

FROM OSTRICH TO MAGPIE

INCREASING BUSINESS TAKE-UP OF PROVEN IDEAS
AND TECHNOLOGIES

NOVEMBER 2017



METHODOLOGY

With analytical support from McKinsey & Company, our assessment included an extensive review of existing literature, data sources, and UK and international case study evidence; interviews with over 30 industry experts; and consultation with over 200 CBI members.

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This year, the CBI set out to find new ways to tackle the striking variation in productivity that exists between UK firms. The results are clear: the UK needs more ‘Magpie’ and fewer ‘Ostrich’ businesses. Magpies have the skill and the will to find and adopt readily available technologies and management best practices proven to lift productivity and pay. Ostriches stick with what they know. Tackling this ‘failure to adopt’ could help reduce inequality between firms’ productivity and between people’s pay, adding over £100bn to UK GVA.

Context: Many UK businesses suffer from a ‘failure to adopt’ that leads to big disparities in productivity and pay

Low take-up of readily available technologies and management best practices is driving the UK’s productivity problem. While the UK’s best performing firms are highly innovative, best practice must reach a greater range of businesses, improving productivity through the adoption of technologies and ideas that are proven. This is what we mean by the ‘diffusion of innovation’.

If the UK had more firms behaving like Magpies, following what successful firms already do, and fewer behaving like Ostriches, not actively looking out for ways to improve, business and government could move the needle on the UK’s sluggish productivity growth. Getting more firms adopting would also help to close the productivity gap between the ‘best’ and the ‘rest’ of UK businesses. Closing this gap could reduce the difference between the highest and lowest earners in the UK.

Chapter one: Too few businesses take up the technologies and management practices employed by those leading the way

The UK has a great record and a strong reputation for cutting-edge innovation. The highest performing businesses drive this through outstanding R&D, collaboration and leadership. But this is only part of the battle. Once these innovations are created, they are not being taken up as quickly as they should be across the economy. UK firms must be proud to be Magpies, picking up the innovations that other businesses have tested and proven.

The UK’s performance on taking up digital technology lags European leaders. In 2015, the proportion of UK firms adopting cloud computing was nearly 30 percentage points below Europe’s best performers. This underperformance has persisted over time. Moreover, UK businesses underperform on the adoption of effective management and leadership styles relative to top performing countries. This is crucial to productivity, including through firms’ ability to take up technology.

Chapter two: Identifying the key areas for improving adoption offers a golden opportunity to raise the UK's competitiveness

Identifying what drives the take-up of technology and management best practice among firms is the first step for the UK to catch up with other countries. Addressing the key drivers of adoption where the UK underperforms, as well as safeguarding the areas where the UK does well, will help the 'rest' of firms to raise their productivity towards that of the 'best'.

The best adopters share a number of characteristics. The CBI's analysis shows that the UK leads G7 countries on three areas that drive successful adoption. Each of these are particularly susceptible to the potential challenges of Brexit. The CBI also finds four areas where more focus is needed for the UK to improve. To get many more businesses better at adopting it is vital to maintain performance in areas of strength and to address the areas of low performance.

The UK must protect and enhance parts of its business environment that already encourage adoption, such as:

- Integration with global value chains
- Labour market mobility
- External collaboration

Areas must be addressed where the UK environment disadvantages adoption relative to other countries, such as:

- Getting more firms exporting
- Embedding skills and processes
- Visionary management and leadership
- Securing capital for investment and allocating it effectively

Chapter three: Working together, government and business can create more 'Magpies' and fewer 'Ostriches', tackling inequality and improving jobs

Government and business must lead a long-term change in the UK's adoption of technology and management best practice. Acting on the CBI's recommendations will help Ostrich businesses to look around, transform their performance, and enhance their contribution to a modern, open and fair UK economy.

The government should:

1. Make innovation diffusion a central theme of the Industrial Strategy
2. Set up innovation diffusion pilots to test different types of on-the-ground support for businesses
3. Link future Local Enterprise Partnership (LEP) funding to improving adoption
4. Run a campaign on the 'Five technologies all companies could adopt'
5. Create a TripAdvisor-style e-platform for assessing technology and business support.

Many UK businesses suffer from a 'failure to adopt' that leads to big disparities in productivity and pay

Striking productivity differences exist between UK firms. These differences cause variations in the wages, opportunities and living standards of people across the country. Business and government can only tackle inequality if together they tackle productivity on the ground, in every firm and in every community. The CBI has previously explored productivity differences between regions and nations, finding that better transport links, investment in education and skills and improved business practices would help to address regional productivity disparities and tackle inequality.¹ This is vital but it is not the whole answer. Even within regions, individual firms operating within the same external environment exhibit big variations in productivity.

This year the CBI set out to find new ways to tackle this firm level variation. The results are clear: the UK needs more 'Magpie' and fewer 'Ostrich' businesses. Magpies have the skill and the will to find and adopt readily available technologies and management best practices proven to lift productivity and pay. Ostriches stick with what they know. Tackling this 'failure to adopt' could help reduce inequality between firms' productivity and between people's pay, adding over £100bn to UK GVA.

Low take-up of readily available technologies and management best practices is driving the UK's productivity problem

Deep-seated, low productivity continues to be the achilles heel of the UK economy. This is holding back prosperity. Not only is productivity growth the key, long-term driver of sustainable growth, it is needed to create sustainably rising wages and opportunities.

