
**PRODUCTIVITY,
TECHNOLOGY
& WORKING
ANYWHERE**



WORK 
FOUNDATION

ABOUT THE WORK FOUNDATION

Through its rigorous research programmes targeting organisations, cities, regions and economies, now and for future trends; The Work Foundation is a leading provider of analysis, evaluation, policy advice and know-how in the UK and beyond.

The Work Foundation addresses the fundamental question of what Good Work means: this is a complex and evolving concept. Good Work for all by necessity encapsulates the importance of productivity and skills needs, the consequences of technological innovation, and of good working practices. The impact of local economic development, of potential disrupters to work from wider-economic governmental and societal pressures, as well as the business-needs of different types of organisations can all influence our understanding of what makes work good. Central to the concept of Good Work is how these and other factors impact on the well-being of the individual whether in employment or seeking to enter the workforce.

For further details, please visit www.theworkfoundation.com.

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OVERVIEW

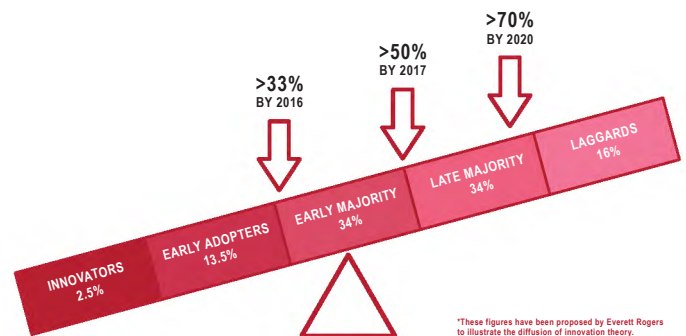
The global financial crisis has left a significant impression on business in the UK.¹ Every economy has seen a sharp slowdown in productivity², but UK productivity has been particularly slow to recover and the gap with competing economies is getting wider.³ Productivity matters because not only does it drive growth through higher performance and profits but it also supports, in turn, higher wages, stronger public revenues and greater social prosperity. In the survey that accompanied this research, nearly two-thirds of employees believed that they were no more productive today than they were 3 years ago. These emerging trends mean urgent action is required before the productivity gap widens still further.

Businesses face increasing competitive pressures from ongoing developments in a global economy, rapid advances in technology, an increasing pace of innovation and changes to working practices. Whilst there is not a consensus on what's behind the problem, there is compelling evidence that too few businesses prioritise productivity and still fewer actually measure it. This limits businesses' pursuit of productivity enhancing management practices and therefore how effectively they are run.

This project aims to contribute to understanding one aspect of the productivity puzzle – how the adoption of digital technologies in organisations, alongside the effective use of people and wider resources, can drive smarter working and support the missing business improvements required to turn the situation round. Whilst there has been an explosion in research documenting the disruptive effects of technology, this has primarily focused on the hollowing out of jobs and the replacement of routine and standardised tasks. There has been less of a focus on how technology enriches work and can enable people to work in more intelligent and smarter ways, making more effective use of the technology. This research aims to begin to address this imbalance. It focuses specifically on office workers, though by necessity considers the implications of evidence on other workers too. This builds on research we conducted last year examining the “realities” of a working anywhere culture supporting more flexible and in particular remote working.

Businesses using digitally enhanced working to improve performance are thought more likely to succeed. Faster adoption of industrial digital technologies can drive improved productivity, and *“there is substantial evidence that exploitation of Information & Communications Technology has been one of the most important drivers of productivity growth...over the last several years”*.⁴

The UK is a world leader in digital consumption and the current effects of technology adoption are clearly transforming traditional business models and ways of working. But rates of digitisation within businesses are only around the EU average and UK businesses as a whole are not pioneers, leading the way in technologically-driven operations at work.⁵ Research for the Industrial Strategy, to understand the barriers to adopting the latest technologies, has found that whilst larger businesses exhibit greater digitisation, they still encounter variations in take up and practices internally which holds performance back, so it's not just a small business issue. McKinsey Global Institute found ensuring consistency in technology adoption within organisations, was as much a challenge as variation between businesses, even within industries at the forefront of digital spending and usage. The CBI also recently called for more firms to become ‘magpies’, following the lead of successful firms through the adoption of technologies and best practices, rather than ‘ostriches’, who don't actively pursue improvements.⁶



Last year we found that we are at the ‘tipping point’ of mobile working in the UK (shown in the figure above).

1. Productivity Leadership Group (2016). How Good Is Your Business Really?
 2. OECD (2015). The Future of Productivity.
 3. BEIS (2017). Building our industrial strategy green paper.

4. SQW (2016). State of Digitisation in UK Business, Strategic Labour Market Intelligence Report.
 5. Maier, J. (2017). Made Smarter Review 2017.
 6. CBI (2017). From Ostrich to Magpie.

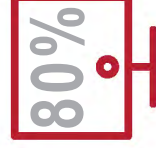
More businesses than ever are seeking to deploy their employees more flexibly and this means rethinking who does what tasks, where they do them and when. Businesses are increasingly operating 24/7, through global supply chains with more remote and virtual teams, which must be technologically enabled to ensure high levels of productivity can be retained. Developing our 'Working Anywhere' study, this research investigates how technology can support increased productivity in workers and more flexible working, wherever they are based.

