



Digital Technology and Digital Literacy

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Digital technologies are seen to hold huge promise to improve the lives of citizens. These technologies are distinguished by their ubiquity and multiple aspirations for their use. Digital technologies are implicated in how we work, shop, learn and play and they have a vital role in empowering individuals and communities. The application of these technologies is expected to increase productivity and competitiveness, change education and cultural systems, stimulate social interchange and democratize institutions. Nevertheless, there are constant calls for reassessment of their governance when the promised benefits are accompanied by real or perceived threats to consumers and citizens. The spread of these technologies throughout society is challenging taken-for-granted assumptions about power, privilege and influence in society. It is urgent to assess whether these aspirations are being fulfilled because of the possibility that the claimed benefits will turn out to be empty promises or that they will be only crude approximations of profound transformations.

Over the past several decades, innovation in digital technologies has occurred at the intersections of established industry boundaries. Technological convergence is offering many novel ways of configuring digital components, but it is generally associated with market consolidation. Although some see convergence in the digital marketplace as a welcome development, others see it as reproducing power asymmetries in society. Convergent technologies and market consolidation appear to be leading to new structures of hierarchical control and inequalities that are enriching the welfare of the few at the expense of the many. These same developments are also seen by some as yielding anarchic wastelands, interspersed with walled online spaces, and admitting only those who submit to the authority of particular digital service providers. What if the providers of digital technologies and services are following a misguided pathway with

negative consequences for all human beings?

All these developments are influenced by policy and regulation as well as by the values designed into digital technologies. Because of their modularity, as these technologies evolve, they increasingly take on 'system' features. This gives rise to considerably greater unpredictability than in the past, which, in turn, makes it difficult to envisage the future benefits and problems associated with disruptive digital technological innovation.

On the benefits side, the algorithms that are increasingly driving digital services can yield information that helps to mitigate the damage caused by disasters, to protect people in public spaces, to signal health risks and to monitor climate change. The use of algorithm-supported services is enabling companies to boost their profits. New types of risk are commanding global public attention and innovative digital technologies and applications are expected to come to the rescue when, for instance, power grids fail, financial crises worsen, or information leaks occur. These services are also providing citizens with information that supports a politics of resistance to unfair policies and practices.

On the problem side, the innovative business models devised by companies operating in the digital economy are enabling companies such as Amazon to sell products at discounted prices selectively to targeted customers, but this squeezes the margins of independent and hyper-bookstores. Digital content is rapidly becoming the advertising for paid-for services that aggregate, filter and integrate information that can be sold to a minority of discriminating customers who are willing and able to pay. Public media, including public service broadcasting, are being challenged as they face intense competition in the face of the digital platforms which aggregate content and function as gatekeepers. The combination of rapid innovation and asymmetrical power in the marketplace is disempowering various groups through technologically induced

unemployment, the rise of criminality, the loss of privacy and, often, the curtailment of freedom of expression. Social and economic inequality is increasing within countries, even as digital connectivity divides are closing with the spread of mobile phones. Automated decision making systems are commonly used by banks, employers, schools, and the police and social care agencies. If they are poorly designed and not transparent, they can result in significant harm through discrimination and social marginalization. In Europe, the European Union's General Data Protection Regulation (GDPR) may help to minimize negative effects by giving citizens a right to an explanation for decisions which rely on these systems, but the regulation has not been tested and the challenges of protecting adults and children's fundamental rights in the digital age continue to grow in all regions of the world.

In the wake of all these developments, effort is being devoted to developing visions of equitable and welfare-enhancing information societies. In both wealthy and poor countries, some experts claim that investment in digital technologies is providing opportunities for lower and middle-income countries to leapfrog generations of technology. They are expected to catch up with, and even surpass, the wealthy countries in securing the benefits of digital technology for their societies. Although the Declaration of Principles agreed at the World Summit on the Information Society in 2003 emphasizes a 'common desire and commitment to build a people-centered, inclusive and development-oriented Information Society' in line with the Charter of the United Nations and the Universal Declaration of Human Rights, a technology-centered approach predominates in the policy and trade literature and in many branches of the academy. Some experts do emphasize that there is no 'one-size-fits-all' model of a digitally mediated society, but a homogeneous model persists which downplays the social, cultural, political and economic factors that can lead to highly differentiated outcomes of digital



investment. Even when visions of a transformative digitally inspired pathway to the future emerge from multi-stakeholder deliberation, the underlying assumption is that competitive markets will deliver it, despite the fact that digital service markets do not operate according to the assumptions of perfectly competitive market theory. The prevailing view is that innovation in the digital realm should be left to the marketplace with as little proactive policy intervention as possible.