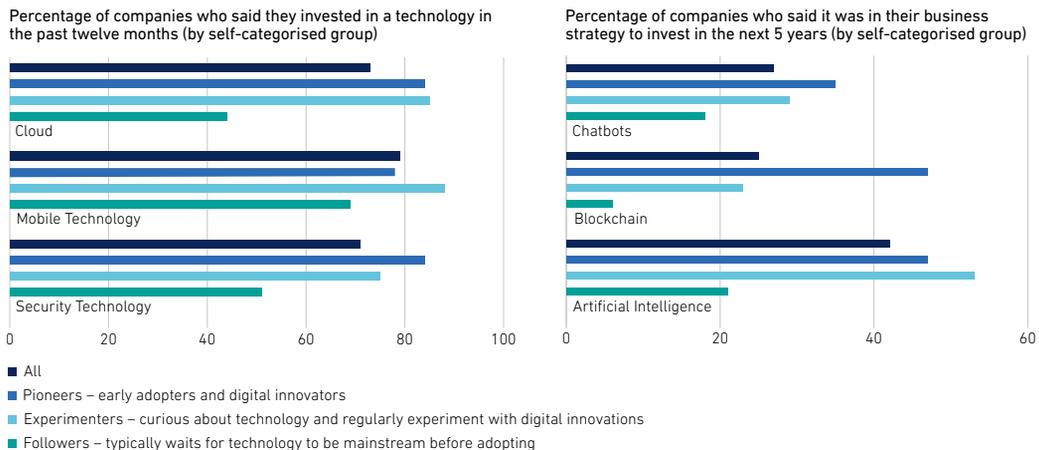
The UK's best performing businesses are highly innovative, moving first to adopt the latest in cutting-edge technology or creating innovation themselves. This is crucial to increasing competitiveness and a strength of the UK. But best practice must reach a greater range of businesses, improving productivity through the adoption of proven technologies and management practices (see **Exhibit 1** for examples). This is what we mean by the 'diffusion of innovation'. It enables innovations to reach their full potential, giving UK firms and the UK economy a greater competitive advantage.

Moreover, there is a lasting and damaging impact of low adoption. 'Follower firms' underinvesting in readily available technology now, like cloud, mobile and security technology, are less likely to invest in cutting-edge technologies like artificial intelligence and blockchain in the future (Exhibit 2).²

Exhibit 1: An illustrative list of tried-and-tested technologies and management practices

	CATEGORIES	SELECT EXAMPLES
A. Digital technologies <i>Creation of or improvements to digital/physical assets and/or capabilities</i>	Digital/physical assets	<ul style="list-style-type: none"> • ERP systems • Cloud computing • Mobile technology • Automated machinery
	Capabilities	<ul style="list-style-type: none"> • E-com, payments, transaction • Advanced analytics • Supply chain digitisation • Cyber security
B. Management practices <i>Creation of new/ adoption of existing business practices and models</i>	HR	<ul style="list-style-type: none"> • Agile/scrum teams • Performance management • Leadership development
	Operations/strategy	<ul style="list-style-type: none"> • Business process outsourcing • Chief Digital Officers/digital strategies • Lean processes • Staff engagement
	Finance	<ul style="list-style-type: none"> • Cost allocation • Efficient usage of available resources (eg tax credits, grants)

Exhibit 2: Under-investment now could reduce adoption of cutting-edge technology in the future



CASE STUDY: At RLB, the adoption of mobile technology was a key step to staying competitive in a rapidly changing market

RLB offers services in Quantity Surveying, Building Surveying and Project Management, often requiring employees to work on site and generate site reports.

To streamline the process of paper-based reporting, mobile technology 'RLB Field' has been adopted for data capture, live reporting and surveying directly from site. Taking up this mainstream technology across all service lines has improved productivity and supported RLB's corporate social responsibility values by reducing paper use. Time saved in writing up reports can now be invested elsewhere. Customers have also seen a marked improvement in performance of their suppliers.

Using mobile technology across the business has enabled RLB to benefit from big data analytics programme 'RLB Focus', offering new ways to digest and process data to engage with customers, and stay competitive in a changing market.

"At RLB we offer our clients strategic counsel to ensure that they are generating the best solution to their project – be it a build, a refurbishment, an estates rationalisation or existing facilities management. To be able to give this counsel we need to be insightful and the adoption of such technology as RLB Field allows us to be just this. By tracking data and using the most effective technology available we can take the data, analyse it, review it against competitors and give our clients an analytical opinion, based in fact. This has led us to be one of the leading management consultancies within the construction and property sector and help us grow our business both in the UK and globally."

Julian King, Retail Sector Lead, RLB

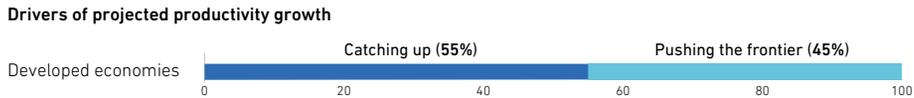
Increasing business adoption of key technologies and management practices would be worth over £100bn to UK GVA

Innovation diffusion in the UK provides a new perspective on improving productivity. It is driven by better technology and management practice uptake by firms. For developed economies like the UK's, McKinsey Global Institute (MGI) estimates that at least 55 per cent of labour productivity growth will come from firms adopting existing best practice. This is known as 'catching up' productivity improvement, or innovation diffusion (**Exhibit 3**).

The remaining 45 per cent of productivity growth will come from innovation creation. This refers to firms going beyond today's possibilities through technological, operational and business innovations.³

Together this paints a clear picture. If the UK had more firms behaving like Magpies, following what successful firms already do, and fewer behaving like Ostriches, not actively looking out for ways to improve, business and government could move the needle on the UK's sluggish productivity growth.

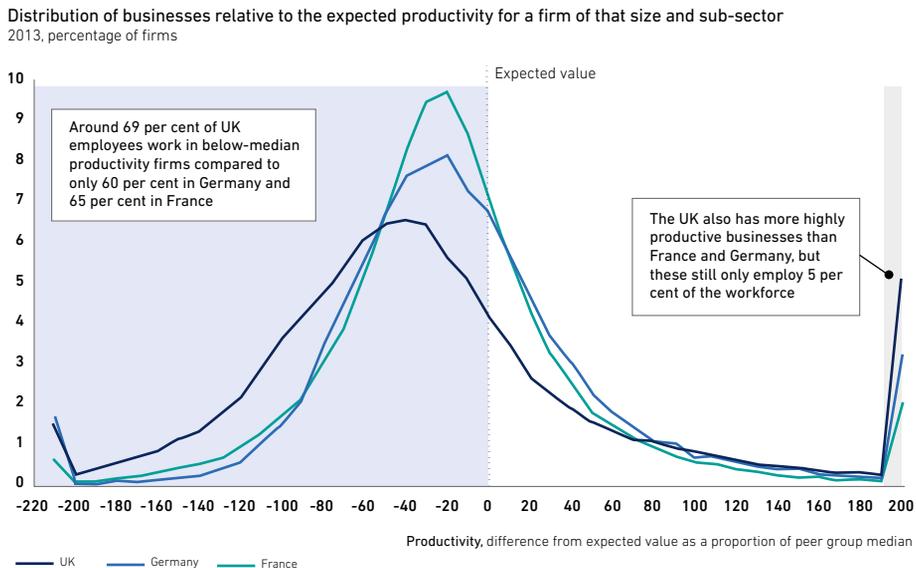
Exhibit 3: Over half of productivity potential will come from firms adopting existing best practices



Source: McKinsey Global Institute

Further, increasing adoption among a greater range of UK businesses is key to addressing the productivity gap that exists between 'the best' and 'the rest' of firms. While the UK is home to some of the world's most productive businesses, the UK's deep-seated low productivity is driven by a greater share of relatively low productivity firms when compared with other countries such as France and Germany (Exhibit 4).⁴ These lower productivity firms account for around 69 per cent of the UK's workforce, compared to only 60 per cent and 65 per cent in Germany and France respectively.