This new research identifies the enablers and barriers to smarter and technologically-driven "organisational-wide" working in medium to large businesses to understand the challenges of achieving consistency in standards across working sites and where workers are located. It seeks to understand how technology can support businesses to more effectively manage their workforces to better meet evolving business needs. The UK has a decreasingly dynamic business population compared to other leading nations, where aggregate performance is determined too much by survival and 'getting by' rather than growth and innovation⁷, leaving the medium-sized share smaller than in some other leading economies. The upshot is that better productivity prospects will come from supporting medium sized companies alongside larger counterparts to find the strategy and capability to innovate and grow, developing more technologically enabled smarter working. A long term goal of the research is to support the development of smarter practices through digital technology across organisations, so that human capability fully complements that of machines in a way that more effectively enriches roles for all workers throughout the labour market and utilises their skills. In essence, what's key is to ensure workers, no matter where they are based, are supported and have the ability to do their job to the best possible level.

THE RESEARCH QUESTIONS

To understand the relationship between technology, ways of working and productivity and whether technology is being sufficiently used to make things better:

- How is technology adoption affecting performance?
- Is there a risk of underperformance where technology does not support modern, flexible ways of working e.g. working away from the HQ – either in secondary offices or mobile working?
- What are the barriers and enablers of technology-led productivity?
- What can organisations do to tackle the productivity problem, improve ways of working and performance?

A red-outlined square icon containing the number '80%' in a large, bold, black font. A small red circle is positioned to the right of the number, and a horizontal red line extends from the bottom of the square.

80% of employees feel technology has a positive influence on their productivity at work.

A red-outlined square icon containing the fraction '2/3' in a large, bold, black font. A small red circle is positioned to the right of the fraction, and a horizontal red line extends from the bottom of the square.

2/3 of managers saw a correlation between technology and their organisation's performance.

A red-outlined square icon containing the number '54%' in a large, bold, black font. A small red circle is positioned to the right of the number, and a horizontal red line extends from the bottom of the square.

However only 54% of managers believe their organisation is technologically forward thinking.

⁷ Bravo-Biosca, A., Westlake, S. (2014). The other productivity puzzle: business dynamism and productivity growth before the crisis. Nesta, London

TECHNOLOGICAL ADOPTION & PERFORMANCE

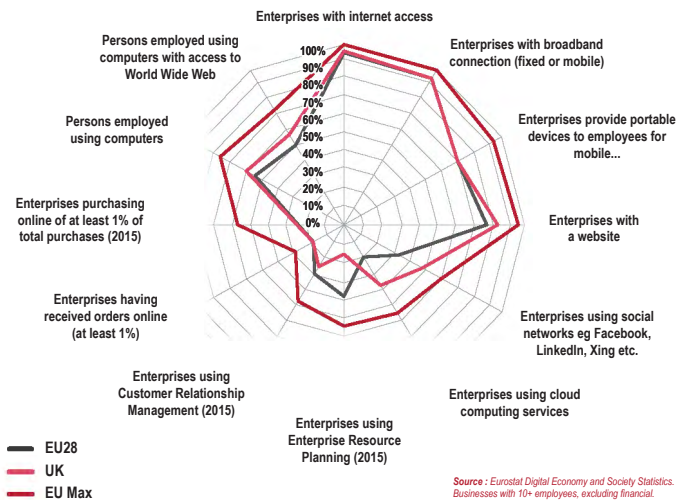
Technological advances and workplace innovation are enabling many businesses and individuals to operate in very different ways, which has fundamentally changed where, when, how and with whom people work.

The spread of the digital economy, a key driver of such changes, shows no signs of slowing. Increasing parts of the economy are being connected and managed by a complex digital network, in a continuing push to meet customers' specific and personal requirements on demand. This network driven by sensors, big data and ever more intelligent computer processing, operating through factory production lines, logistic centres, retail outlets, transport networks and road systems, is seeking out productivity improvements through ever more "smart" working. As worldwide internet usage both, at home and on the go, carries on rising, connecting far reaching ends of the globe, this too enables more flexible and mobile working. A decade ago, the iPhone had yet to be released. Now, two-thirds of Britons use a smart devices phone and growing numbers have high-speed 4G connection. With the potential of the "Super Internet of Things" also continuing to grow, debates crystallise around the features of a fourth industrial revolution and it is increasingly being suggested that future prosperity depends on our ability to exploit technology and is a leading factor powering future productivity growth.

Our research highlights many positive business benefits that technology potentially brings not least in enhancing more flexible smarter ways of working. For instance through greater digital connectivity it can:

- unlock the business value from external networks as well as internal capability,⁸
- enhance collaboration across value chains through crowd-working, and outsourced "virtual" project teams, involving core employees, international workers and out sourced external freelancers;
- encourage working across disciplines, as boundaries blur, supporting cross fertilisation and hybrid functions;
- support leaner, flatter management structures and more agile distributive leadership; and,
- smarter, intelligent operations.

Enterprises Adopting Digital Technologies (2016 except where indicated)



Whilst the dominant weight of evidence points to how effective technological solutions drive productivity, there is also a minority view that technology can prove a hindrance, and success from technological adoption is by no means guaranteed. Many studies have examined the effect of technology in more detail⁹, and interestingly what is crucial is not just how companies invest in technology at different times and what technology is deployed, but how it is accessed and used too.

In the UK, overall business take up of basic hardware and software is comparable to rest of the EU (as shown on the figure). However, whilst it is ahead in some more specialist systems, such as cloud computing, but behind in others, such as relationship management and resource planning systems. Marked variations exist between sectors and between large and small organisations, and SME exploitation of technology is relatively low – especially compared to large organisations. This was reflected in the survey where only around half of the managers thought that their organisations were 'technologically forward thinking' despite clearly linking technological uptake with organisational performance.