An exception to this is in the digital skills domain. The skills gap is substantial and there is much debate about de-skilling and up-skilling. The direction of digital innovation is affecting income distributions of populations by replacing humans with machines to accomplish growing numbers of tasks with varying forecasts of how severe the threat to worker livelihoods is and how quickly job displacement will occur. Skilled workers in areas such as artificial intelligence (AI), data management, data quality control and data visualisation are in short supply. Research on digital divides often focuses on up-skilling in technical domains of expertise. Many countries are introducing strategies to boost skills in STEM subjects – science, technology, engineering and mathematics, including coding. These skills are needed for employment in data analytics, data driven science and the AI field, but inequality in the digital world cannot be addressed without also paying attention to other determinants of inequality and exclusion.

Inequalities exacerbated by the spread of digital technologies cannot be addressed mainly by increasing the numbers of computer scientists and graduates with specialized technical training. Citizens need to be able to manage information creatively. They need the ability to select information, to disregard irrelevant information and to interpret patterns in information; and these are not technical skills. This feature of the skills deficit is especially important in relation to media content production and consumption where ‘fake’ or ‘false’ news is a growing problem. Online hoaxes are being created for profit and to foment political disruption. Social media content of this kind misleads citizens, it is creating a culture of mistrust and confusion, and there are growing signs of inequality between those who trust the media and those who do not. In principle, anyone

can set up a home page but discriminating Internet use depends upon a range of skills to engage in interactive communication, information dissemination and collection, as well as information interpretation. The failure to make significant progress in developing broadly based digital literacy means that people who lack appropriate skills are being progressively marginalized and excluded. They may be excluded by their inability to recognize the value or usefulness of digital services or because they do not realize how services can be used in socially or economically productive ways.

Digital illiteracy is a growing problem. There are tools for filtering and censoring information but when children and adults cannot discern the difference between fake news and reliable news, the foundational assumptions of civic participation in the polity are challenged. In the United Kingdom, research shows that only 25 per cent of 8 to 11 year olds can understand the difference between an advertisement or a sponsored link and an ordinary post in social media. Some 33 per cent do not know how to tell the difference. Just less than 50 percent of 12 to 15 year olds and only 6 in 10 adults could tell the difference. Researchers in the United States tested students across the country, also finding that relatively few could distinguish an advertisement from a news story or information from a political lobbying group. They concluded that ‘we worry that democracy is threatened by the ease at which disinformation about civic issues is allowed to spread and flourish’.

Digital disruption is affecting every business on Earth and the message is simple – adapt or become another statistic. The reality is that companies need to be agile, forward-thinking and capable of adopting transformative strategies to keep up with the rapidly evolving business rules of the digital age. Intel describes this state of extreme business disruption as the Vortex of Change. But what happens next? The process of completely transforming a business can be daunting and obstacles along the way include everything from a fear of failure, lack of clarity and hesitation from leadership, to a lack of skills and a degree of uncertainty on how to begin.

The challenges of the current business climate can be characterized by a useful acronym – VUCA (Volatile, Uncertain, Complex, and Ambiguous). Originally a military term, the concept later made its way into the world of

finance, before noted futurist Bob Johansen used it to describe the challenges faced by businesses across all industries. “This is the new normal and it’s not going to change any time soon,” says Andrew Moore, Chief Digital Officer at Intel. “These levels of disruption are unprecedented and if you don’t want to end up as the next Blockbuster, you need to do something different.”

The good news is that if businesses tackle digital transformation correctly, the VUCA outlook can evolve to mean Vision, Understanding, Clarity and Agility. But going from one to the other is a monumental exercise, so how exactly do businesses go about making these changes?

It is paramount to begin with a singular view of what the business should be in future – the Digital Business Vision. You know your business will be different in the future – the question is what does it look like? Fundamental principles must be questioned, for example – what is a bank? What is banking? Who can provide banking services? Try to avoid shackling yourself to the next few years. “We see a lot of 2020 visions,” says Moore, referring to businesses that are only looking ahead as far as three years. “That is gone. You have to unshackle yourself from the habits of the past. It is not like in 2021 things are going to slow down. It is quite the opposite.”

Digital should be woven into everything you do and not treated as an add-on. Businesses must have the right level of digital literacy at the executive level to develop a company-wide transformation plan and to foster a digital mindset among all employees. A lack of digital literacy and skills often leads to narrow and ineffective strategies that have more in common with budget-cutting measures than true innovation. “You can’t save your way to transformation,” says Moore. “If you have a lack of digital literacy, the strategy might just resemble a cost-cutting exercise”.

Kodak was one of the first to introduce cameras to the mainstream market. They monopolized the markets for the majority of the 20th century, but unfortunately failed to keep up with the changing identities of their customers and the changing needs and expectations that came along with them.