Exhibit 4: The UK has a greater share of relatively low productivity businesses than France and Germany



Source: *How good is your business really?* Productivity Leadership Group 2016

Are you an Ostrich or a Magpie?

For a business to be successful at taking up tried-and-tested technology and management practices, it needs the skill and the will to do so. Even if one of these is missing, that is enough to stop adoption. We have identified two distinct behaviours which have different impacts when it comes to adoption: Ostrich and Magpie. This does not rely on a firm creating innovation, and some firms may exhibit Magpie and Ostrich behaviour at different times.

MAGPIE

The Magpie has the skill and the will to adopt tested ideas and technologies:

The Magpie has a keen eye for spotting readily available technologies and uses management practices proven to lift productivity and pay. It is a strong follower of what works well in other companies, quick to take these innovations and successfully embed them within its own business.

OSTRICH

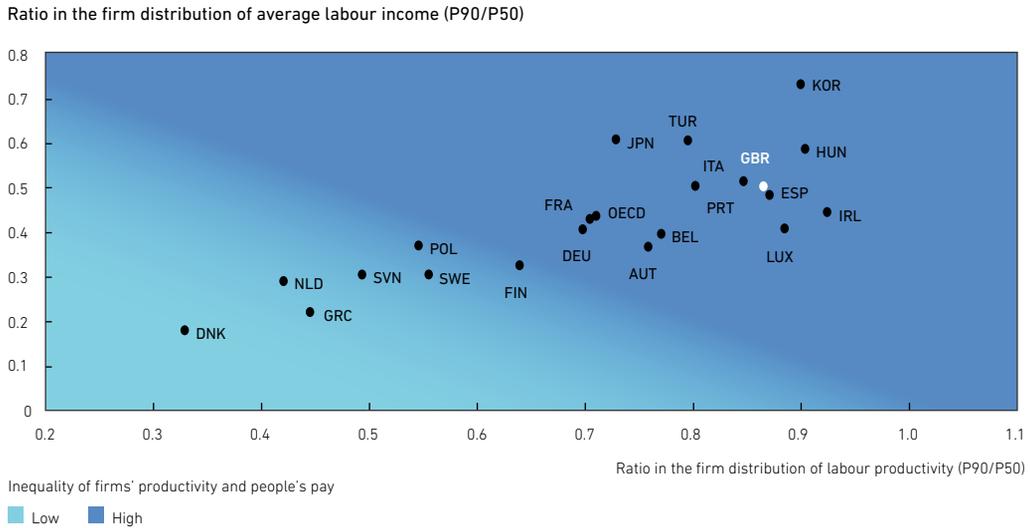
The Ostrich sticks to what it knows:

The Ostrich does not keep its head up and look for ways to improve. It struggles to follow what successful firms do well. In some cases, this is an active choice. But true Ostrich behaviour is exhibited by an inability to seek or find the technologies and management practices proven to lift productivity and pay. Or, even if successful, the Ostrich will find difficulty embedding them within its business.

The productivity gap between UK firms is significant and it exists right across the economy. Businesses across sectors, regions and all sizes exhibit similar characteristics; a small club of highly productive businesses followed by a long tail of lower productivity.⁵ Failure to adopt tried-and-tested technologies and management best practices is a major driver of this.⁶

Closing this gap could also reduce the difference between the highest and lowest earners in the UK. Analysis by the OECD indicates that where firms are more unequal in terms of productivity, people are more unequal in terms of pay (**Exhibit 5**). Looking across several countries, the size of the gap between the 'best' and the 'rest' of firms is strongly linked with income inequality.⁷

Exhibit 5: Where firms are more unequal in terms of productivity, people are more unequal in terms of pay



Source: OECD Economic Outlook, Volume 2016, Issue 1

If lots of companies did a little bit better, the economic benefits would be huge. Raising productivity among businesses that have so far failed to adopt, and achieving a productivity profile more like Germany's, would add over £100bn to UK GVA. This is the mantra of the Productivity Leadership Group's 'Be The Business' – a movement to raise productivity and business performance (see pull-out box). The social impact could be huge too. The same shift in UK productivity could support a 5 per cent reduction in income inequality.⁸

The Productivity Leadership Group's 'Be the business' movement – getting lots of businesses doing a little bit better

A group of business leaders, including CBI Director General Carolyn Fairbairn, have come together to engage with solving the UK's poor productivity. The Productivity Leadership Group (PLG) aims to address the trend highlighted in this report: the UK's long-tail of businesses whose productivity is below what is expected of similar companies. The prize is clear; if a lot of firms do a little bit better it would add over £100bn to the economy. The PLG has launched the 'Be the Business' movement to inform, educate and collaborate with UK businesses to raise productivity through improving key areas such as management, leadership and adoption of technology. This report offers an opportunity to drive the direction of Be the Business as its productivity movement develops.



The technology is out there. Whatever you do – don't underestimate your role as a leader. Technology is changing not just how industry works, but also the way that people, culture, structure and incentives are aligned to make these investments successful. What's vital is that leadership recognise and address the change management and technology challenges at every level of their business.



**Deborah Sherry, MD and CCO,
GE Digital Europe, Russia & CIS**



Too many businesses don't take up the technologies and management practices employed by those leading the way

The UK has a great record and a strong reputation for cutting-edge innovation. The highest performing businesses drive this through outstanding R&D, collaboration and leadership. But this is only part of the battle. Once these innovations are created, they are not being taken up as quickly as they should be across the economy. UK firms must be proud to be Magpies, picking up the innovations that other businesses have tested and proven.