8 Sparrow P. (2013). Beyond the Organisation. Understanding the business issues in partnering arrangements.

9 Basu S, et al. (2001). Productivity growth in the 1990s: technology, utilization, or adjustment? Carnegie-Rochester Conference Series on Public Policy, 55(1): 117-165. Fulton M, Hon B. (2010). Managing advanced manufacturing technology (AMT) implementation in manufacturing SMEs. International Journal of Productivity and Performance Management. 59(4): 351-71. Chen Y, Zhu J. (2004). Measuring Information Technology's Indirect Impact on Firm Performance. Information Technology and Management. 5(1-2): 9-22.

In addition to problems due to varying levels of adoption there are differences in how technology is utilised and this also affects productivity in very different ways.¹⁰ For example, higher rates of investment in technology have been demonstrated to be associated with higher annual turnover per employee.¹¹ But, achieving such returns is not a matter of routine. Technology clearly cannot operate alone and where there is an absence of sophisticated management techniques supporting effective use, or when the potential of technology is not fully utilised (e.g. through lack of training or problems with infrastructure and connectivity), there can be a negative effect.¹² The presence of these factors is clearly crucial to businesses making the right choices about what to invest in when and to realise the benefits of evolving technologies of the future from mobile analytics, artificial intelligence and machine learning, cloud computing robotics, blockchain as well as the widening potential of the internet of things. Later in this report we discuss the barriers and enablers of technologically driven productivity.

MEASURING PRODUCTIVITY

Assessing the impact of technology on performance is problematic because many organisations do not appear to measure productivity. In the survey of managers conducted for this research just under half (49%) said their company did so. This is in part because productivity measures are not seen as relevant to businesses or indeed easy to measure.

Productivity is defined as the value of goods and services businesses supply (i.e. outputs) relative to the amount of time and/or resources used to produce them (i.e. inputs). Traditionally this is something that would be easier to measure in the manufacturing sector, which is more likely to produce physical outputs and products through the production process. The growth of professional and business services and creative industries make such assessments a little more problematic. What motivates most businesses, in contrast, is creating a large and sustainable operating surplus or more specifically generating profit. That is the revenue from output minus the input costs involved in producing that output (e.g. staff salaries and capital costs). If businesses can increase their net revenue after costs by employing more staff, then they will typically do so. But productivity and profitability are not the same thing and an additional assessment of productivity provides more of a general guide to businesses level of operating efficiency.

In other words what levels of net revenue can be provided per member of staff or hour worked. This is part of the conundrum for raising productivity; not least how to convince businesses that they need to measure and benchmark their performance on a broad range of measures, including although not restricted to productivity.

As the digital economy increasingly integrates the physical and virtual world and enhances connectivity through electronics, sensors and software, this is generating huge amounts of performance data as different parts of the digital network communicate with each other. Intelligent use of data has enabled more precise measurement and monitoring of operations, working processes and individual tasks, cutting down on waste, shortening production times and optimising task allocation. Clearly, flexible working has been enhanced by a data rich world which deploys a wide range of metrics and Key Performance Indicators (KPIs) to support more efficient multi-tasking and smarter working. In the survey, managers who measured productivity listed these mechanisms alongside sales data and regular performance appraisals as their main methods. Given this complexity, some suggest that wider measures, other than productivity, should be used to create a more complete picture:

“Intangibles such as better responsiveness to customers and increased coordination with suppliers do not always increase the amount or even intrinsic quality of output, but they do help make sure it arrives at the right time, at the right place, with the right attributes for each customer. Just as managers look beyond ‘productivity’ for some of the benefits of IT, so must researchers be prepared to look beyond conventional productivity measurement techniques.”¹³

A wider issue is therefore how technology supports better effectiveness or improved ways of working and it's to this we now turn.

¹⁰ Syverson C. (2011). What Determines Productivity? *Journal of Economic Literature*. 49(2): 326-65. Bloom N, et al. (2012). Americans Do IT Better: US Multinationals and the Productivity Miracle. *The American Economic Review*. 102(1): 167-201. Brynjolfsson E. (1994). The Productivity Paradox of Information Technology: Review and Assessment.

¹¹ Fulton M, Hon B. (2010).

¹² Ghobakhloo M, et al. (2012). Strategies for Successful Information Technology Adoption in Small and Medium-sized Enterprises. *Information*. 3(4): 36-67.

¹³ Brynjolfsson E. (1994).

TECHNOLOGY AND WAYS OF WORKING

Our research found a strong link between technology and improving working practices, and in the role technology plays in facilitating the increasing prevalence of smarter working, especially more mobile working and supporting distributed teams.

However there is considerable heterogeneity within and between firms. This results in a tension between organisational drives for standardisation in ways of working to ensure consistency in working standards and accessibility in different parts of the organisation versus room to be different which enables innovation, and supports improvements to boost growth.

The literature reflected a consensus that technology should drive productivity. But it also reveals a strong seam of work that examines why this is not always the case¹⁴ because of varying forms of implementation as identified above. The interviews supported this tension between different viewpoints on the relationship between technology, how it is used and productivity. Generally, people spoke in terms of technology helping or driving productivity. However, there was a suggestion that technology could also hinder productivity

because it may not improve ways of working for the better. For example, technologically enabled virtual teams seem to be the greatest recipient of productivity benefits,¹⁵ however this is often tempered by the difficulty in knowledge sharing experienced by dispersed workforces. Technology clearly can dramatically change the roles people undertake, working processes and workflows, as well as reconfiguring how best to deploy working spaces but if not carefully planned and considered this undervalues and undermines the benefits of face to face “human” interaction in particular and working relationships between staff – often expressed as the “water-cooler culture”. On balance, our research and the wider evidence suggests the use of technology should enable efficiencies, but only when the circumstances for implementation are sufficient to overcome the barriers that exist.