Digital cameras made the move from being a just piece of photographic equipment to being a much more life-friendly, fun gadget. And whereas Kodak originally had their target

consumer pegged as female, the male digital camera market opened up thanks to the 'gadget' culture. Some clever marketing from other digital technology brands led to changes in consumer perceptions and created a new 'need' for photographic gadgets.

This allowed brands such as Sony and Canon to swoop in and steal the hearts of the consumers with their new technologies and approaches, while Kodak stuck to their guns and fought the change for as long as they could. Despite rapidly losing market share, they refused to succumb to the inevitable force of digital disruption and in 2012 they eventually declared bankruptcy.

The lesson we can learn from Kodak is that digital disruption is an unstoppable force and to try and fight it is futile.

But what businesses can do is embrace digital disruption, even plan for it. Keeping an eye on the ball and knowing the signs of digital disruption emerging in your industry means you can get ahead of the game and work with the flow rather than against it. Not only does this prevent the wave of digital disruption from washing away your success, it can also lead to further growth and new opportunities for the business.

Digital disruption typically marks changes in consumer needs and therefore working with the tide allows you to fulfill these emerging needs, keeping existing customers happy and opening up opportunities for new customers to find what they need from your brand.

Organizations today are faced with a disruption that is nothing short of historic. Digital technologies have made their way into organizations and now impact every facet of organizational behavior, both externally and internally. And the digital transformation is just beginning:

Yet despite the omnipresence of digital technologies in organizations today, statistics reveal that the people working in them are unprepared:

* Nearly 40 percent of workers in the European Union lack some critical digital skills, and 14 percent have none whatsoever.

* In the U.S., an estimated 60 million people are shut out of jobs because of a lack of digital skills, and nearly 20 percent of American adults do not use the Internet at home, work or school or by mobile device.

* In the U.K., six million citizens have never used the Internet, and 9.5 million have inadequate digital skills.

In light of these skills gaps, organizations have no choice but to rethink the way they develop their people and their talent in order to stay afloat in this tidal wave of change.

The modern digital transformation can easily be compared to the Industrial Revolution. Like the innovations of that era, digital technologies have afforded organizations opportunities to boost performance and efficiency that even a few years ago would have been unthinkable.

For example, geographically dispersed teams can now collaborate and innovate in realtime and organizations can analyze big data to identify which talent is at risk of leaving. Despite these opportunities, organizations are unsure how to embrace this change and unleash the full potential digital technologies offer.

Perhaps the biggest impact of the digital transformation affects the people who make up organizations. Like the Industrial Revolution, the digital disruption has reached the societal level, causing anxiety, fear and heightened uncertainty and insecurity regarding the future.

In 1675, when machine looms began to replace handloom weaving, a three-day riot broke out in England, during which groups of weavers destroyed the machines that had begun to replace their jobs. While these machines presented inestimable advantages for performance and efficiency, the people who lived at that time had either to adapt to this change or risk being left jobless.

As history illustrates, technological progress will prevail. Therefore, rather than resisting the digital transformation, people and organizations must prepare immediately and strategically for a skill set that will perpetually change and evolve.

To master perpetual change, both people and organizations must consider learning and development as a never-ending cycle of continuous improvement. Contrary to even a decade ago, a college degree is no longer sufficient to develop the skills needed to build a lifelong career.

The 21st-century workplace is built

on changing skills that require lifelong learning and development; failure to adapt will result in obsolescence. Individuals who stop learning endanger their careers. More worrying still, what is true for people is also true for businesses: Companies that are unready or unwilling to become learning organizations will not survive in the era of digital transformation.

To complicate matters, the way people learn has also been greatly impacted by digital technologies. Learning today is less and less about reserving an hour of training than about consuming short bursts of content on the go. Traditional didactic models are incompatible with new working habits: People simply cannot cut themselves off and concentrate for long periods of time.

Learning is now happening on subway platforms, on planes and even in taxis; as a result, contemporary

learners expect learning experiences to be quick, engaging and immediately useful. In addition, organizations can no longer adopt only a top-down approach when it comes to development.

Instead, they need to focus more on empowering their staff to develop themselves and each other by providing them with the tools, framework and autonomy to do so.

Acquiring a solid range of digital skills is of utmost importance for people and organizations. Many companies, in an effort to join the race toward digital transformation have chosen to train their staff members to use software. While developing such technical skills is a laudable decision, but teaching a staff member which button to push to create a bar chart or how to electronically sign a document is just not enough.

If an organization's goal is to make its employees digitally literate, simply training them to operate different types of software only addresses part of the problem. Put simply, it is as if these organizations were giving their staff one shoe to wear instead of two. Instead, the skill set employees need in order to survive the digital transformation requires a more holistic approach to create sustainable value ■