The UK has a world-beating research base, crucial for innovation creation

Much of what the UK needs to deliver a world-class innovation ecosystem is already in place, with renowned excellence in science and research. The UK has first-rate universities and businesses, and attracts talent from across the globe.

The landscape for commercialising ideas in the UK is improving. The developing Catapult Network, Research Technology Organisations (RTOs), Scottish Innovation Centres and the UK's research base serve firms at the cutting edge, bringing together key players and accelerating innovation by helping to commercialise early stage research. Encouragingly, the economic impact of the Catapult model is already demonstrated by the High Value Manufacturing Catapult delivering £15 of value add from every £1 of government funding invested.⁹ Cross-party support for reaching 3 per cent of GDP spending on R&D is another positive step for UK innovation, but with spending currently stagnant at 1.7 per cent the challenge rests in reaching this target.¹⁰

The blindspot in public policy for innovation lies in the diffusion of innovation through the economy. This may also reduce cutting-edge innovation as adopting tried-and-tested technologies and techniques is often the first step to becoming more innovative. The Industrial Digitalisation Review presents some interesting ideas for the adoption of rapidly-changing digital technologies in manufacturing and construction.¹¹ Sharing in Growth, a business transformation programme for UK Aerospace, has been successful in coaching best practice management in human resources, strategy, operations and finance. These ideas should be embraced. But, more broadly, an economy-wide push is needed to include the adoption of baseline technologies and management best practice that every business can adopt.

Support for UK innovation is improving, but there is a blindspot for the adoption of ideas and technologies



The Industrial Digitalisation Review shows the UK’s strengths in innovation are underleveraged and low adoption is holding back productivity

Industrial Digitalisation is the application of rapidly changing digital tools and technologies across UK manufacturing and industrial sectors. It is sometimes described as the 4th Industrial Revolution or Industry 4.0.

A group of businesses from across the UK have come together to lead a review for government on ‘Industrial Digitalisation’, and how to unlock the opportunities it presents to raise productivity and competitiveness. Supporting industrial digital technologies include artificial intelligence (AI), Internet of Things, robotics and data analytics.

Findings of the review reveal the UK’s leadership in some supporting industrial digital technologies, such as AI and machine learning. It recognises the strength of the innovation ecosystem of Catapults, universities and a growing start-up economy. But it finds that these ‘innovation assets’ are under leveraged and lack coordination, which is holding back industrial digitalisation across the UK economy.

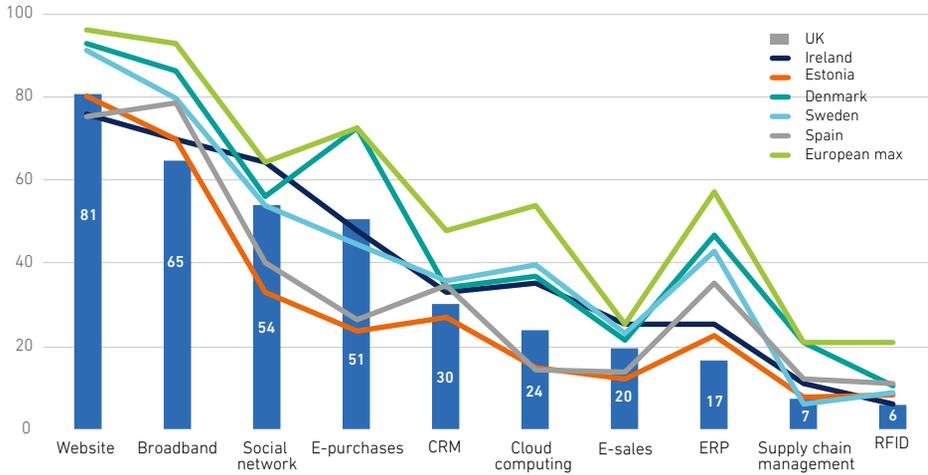
The review also finds that low adoption is one key barrier to industrial digitalisation in the UK, particularly among SMEs. Potential causes of poor adoption, cited in the review, include difficulty for firms to identify best practice and lack of access to people with the right skills.

Innovation will not realise its potential without widespread adoption, but take-up of digital technology by UK firms lags European leaders

The best performing firms are often proud Magpies, and are willing and able to adopt tried-and-tested technology. But the UK does not have enough Magpies. Overall, the UK’s performance on taking up digital technology lags European leaders. In 2015, the proportion of UK firms adopting cloud computing was nearly 30 percentage points below the EU’s best performers (**Exhibit 6**). For ERP systems, the proportion of UK firms adopting the technology was around 40 percentage points below. This underperformance has persisted over time. The proportion of businesses with websites, internet trading capabilities, CRM and ERP systems in the UK today is still below levels in Denmark in 2009 (**Exhibit 7**).

Exhibit 6: The adoption of digital technology by UK firms lags behind many European economies

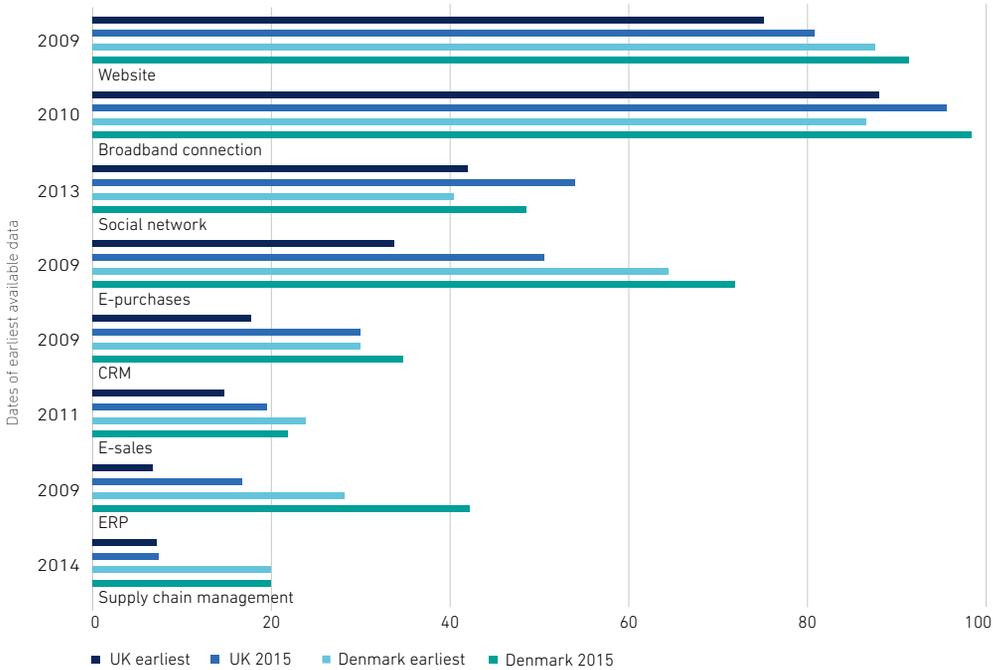
Penetration of digital technologies within select European economies
2015, percentage of enterprises with ten or more persons employed