Our interviewees mentioned the impact on communication that results from workers being isolated from other team members. These issues also featured strongly in the literature. This leads to an emphasis on the tools for collaboration in discussions about productivity associated with staff working away from the HQ – whether at secondary offices or when engaged in mobile working. We explore this further through the survey and expert perspectives below.

CASE STUDY: USING TECHNOLOGY TO CUT TRAVEL COSTS

Chas Smith Shopfitters, a multi-million pound business fitting car showrooms for the major players in car sales across the UK, showed us how technology can be used to reduce the costs associated with travel and administration.

The company employs about 20 professional managers – mainly quantity surveyors - who tend to work from home and go into the office centre closest to them once or twice a week. The nature of the business means these highly paid staff need to inspect work conducted on sites across the UK. Typically, about 80% of the people carrying out that work on site will be sub-contractors, carrying out their specialist tasks. Because the surveyors work remotely they don't have the administrative support that people working in the company offices have, and this makes completing administrative tasks very costly.

But over the past year staff working in the field have been using new apps on mobile phones and i-Pads that have been created specifically for those working in the sector. These apps have changed the reporting of progress and reporting of defects - allow reports and other outputs to be shared very quickly which is important in an industry where there are typically very many sub contractors. PDFs can now be shared in ten minutes whereas in the past people used to take photographs, then go back into the office and upload them before they could be shared. Using these apps have really changed the world for people who work away from the office. They are now able to share reports quickly without the support of an administrator.

14 Brynjolfsson E. (1994).

15 Bosch-Sijtsema PM, et al. (2009). Knowledge work productivity in distributed teams. *Journal of Knowledge Management*. 13(6): 533-46.

TECHNOLOGY AND WORKING PRACTICES

In the survey, over two thirds of respondents saw a direct link between their productivity and the technology available to them but a similar proportion said that their productivity had not increased in the last 3 years. The experts at our roundtable discussed a number of ways in which they are seeing changes in the nature of work:

- In professional services enhancement in document scanning software is reducing the time needed for staff to manually review evidence and data leading to potential issues of lower billings and requirements for job redesign in junior roles.
- Customer services is seeing a boom in the use of 'chat bot' software which is taking over responses to 'basic' enquiries. Whilst this is potentially resulting in reduced staffing requirements it creates an opportunity to redefine more 'expert' and knowledge based roles for those dealing with the more complex cases, which should in turn lead to more meaningful and engaging work.¹⁶
- Digitally enabled insurance agencies are utilising more freelance workers equipped with tablet computers and software to improve customer claim response times and consistency of assessments.
- Learning and development, the rise in online courses and digital badging is allowing individuals to undertake personal development activities online from anywhere at any time.

These reflect the drivers of improvement highlighted by employees in the survey, shown on the chart (right). Managers also recognised the drivers of changing technology (44%) and improved learning and development (51%) but saw an important role for strong leadership (46%).

FLEXIBILITY

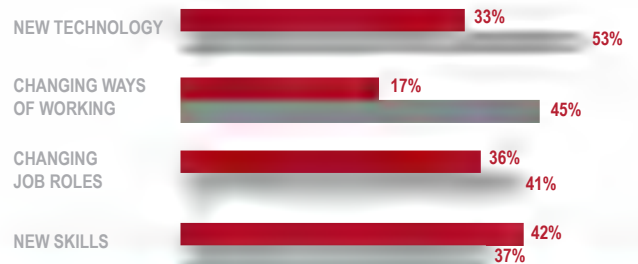
With the 'tipping point' in mobile working having been expected to occur in 2017, our experts described how in many organisations, flexible working still tends to be limited to people in specific roles, such as client facing sales, marketing, and consulting; and field based construction and research. In these companies, a distinction is made between these types of roles and those which are described as 'office based'. This was reflected in the survey findings as 7 in 10 still were not given the opportunity to work remotely. Some organisations have what was described as an 'old fashioned' approach to flexible working, where the flexibility was limited to variation in starting and finishing times, to the availability of job sharing, and possibility to work from home occasionally when necessary.

69% OF EMPLOYEES AGREED WITH THE STATEMENT

"I see a direct link between the technology provided to me in my line of work and my productivity levels"

HOWEVER only **1/3** of employees believe that their productivity has changed in the last 3 years, AND just **31%** predict that their productivity will increase in the future

THE KEY DRIVERS OF IMPROVEMENT, NOW AND IN THE FUTURE, WERE HIGHLIGHTED AS :



CASE STUDY: IMPROVING PRODUCTIVITY THROUGH OFFICE RATIONALISATION

The HS2 development in London was the instigation of a big change over the past year for this accountancy firm. Local redevelopment resulted in office closure and rather than finding a replacement site the decision was taken to relocate staff to an existing London office. New ways of working have been encouraged as staff now outnumber desks. Hot desking is the new normal and people are supported to work remotely, and embrace technology. There are no phones on the desks, everything is done via laptops. Technology enables staff to see where everyone is – from calendars to the green/red dots on Skype – and helps them do all the same things as have always done, without being in the office.

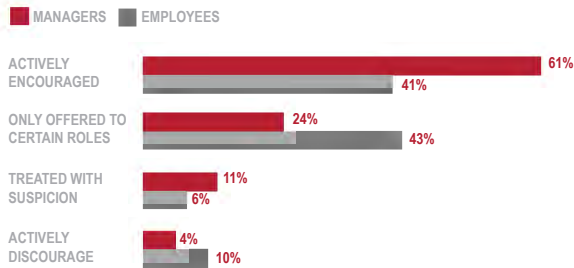
People are encouraged to spend more time with clients, such as working in their office after meetings – as a form of investment in the relationship with them. *"We keep saying it is not about working from home, but about the whole way of working. We call it agile working to try and encourage people to see it in terms of how to get the most of the day. It is quite a different way of working."*

Change has not been without its issues, *"Accountancy is a very formal profession – it is quite old fashioned. People wear suits, come in at 8.30, and stay until 7pm. It is also quite hierarchical, and an extension of that hierarchy and tradition is the way the workspace works. We are now challenging this. We are really encouraging everyone to go for it and hope that we all have a much better working experience."*

"It is too early to assess the impact, but productivity has definitely not gone down. However, people haven't quite got to grips with it yet. One month in, most people still come into the office even though they don't have to and sit in the same places as they did before – in their same specialist teams and work the same hours."

