while using social software to connect with each other and learn more rapidly from the experiments.

We are in a period where people at the edges can take advantage of innovation much more rapidly than before.

This ability gives the edge great potential to challenge the core. The edge of innovation is therefore something every business executive should be deeply concerned about.

The Journey Ahead

IT is creating both tremendous opportunities and challenges. If executives don't watch out, something on the edge that they dismissed as trivial may rapidly achieve the scale needed to take them head-on.

On the other hand, these forces create significant opportunity for another transformative wave of innovation

We see a huge upside here for those who can harness the Big Shift and master the new practices and architectures that are required to profit from the dislocations of the future.

We look forward to exploring these strategies in the columns ahead.

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Their books include 'The Power of Pull', 'The Only Sustainable Edge', 'Out of the Box', 'The Social Life of Information', 'Net Worth', and 'Net Gain'.

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