Source: OECD, Science, Innovation and Technology Scoreboard, 2015

Exhibit 7: The UK's underperformance on adoption has persisted over time

Penetration of digital technologies in the UK and Denmark
Percentage of enterprises with ten or more persons employed



Source: OECD, 2015

CASE STUDY: Using mainstream technology, Palletways has found innovative solutions to raise efficiency and stay internationally competitive in the pallet delivery industry

Palletways is Europe's largest pallet delivery network, specialising in the express delivery of palletised freight via 400 independent network members in 20 countries throughout Europe. It handles 45,000 pallets per day. The use of technology is fundamental to its operations, providing consistency, efficiency and service excellence.

At its UK hub handling 24,000 pallets per day it created a vehicle and pallet scanning and imaging system. Using existing technology found in high resolution architectural scanning, number-plate recognition and cheese maturation it developed a means of scanning and photographing every pallet on entry and exit from each area.

The benefits have been widespread to the business and its customers. The technology has increased efficiency and reduced costs with improved service levels and profitability. Real time information helps to anticipate and manage potential issues. Damage claims have fallen and health and safety performance has improved.

Palletways has also developed a web-based online booking system www.palletwaysonline.com utilising standardised e-commerce software. For the first time this is allowing small businesses easy access to export markets and enabling growth. Now, small businesses can book consignments for express delivery to 20 European countries and pay by credit or debit card, removing the need for account set up and financial checks.

"I am absolutely certain that the adoption and development of technology has underpinned our success over many years. Fundamental to our success is the ability to increase efficiency, reduce cost and enhance service excellence for customers, members and our management throughout Europe. Frequently it is adaptation of existing technology which allows us to deliver."

James Wilson, CEO, Palletways

The UK lags behind on management best practice, which is essential for driving productivity and technology uptake

Management practices, including leadership, are key to productivity in themselves. They account for 10-15 per cent of the productivity gap between the UK and the US.¹² Access to leadership and management skills helps firms to innovate, true for 45 per cent of respondents to the CBI's Innovation Survey.¹³ This includes helping firms to take up technology and make the most of their investments. For example, leadership development builds the desire and vision to improve adoption. Digital strategies help build the capabilities and access the technical skills to do so. But UK businesses underperform on the take-up of effective management and leadership styles relative to top performing countries. The World Management Survey places the UK sixth in the G7 on average management scores.¹⁴

Moreover, poor management practices lead to comparatively lower levels of organisation health, a measure of a firm's aspiration, and the capabilities and empowerment to reach them. McKinsey's Organisational Health Index finds that UK firms have lower organisational health than the global median.¹⁵ These data show that there is an opportunity for UK firms to improve when it comes to communicating direction, taking measured risks and encouraging new ideas so that businesses can grow.



When it comes to technology it is not a straightforward journey. You have to continuously test, try and adjust, especially when thinking about how to improve products and services. That is how we built our strategy and we continue to refine it. If something does not work, we go back and adjust it. ”

Gaby Appleton
Managing Director, Mendeley



Identifying the key areas for improving adoption offers a golden opportunity to raise the UK's competitiveness

By identifying what drives the take-up of technology and management best practice among firms, there is an opportunity for the UK to catch up with other countries. Addressing the key drivers of adoption where the UK underperforms, as well as safeguarding the areas where the UK does well, will help the 'rest' of firms to raise their productivity towards that of the 'best'.