¹⁶ Bevan S, Anderton E. (2014). *Constrained Work*. London: The Work Foundation.

Asked about flexible working opportunities, views of managers and employees differed saying it is :



15% of employees did not have the appropriate technology to work remotely

Expert evidence suggests that organisations that promote flexible working for all staff fell into two distinct categories. Firstly, those at the cutting edge of digital technology, involved in the development and marketing of internet based collaboration tools. Secondly, those that have been through a process of change that has explicitly included the adoption of strategies for increased flexible working for all staff, including the assessment of the technological tools necessary to support that. Organisations in the latter category are likely to have been through a process of property rationalisation that involves a reduction in the number of desk spaces relative to staff numbers, including the closure of office locations (as illustrated in the case study above). Nearly 40% of workers in the survey had experienced such instances of office downsizing and/or site mergers during their tenure. With managers noting that this led to drives to change working practices in their organisations, especially via hot desking (71%) and remote/flexible working (59%). Most were also certain that these processes would maintain or improve performance (55%), however a third thought their productivity might get worse as a result.

In terms of the adoption of flexible working, it is evident that promotion of new practices alone is not a sufficient condition for all staff to adopt them. Many individuals become quite wedded to their preferred ways of working and so if some people prefer to come into the office to work, they will continue to do so, regardless of selling the benefits of the new approach.

[My company is] “very good on work-life balance – it always scores highly as one of the best places to work for work-life balance. I’m convinced that is because of the adoption of collaboration tools and the acceptance of working from home is very high. People are generally judged on their results. There is no obligation to be seen in the office late at night just for the sake of it.”

Another, and related, recent theme in the literature is the working of distributed,¹⁷ dispersed¹⁸ and virtual teams.¹⁹ Empirical studies have found that these can increase productivity, when effectively implemented with appropriate technological arrangements for teams to communicate; and can hinder productivity when these mechanisms are not in place.²⁰

“While the impact of technical connectivity on performance may be debatable, the distributed team literature reveals the myriad of social, organizational and cultural barriers experienced by distributed team members that cannot be fully compensated by high levels of technical connectivity.”²¹

ENABLERS AND BARRIERS

Given the critical importance of getting the implementation of technology right, to unlocking the benefits of technologically enabled smarter working, we have explored a range of barriers and enablers which can secure or impede success. These are often related opposing forces or “opposite sides of the same coin”.

Summarised in the figure overleaf, we have organised the factors into three groupings or levels which we illustrate below: technological; organisational; and individual. Additionally, the external environment plays an important role in determining the use of and investment in technology.

“There is technology that can drive productivity but it is not adopted as widely as it could be. That is to do with all sorts of barriers.”

17 Bosch-Sijtsema PM, et al. (2009). Knowledge work productivity in distributed teams. *Journal of Knowledge Management*. 13(6): 533-46.

18 Lee-Kelley L, et al. (2014). Intentionally Creating a Community of Practice to Connect Dispersed Technical Professionals. *Research-Technology Management*. 57(2):44-52. Collins P, Kolb D. Innovation in distributed teams: The duality of connectivity norms and human agency. In: Kelliher C, Richardson J, (eds.) *New ways of organising work: developments, perspectives, and experiences* Routledge Studies in

Human Resource Development Series. New York: Routledge; 2012. 140-59.

19 Batarseh FS, et al. (2017). Collaboration capability in virtual teams: Examining the influence on diversity and innovation. *International Journal of Innovation Management*. 21(4):1750034.

20 Bosch-Sijtsema PM, et al. (2009); Lee-Kelley L, et al. (2014); Batarseh FS, et al. (2017).

21 Collins P, Kolb D. (2012).

Technologically, staff can be supported or hindered by what is available for them to use and the mechanisms that are in place to enable access both within an office environment and whilst working remotely. For example if an organisation encourages flexible working but the practicalities for staff are limited, e.g. through out of date hardware and software, restricted functionality due to security concerns, etc., then uptake of such opportunities will undoubtedly be limited and the ability of staff to perform at their best will be reduced. Of course when workers do have such appropriate technologies the risks of productivity loss can be minimised.

The level of technical support available is also a critical factor, closely linked to individual skills and the provision of training, whereby organisations offering support to maximise staff utilisation of the tools available to them can see additional benefits of this and not just rely on an employee's willingness to teach themselves.

Furthermore, standardisation of technology could be associated with strict processes for control, hindering innovation:

“Some organisations have very locked down systems, where people can't experiment with applications outside the standard suite, especially in Government.”