The best adopters share a number of characteristics

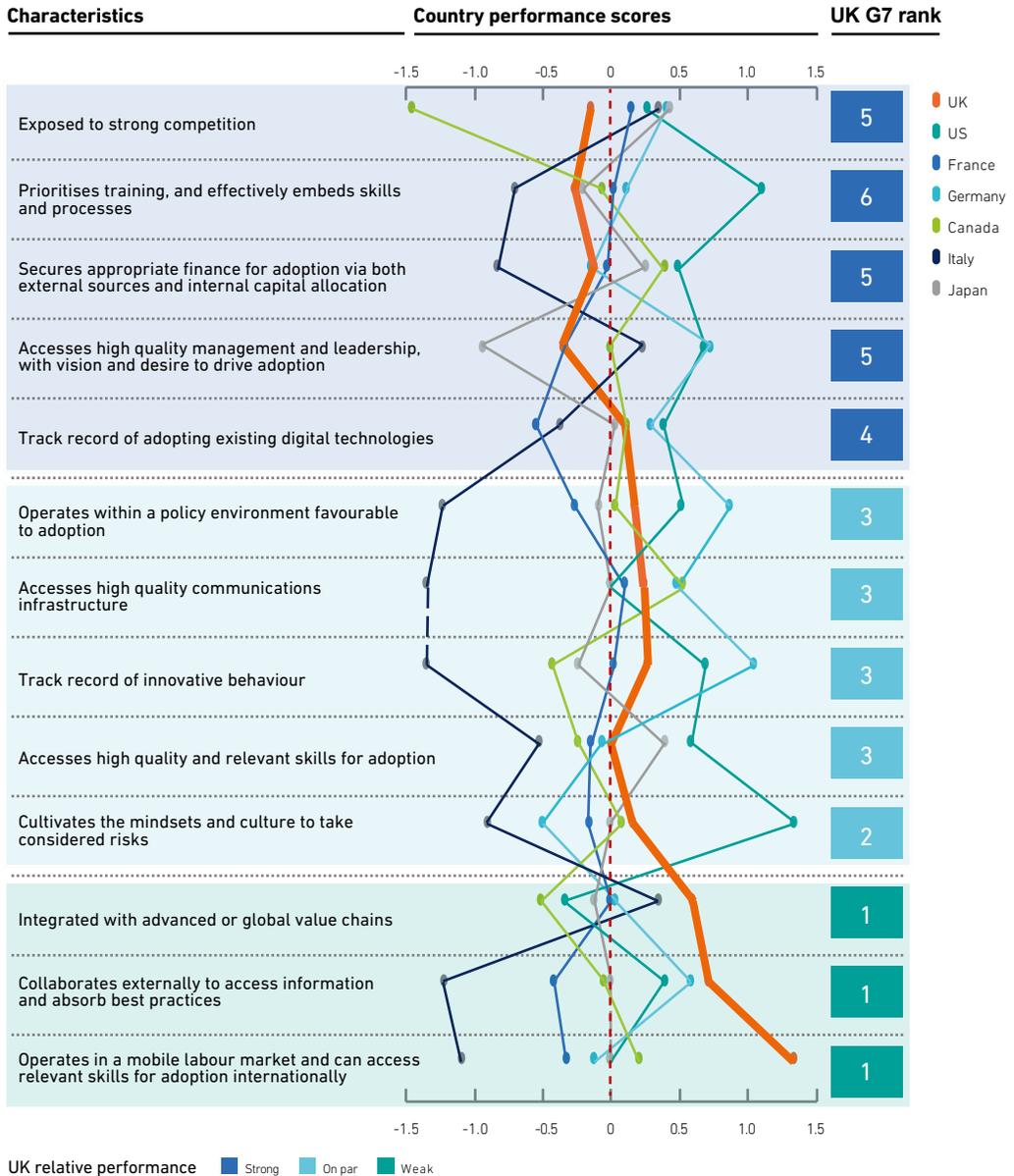
Firms successful at adopting innovations – the Magpies of industry – share a number of important characteristics. The identification and assessment of these characteristics is based on extensive research from, and interviews with, academic and other innovation diffusion 'experts'.

Some characteristics centre around the market and industry conditions within which firms operate – from a firm's exposure to international competition to the local and national policy environment affecting adoption. Availability of knowledge and capital is key, driven by external collaboration and effective internal allocation of capital. The characteristics also reflect the culture, skills and capabilities within firms that support the successful take-up of best practice technologies and management.

The CBI's analysis shows that the UK is leading G7 countries in three areas, but that relative performance is weak in several others. Even in areas where the UK is middling, firms face serious challenges. Addressing the areas of low performance is key. And while the UK shows strength across three drivers of successful adoption, there is no room for complacency in competitive global markets (**Exhibit 8**).¹⁶

Exhibit 8: The UK falls behind G7 countries on a number of characteristics common to successful adopters

Weighted average scores across each characteristic



SOURCE: WEF Global Competitiveness Index 2016-17, Global Innovation Index 2016, European Innovation Scoreboard 2016, Global Entrepreneurship Monitor, OECD, McKinsey OrgSolutions, World Management Survey, Eurostat, team analysis

The UK must protect and enhance parts of its business environment that already encourage adoption

The UK leads G7 countries on three areas that drive successful adoption. Each are particularly susceptible to the potential challenges of Brexit. To get many more businesses better at adopting, it is vital to maintain performance in these areas.

i. Integration with global value chains

Firms in the UK are well integrated with global value chains where they already exist. This accentuates the need for firms to adopt new products, processes and business models for compatibility with the rest of the value chain. Often, more influential firms will be first to adopt, causing others to follow. Intermediate goods imports as a percentage of total import value is a measure of integration with global value chains – in the UK this is 27 per cent, higher than the G7 average of 22 per cent.

ii. Operating in a mobile labour market

Due to the UK's flexible labour market, people tend to move between firms more fluidly. When they move, they take with them experiences, ideas and ways of working that can benefit the new employer. This is illustrated by the fact that, in human resources, science and technology, around 10 per cent of employees changed jobs within the year leading to 2016, compared to 4-7 per cent in France, Germany and Italy.¹⁷

iii. Collaborating with external networks

Working closely with external networks encourages the sharing of best practice and knowledge. Competition between firms can be a barrier to the spreading of innovation. But where collaboration exists with suppliers and customers, such as in supply chains, it allows firms to identify which technologies and management practices to adopt to lift performance and growth, and how best to do so. This is a strength of UK business. The share of SMEs cooperating on innovative projects with other businesses or institutions is higher in the UK than any of the G7. Interacting with research institutions also supports the transfer of knowledge to firms, a driver of better adoption. The environment for business-university collaboration in the UK is improving, ranking 6th in the world by the World Economic Forum and the Global Innovation Index.¹⁸

Four key areas must be addressed where the UK environment disadvantages adoption relative to other countries

The CBI's research, supported by the views of our members, finds four areas where fundamental improvement is needed for the UK to improve on adopting tried-and-tested technologies and management practices. These are areas where the UK underperforms relative to the G7 and where new or improved government policy can make the biggest impact. The UK needs more focus on:

i. Getting more firms exporting

Strong competition incentivises improvement. Firms under pressure from others need to maximise efficiency, adopting technology or new ways of doing things to stay competitive. Exposure to exports stimulates exchanges of ideas and best practice, key for improving adoption. As seen earlier in this report, the UK is well integrated with global value chains. This is through a high number of businesses exporting indirectly. But direct exporting also adds the competitive pressure needed for firms to adapt and adopt. In the UK, a small number of businesses account for a large chunk of UK trade. In 2013, the top 100 exporters and importers accounted for 50 per cent of export value and 40 per cent of import value, compared to Germany where these figures were 38 per cent and 35 per cent respectively.

ii. Embedding skills and processes

Prioritisation of training and development helps to build employee skillsets in line with market developments and innovation. Keeping workforce skills and capabilities present-day is central to identifying and adopting performance enhancing technologies and best practices. This is increasingly important with the changing nature of work and workplaces as technology advances. The UK performs well here. While not at the heights of global best Switzerland, the UK scores above average on business investment in training and employee development.¹⁹ But UK firms lag behind on embedding capabilities and 'know-how'. For example, the use of training manuals, standard operating procedures (SOPs) or 'cheat sheets' help employees carry out complex routine operations efficiently. Best practice like this ensures work doesn't stand still when staff with specific skills aren't available to perform their everyday tasks. Firms in the UK score well below the global median on these process-based capabilities, and further behind global leaders like the US.²⁰

CASE STUDY: Barclays gets the full benefits of adopted technology by identifying internal champions to embed technological 'know-how'

In 2012, Barclays issued 10,000 tablet computers to its branch network to help improve the service offered to customers. After a couple of months it was discovered that only about 15 per cent of staff were using them. Of the remaining 85 per cent, some were unenthusiastic about changing the way they helped their customers, but the overwhelming majority were embarrassed that they could not operate the technology.