There are also a number of organisational barriers and enablers to consider. For instance, legacy factors, such as organisational history, may create intra-organisational variation in attitudes to technological resources for collaboration, and determine the way that technology is used. So, a persistence of dominant attitudes



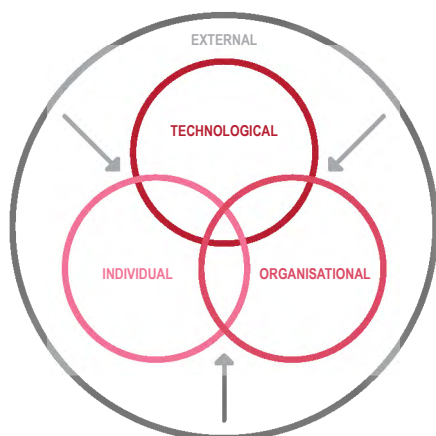
1/3 of employees said they sometimes or mainly worked from home or remotely

When asked about their organisation's provision and culture for them to do so more than half (**56%**) indicated difficulties with technology available to them

amongst the workforce which hold on to traditional views of “this is how we do things here”, combined with limits to promoting new ways of working, can reinforce barriers to uptake. This is especially for those working remotely, where opportunities for communication are reduced. In contrast, if the legacy is to continually evolve, helped by a staff cohort of younger and/or more “technologically savvy” workers, attitudes to adopting new technology are clearly more effectively enabled. In practice most organisations will display varying enablers and barriers which may reinforce existing intra-organisational differences and drive considerable heterogeneity in practices across sites and in turn efficiency and performance.

“If leaders are signalling that a particular technology is available and should be used, then that also influences people who report into those leaders.”

The attitudes of leaders and the ways in which strategic decisions are taken are also critical – research amongst SMEs has shown that when CEOs and other senior leaders are personally well disposed towards technological adoption there is often a greater willingness to invest and have more successful strategies of adoption.²² The presence of organisational hierarchies however may present further barriers. For example, in some organisations, senior staff get the new technology first regardless of any more pressing needs for that technology amongst less senior staff, and this practice is inherently inefficient and therefore will have a negative impact on productivity.



TECHNOLOGICAL

Including:

- Access to hardware/software
- Connectivity
- Security
- Level of technical support
- Usability

EXTERNAL

Including:

- Infrastructure e.g. broadband access
- The marketplace
- Political factors e.g. Brexit

INDIVIDUAL

Including:

- Attitude towards technology
- Skills/training
- Attitude to change
- Generation
- Type of job

ORGANISATIONAL

Including:

- Culture
- Policies & practices
- CEO attitude towards tech
- Decision-making processes
- Budgets
- Strategic position

In this way organisational culture has an importance as an enabler too which warrants further exploration. The common theme is the need for a collaborative culture and a bottom-up approach that takes the needs and experiences of individual users into account.

“I work with a US company where IT designers work with users to ensure systems are effective. If we had more of that we would have more positively productive technology.”

Relatedly, organisational decision making was also identified as a vital enabler or barrier in determining the effectiveness of using technology to drive productivity. The consensus in thinking in the research was that collective decision making is regarded as the ideal, engaging managers and staff more broadly as well as the top management team. This consists of a balance between:

- a high level strategy, commitment to invest and hence financial backing;
- informed by IT expertise, and experience of clients and partners;
- with input from staff using the technology about their needs during development of solutions and user experience during testing.

For efficient IT adoption, strategies for the use of technology need to align with the strategic priorities of key departments, including IT, procurement and purchasing, marketing, HR and facilities/premises, as well as with any strategies at operational level. Full consensus from senior management, accompanied by a clear signal that the change is important, is a crucial part of that strategic decision-making process. Sufficient budget to provide tools to a high specification can also drive productivity.

In our expert interviews organisational cultures around learning were seen as strongly related to productivity issues when it came to the adoption of technology for enhanced working away from the office. This is closely linked to organisational decision making, particularly with regard to leadership support for the provision of continuous learning to ensure staff understand the benefits of technology – how it can help them do their job better, and the consequent relationship between organisational profit and staff pay.

“People need to understand the benefits of using it – they need to know that it will help them.”

Another way senior managers can ensure productivity associated with the use of technology is by supporting individual staff who have the skills to identify and put into practice innovations that could help them do their job better. Organisational productivity could be enhanced by explicitly acknowledging that some individuals are more comfortable with experimenting, and providing them with the opportunity to trial new approaches in practice – including technology that they use outside of work. There is a clear role for leaders here in providing a suitable environment which enables those at the vanguard to take risks, and create the conditions for subsequent more widespread adoption amongst those facing barriers to adoption.

“Nurturing those who have the skills and want to try things out – then transferring those skills to others who don’t have them, beyond the shadow IT folk”

The critical role of leadership was illustrated in practice. In one example of a BAE Systems shipyard, turning off the command and control culture and empowering the workforce to develop smarter ways of working led to a 20% increase in productivity. In another example, the visible backing of plans for a new tech starter hub by Berlin’s local mayor was seen as a critical demonstration of the importance of political engagement and backing – leadership at the highest level. However, there are many other examples where leaders do not understand this and can block change.

In particular this can result in a lack of time for people to experiment, and try new technology. Organisational cultures around management styles are a further related issue, for example, ‘manage by presence rather than by results’, stigma around not being in the office and the “need to be seen to be working hard rather than working smarter”.

“There is a slightly parent-child relationship with IT. That cultural thing – that IT is given to you, rather than something you discuss and chose to suit you. That is an issue.”

In terms of individual level barriers and enablers, personal decisions and preferences underpin the technology that people actually use. Individual choice is one dimension, for example, “people still want to meet face to face and perceive benefits to doing so”. There are also various constraints that may operate here, each of which may have an impact on productivity: individuals may lack confidence, knowledge of the best technology, and/or expertise how to use it; they may fear doing something different, or feel comfortable with way currently work, and not want to change; or they may just be highly resistant to change.

These issues are often prevalent in certain groups of individuals, for example, unskilled (level 1) staff may have limited opportunities for learning about new technology compared to staff in senior (level 4) roles; individuals entering via the vocational route often have a more limited use of technology; and, millennials are more likely to have a greater use of technology than baby boomers who had a pre-computing schooling.