It was realised that top-down training from head office was not going to overcome this emotional barrier, so the solution was to harness the skills of the digitally empowered 15 per cent. They were asked to 'buddy up' with less digitally confident colleagues and share their knowledge and expertise, and Barclays *Digital Eagles* was born.

There are now nearly 18,000 Digital Eagles operating across the country who help not only colleagues, but customers, businesses and the public at large. Training is offered for free and focuses on building digital confidence generally, so whilst some people may benefit by learning how to bank and manage their finances through the internet, others will learn how to, for example, stay in touch with friends and family or access online TV.

iii. Visionary management and leadership

Visionary and ambitious managers and leaders are more likely to experiment with new ideas. Coupled with appropriate skillsets they can execute these approaches effectively, with good management complementing the technical skills needed to absorb the full benefits of new-to-firm technology. This is key for unlocking value to their business, and for raising productivity. But UK businesses seem to have more risk-averse management mindsets, a classic Ostrich behaviour that prevents the adoption of tested ideas and technologies.

McKinsey's OHI finds that UK firms fare worse than US and German peers at having leaders that "encourage employees to take on tough challenges and do more than they thought was possible". Moreover, the cream of managerial talent is often absorbed by the best performing firms. The 2014 World Management Survey results indicate that management quality scores of the best performing UK firms are 1.7 times higher than those of the worst performing firms; this difference is wider than in any other G7 country.

CASE STUDY: Effective leadership and management skills encourage innovation, supporting the uptake of technology and new ways of doing things.

Tharsus is a highly innovative, leading firm in the UK's robotics sector based in Blyth, north-east England. Well known for playing a key role in designing and now manufacturing the autonomous robots used by Ocado, a grocery delivery firm, to pick items within its warehouse, Tharsus develops a variety of complex products, taking ownership of system integration and design for manufacture through to product testing and certification.

"To be a successful, innovative company quick to react to market developments, skilled management and leadership will recognise the need for different behaviours across an organisation. When designing a new product, for example, different mindsets and aptitudes are needed for the product architecture phase of the project when compared to the detail focused testing and certification phase.

In the early phases of a project when innovation is at the fore, leaders and managers must be prepared to allow their teams the freedom fail fast and hard, learn and try again, otherwise they will never push the boundaries of what is possible."

Brian Palmer, Chief Executive, Tharsus

CASE STUDY: Steering at the COO- and CTO-level has enabled Airbus to overcome potential operational 'inertia' which might otherwise hamper adoption

Airbus is a major OEM (original equipment manufacturer) in the fields of civil aerospace, space and defence. The formation of a companywide 'platform' organisation, chaired by the Chief Operating Officer, drives a common strategy and retains knowledge to enable the transfer of additive manufacturing technology to multiple products.

In particular, Research and Technology (R&T) activity on Additive Manufacturing was centralised to minimise duplication of effort and accelerate company-wide standardisation. Lowest barrier to entry applications were targeted first, such as satellite products and tooling applications in assembly plants. To broaden the knowledge base within the business to support the adoption across applications, training and awareness courses were developed and implemented within the business.

As a result, centralising R&T has minimised duplication and enabled faster adoption, and will enable economies of scale in sourcing. The first technology application on satellites has now been followed by certified application on civil aircraft.

"Additive manufacturing technology is one of the methods being used by Airbus to shape the future of aircraft component manufacture. This capability results in lighter parts, with shorter lead times, fewer materials used during production and a significant reduction in the manufacturing process' environmental footprint. Additive manufacturing is giving Airbus the design freedoms it needs to innovate and deliver complex components very rapidly – so through adopting additive manufacturing we are literally printing the future."

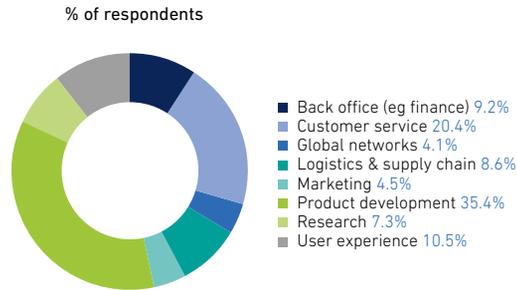
Jonathan Meyer, Technology Roadmap Owner, Additive Manufacturing Processes, Airbus

iv. Securing capital for investment and allocating it effectively

Accessing appropriate capital underpins finance investment in technologies, and the skills and capabilities to embed them. The UK's financial sector performs above the G7 average on providing the products and services that meet the needs of businesses.²¹ But the availability of financing for entrepreneurs in the UK is below the G7 average.²² Government grants and subsidies are also key. Business expenditure on R&D, a proxy for government support to finance investment is also below par compared to G7 countries.²³

The UK's underperformance is partly driven by the internal under-allocation of capital for adoption-related investments. Many firms' capital allocation decisions discriminate against complicated business cases, of which ERP and CRM systems carry. Capital allocation for innovation often favours investments in parts of the business that are more customer facing, where businesses expect a greater benefit from innovation than, for example, the 'back office' (**Exhibit 9**).

Exhibit 9: The business area that CBI members say would benefit most from innovation



Source: CBI Innovation Survey 2016

CASE STUDY: Training and development at Integrity Print supports the adoption of technologies needed to break into new digital markets

Integrity Print is a well-established manufacturer of high volume business forms. With printed products being replaced by digital alternatives, and turnover from traditional work declining, management recognised the need to deliver business change. A key area for transformation was the ability to handle and process client data, but Integrity lacked both the equipment and credibility in managing data.