“Having access and using it in the right way – is quite different. You can give someone an i-Pad and they just use it as a browser. Optimizing use of a mobile tool is about using all the different functions - turning it into something very different from a laptop, and using its full functionality”

As discussed in Working Anywhere, building trust with individuals is also a vital factor. Results from the survey show that over a fifth of managers still believe those working away from the office are less productive, which may act as a deterrent from supporting requests for flexible working or enhance technology to support business activities outside of the office environment. But, in turn when trust is strong this can in turn inspire high levels of commitment and hence becomes associated with more enabling attitudes and behaviour with positive benefits for supporting change, including in effective adoption and use of technology.

The research also pointed to the importance of considering the external environment too. As technology increasingly blurs organisational boundaries it is vital businesses keep an eye on ongoing changes on the horizon (including the potential impact of

Brexit) and adapt their processes and ways of working accordingly in response to external as well as internal drivers.

Expert interviewees were asked to comment on such developments. One of the most important factors identified in the research was the threat and opportunities of the rapid pace of technological change. It was suggested that *“the internet will do away with the need for the traditional office”* and experts questioned whether enough businesses were prepared to fully assess the benefits and risks, and therefore to unlock the opportunities. Another key, and interrelated theme, concerned developments in the supporting infrastructure and how this would affect the changing nature of work. With such developments likely to accentuate the reliability and possibilities of flexible working, this was thought in turn to support greater choices around achieving a better work-life balance in future, and supporting the cultural shift around working from home.

Views about Brexit were mixed. Uncertainty surrounding political situation has affected client confidence regarding expenditure, and it will be a distraction which might be a drain on productivity. In the longer term the UK may be poorer as a result of Brexit and therefore have less to spend on technology. However, the loss of migrant labour could lead to increased automation, and virtual outsourcing. There were also some specific concerns regarding the changes it would bring in terms of data storage, for example data protection; and hosting data in the cloud over the UK rather than in Europe.

“Productivity in the UK has been flat over last ten years – relationship with cheap labour - the business case for automation is weaker because of the availability of cheap labour. Living wage may change this, especially if Brexit means that the supply of cheap labour gets turned off. The business case for automation then becomes more compelling. And more automation and digitalisation may occur.”

Cyber security was mentioned as an external driver of the use of technology, especially when away from the office. The NHS was given as an example of an organisation which blocks staff from using certain software on the network. It was suggested that locked down organisations prevent the innovation necessary for productivity improvements associated with the use of technology.

IMPLICATIONS FOR BUSINESSES

Given the challenges identified in optimising the benefits that technological adoption can bring, this research has also sought to consider what businesses can do in future to enhance the likelihood of success.

We have set out the key considerations for businesses to develop more effective strategies for smarter working. From our research we believe any such strategy will involve action on a number of fronts, as outlined below.



LEADERSHIP

First and foremost there is the need for strong leadership at the highest levels to build and incentivise the commitment to change. This has a number of components. It needs to be led from and modelled by the top leadership, including the CEO, but also to have the backing of funders and financial supporters (e.g. finance director/ banks/ investors) too – only then will people believe the business means it. Clearly, a sufficient budget is key to providing tools to a high specification consistently across the organisation.

Crucially, commitment at the top is about building a strong strategic narrative which in turn supports an “explicit organisational culture which gives employees a line of sight between their job and the vision and aims of their organisation.” Evidence shows that it is vital that leaders of an organisation both tell the story, and live the values embodied in it. Leadership visibility, accessibility and storytelling are therefore crucial in times of change to raise sights, and to build an aspirational goal or vision to work towards.

If a CEO does not support or invest in change, how can they expect their staff to?

“Investment – in both people and technology – is one of the key drivers to improving productivity”

But cultural change also depends on building the right customs and values and therefore creating an environment of trust. If employees are to change their approach they need to see how their individual graft and toil contributes to something greater, something that they can buy in to and believe in. Senior leadership needs to support the conditions for continuous action and learning to ensure staff understand the benefits of technology – how it can help them do their job better, and the consequent relationship between organisational profit and staff pay. Full consensus from the senior management team, accompanied by a clear signal that the change is important, is a therefore a crucial part of effective delivery.

INNOVATION

Work Foundation research has shown that outstanding leaders are not only those that think and act systematically but they also give people time and space to initiate and fulfil their potential.²³ To sufficiently inspire something new emphasises the importance of creating an openness to business development, innovation and continuous improvement.

Organisational productivity could be enhanced by explicitly acknowledging that some individuals are more comfortable with experimenting, not least because they have access to and deploy different types of technology in their wider lives. Supporting the staff with these skills, giving them room to make mistakes, will allow them to trial new approaches in practice.

23 Tamkin P, et al. (2010). *Exceeding Expectations: the principles of outstanding leadership*. London: The Work Foundation.

There is a clear role for leaders here in providing a suitable environment which enables those at the vanguard to take risks, and create the conditions for subsequent more widespread adoption amongst those facing barriers to adoption.

“[Employers] need their people to find the best tools, not just use what they are given... At senior level they probably don't have the time or the inclination to do that. The senior ranks, they are not necessarily the instigators. It is the middle and junior level – the change agents – they are likely to have the most vested interest in new solutions. It is more likely to come from the bottom to the top.”

Developing a culture that embraces innovation will help to counter some of the challenges of change. Creating a climate for innovating can be more effective operating through smaller pilots and experimental projects first so that successes can be understood before wider roll out. This then also builds ownership on the ground and risk taking behaviours. Bringing in broader technical expertise through respected partners at critical stages of the development process can help co-design and contextualise applications to the organisation so the risks of negative unintended consequences of change can be mitigated. Where the implementation can be co-ordinated by a project manager with expertise in innovation this can ensure disruption, including any conflict of interest between departments, is effectively managed. A range of implementation champions drawing on a wider pool of staff and early adopters can also be very beneficial. The engagement of recognised and valued technical partners and champions can help strengthen commitment to the change and hence sustain action over time. But, effective innovation is also about effective planning and knowing when and how quickly to scale up.

POLICIES, PROCEDURES, EVALUATION & PLANNING

As highlighted in the Working Anywhere report, once new innovations and practices are more widely rolled out it is important that the fit between old and new are appropriately reviewed and old policies

updated, otherwise the effects of new ways of working will be limited by prevailing traditional customs and practices.

Wider take up and adoption needs strong communication to actively secure the commitments of line managers and employees at large and to create a strong sense of listening and responsiveness that permeates the organisation. The way forward will therefore need not only to be transparent but visibly agreed with staff. Where workers are directly affected by changes in ways of working, procedures need to be in place including job redesign and training and development, to support a culture where innovations are embraced and seen as opportunities for growth rather than treated with suspicion.

Changes in the ways of working will also need to start from a clear set of outcomes and targets which can cascade through to individual staff through performance management systems, guiding people with the right incentives through their personal objectives. Individual reviews can be combined with a broader organisational process for performance review and evaluation, which helps to set a climate for learning lessons at multiple levels across the organisation. These can be shared and actively communicated to drive more consistent standards of working and performance and to reinforce a positive climate that supports ongoing change.

MANAGEMENT & EMPLOYEE ENGAGEMENT

A successful strategy also depends on a collaborative approach which pools knowledge, expertise and resources not only in supporting more effective design of the approach, but also supporting ongoing delivery and hence effective take up and implementation over time. The vision needs to be built on a strong rational case for change. This needs to be “home grown” set in a “local” context relevant to and owned by the individual business or target community.

Staff engagement is regarded as an important facet of productivity, and one that is closely intertwined with that of leadership, and how leaders deploy their role in a way that ensures that technology brings about improvements, and is not seen as a threat to jobs. Changing the culture of the organisation requires bottom up input as well as strong leadership from the top. Line managers have a critical role to play here. They are the interface between employees and the strategic decision makers in an organisation.

Clear two-way communication is a vital component of maintaining employee engagement in organisational decision making processes. Engaged managers are vital to offer clarity, appreciation of employees' effort and contribution, who treat their people as individuals and who ensure that work is organised efficiently and effectively so that employees feel they are valued, and equipped and supported to do their job. As Dame Carol Black's work has shown, dysfunctional relations between individuals and their line manager are the biggest contributor to workplace stress, itself a major contributor to ill health absence. Listening to employees is clearly another central component of effective engagement.

HOW CAN WE SUPPORT WIDER BUSINESS IMPLEMENTATION?

As we saw earlier, whilst there is clearly a lot individual businesses can do to invest in technology and ensure success through smarter working, we do need to acknowledge the effects of wider external events and disruptive factors which can also act as important catalysts for change or be further inhibitors. Whilst this wasn't a specific focus of the study, it's important to reference that there's certainly a lot that Government can do to support businesses to manage and effectively respond to the external environment and as such to make better decisions about how to deploy technology. Actions the Government takes on regulation; taxation; infrastructure; industrial policy and economic development; innovation, science and education, are all critical to improving prospects for business performance and encouraging more businesses to act.

Government can usefully support localised ecosystems, encouraging a range of partners from businesses to universities and wider technical experts, to work together on resolving technological challenges. By encouraging more collaborative working and networking across business communities, this can then provide further incentives for more businesses to act, share their performance problems and work together to create solutions. The role of Government in providing the infrastructure to improve technological take up and in turn productivity is a key pillar of the UK Productivity Plan and evolving Industrial Strategy and as such can be a vital mechanism to scale up technological investments, share costs and also manage risks. For instance, the Industrial Strategy setting out Government investments has also encouraged business to act and the recent publication of the Made Smarter Review

provides an illustration of what is possible over the longer term. We can also learn from other countries that have got it right in terms of developments to support technology, such as Germany, where local governments are establishing tech starter hubs through the Industrie 4.0 initiative.

CONCLUSIONS

There is a consensus that effective and appropriate technology solutions define a company's productivity, supporting modern more effective and efficient ways of working including better remote working through, for example, virtual teams.

The evidence from our literature review, interviews, roundtable and the accompanying survey demonstrate that there is a complex interplay between people, processes and technology at work. As we have seen from this study and our research into Working Anywhere, when managed properly a balance can be found in this interplay. Organisations hold the key to this and can drive change through adopting positive strategies. Strategies need to allow employees space and time to experiment with new ways of doing things and to learn as much from making mistakes as from what goes well. Where leaders throughout the organisation can support continuous improvements on the front line and are backed by policies, procedures, and standards to guide, evaluate and share progress made, this will create a learning climate that will build on successes and avoid pitfalls.

Everyone should be able to benefit from developments in technology, working practices and feel supported and engaged to perform at their best. However employers need to be mindful about the ways in which they integrate technology into processes and the effects this has on individuals and their roles; it is not about removing low value jobs but low value tasks, to create more good jobs. As Government sets out its investment priorities and in turn industry leaders issue a call to action in the Made Smarter Review to tackle the UK productivity problem, this provides an opportunity for all businesses to act. The key questions of interest to consider are: where individual businesses sit alongside their competitors in technology adoption; what improvements can and should be made; and, where support and advice can be sought. There is no time to waste.



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