A new division was set up as a beacon of excellence within the organisation, with investment made in high quality, tried-and-tested equipment, and software allowing Integrity to offer a secure print and mail environment. Integrity had an existing workforce that demonstrated both loyalty and a passion for print, but still needed to achieve a cultural shift as the business changed its focus. This required a programme of training and development, and a change in working practices. Employees were actively engaged in the process to evaluate and improve business process. Workplace education and third-party site visits were encouraged to ensure the adoption and buy-in of industry best practice.

Developing digital print production has given Integrity Print the confidence to engage with a wider customer audience. Around 20 per cent of turnover now comes direct from end users, compared to 5 per cent three years ago. The development of a digital, data driven service has contributed to sales of £6m per annum and will grow to a minimum of 20 per cent of Integrity’s turnover in the next two years.

“It has been mission critical that we transform our business to survive in a challenging market. It is imperative that the pace of change is not affected by technologies or business practices that are not yet proven. We made the decision to invest and implement the available technology that could deliver an immediate business impact, and have an immediate and measurable impact on our bottom line.”

Mark Cornford, MD, Integrity Print



While the eyes of the business world can often be on the 'next big thing' in cutting-edge technology, too many firms are missing out on what's right under their nose. "

Carolyn Fairbairn
Director-general, CBI

Working together, government and business can create more 'Magpies' and fewer 'Ostriches', tackling inequality and improving jobs

Government and business together must lead a long-term change in the UK's adoption of technology and management best practice. Acting on the CBI's recommendations will help Ostriches to look around, transform their performance, and enhance their contribution to a modern, open and fair UK economy.

Headline recommendations

The government should:

1. Make innovation diffusion a central theme of the Industrial Strategy:

The Department for Business, Energy and Industrial Strategy (BEIS) should include a clear plan for increasing adoption of tested technologies and management best practice as a central theme within the Industrial Strategy, identifying accountable bodies and including measurable targets.

2. Set up innovation diffusion pilots to test different types of on-the-ground support for businesses:

Over the next 12 months BEIS and the Treasury should run a competition for LEPs and Growth Hubs to deliver pilots providing practical support firms to be better adopters of tried-and-tested technologies and management practices.

3. Link future Local Enterprise Partnership (LEP) funding to improving adoption:

The Department for Communities and Local Government (CLG) and BEIS, with funding from HMT, should link future funding of LEPs – including monies allocated through the Shared Prosperity Fund – to driving the adoption of tested technology and management best practice, based on local industrial strategies.

4. Run a campaign on the 'Five technologies all companies could adopt':

BEIS should partner with the Be the Business movement and the CBI to run a campaign on the 'five technologies that all companies could adopt'. The CBI will run a series of workshops in 2018 to support this campaign and companies adopting the five technologies.

5. Create a TripAdvisor-style e-platform for assessing technology and business support:

Innovate UK should launch a competition to establish a TripAdvisor-type e-platform, acting as a one stop shop for firms to assess technologies and technology providers, and navigate business support services for adopting technology and management best practice.

The adoption of technology and management best practices must be higher on the UK’s policy agenda, starting with the Industrial Strategy

The UK needs a greater focus on targeting Ostriches to increase adoption of technology and management best practice. This requires national prioritisation and locally coordinated efforts. The Industrial Digitalisation Review provides a great opportunity for increasing adoption of new, digital technologies across industry sectors (see page 15). But, currently, most public bodies are focused on innovation creation and, to some extent, commercialisation. Initiatives are targeted almost solely towards highly productive, high potential firms. While this remains essential to raising productivity and prosperity in the UK, there is a need to address the blindspot of promoting increased adoption across a greater range of businesses.

1. Make innovation diffusion a central theme of the Industrial Strategy

The Department for Business, Energy and Industrial Strategy (BEIS) should include a clear plan for increasing adoption of tested technologies and management best practice as a central theme within the Industrial Strategy, identifying accountable bodies and including measurable targets.

To address the national blindspot in prioritising the adoption of technology and management best practice the CBI recommends:	
OVER THE NEXT 12 MONTHS	IN THIS PARLIAMENT
<ul style="list-style-type: none"> • BEIS should include a clear plan for increasing adoption of tested technologies and management best practice as a central theme within the Industrial Strategy, identifying accountable bodies and including measurable targets, including: <ul style="list-style-type: none"> – Designate Be The Business as the primary body responsible for driving productivity-enhancing technology and management best practice adoption among firms – Define an overarching vision for what success would look like for the economy and for firms with clear targets around outputs and outcomes. This should include metrics on the adoption of a basket of technologies and closing the productivity gap among firms between the 'best' and 'rest'. – Set out a clear accountability framework encompassing responsible government departments such as BEIS and DCLG alongside independent bodies like Be the Business. • BEIS should work with the Bank of England/ HMRC and other bodies to compile data to define a target group of firms that would benefit most from specific incentives, and commission research into the characteristics of these firms. 	<ul style="list-style-type: none"> • BEIS, CLG and The Treasury should link future funding of LEPs to performance indicators relating to driving innovation adoption among target businesses e.g. through developing a strategy within local industrial strategies; and proactive engagement with the Be The Business movement. • To raise the profile of the issue and ensure clear accountability, BEIS and CLG Select Committee should announce a joint enquiry into increasing business uptake of new-to-firm management and technological innovation. • The Be The Business movement should provide information and advice to firms to increase innovation diffusion, and nudge firms to act on this support. This could be delivered through the Be The Business movement's 'collaboration hub' which will share information through webinars, case studies and examples of best practice.

Develop local pilots to discover the right practical support to increase adoption among a greater range of businesses

To increase adoption of ideas and technology firms need the right support at a local level. LEPs and Growth Hubs show signs of promise, but their efforts need coordination and consistency. Messaging will need to reach a larger number of firms than currently. Piloting what works can inform each local area's approach to increasing adoption across the country. Those delivering experiments at a local level, such as LEPs, will need to be Magpies themselves; adopting ideas from elsewhere that will work for them.

2. Set up innovation diffusion pilots to test different types of on-the-ground support for businesses

Over the next 12 months BEIS and the Treasury should run a competition for LEPs and Growth Hubs to deliver pilots providing practical support firms to be better adopters of tried-and-tested technologies and management practices.

3. Link future Local Enterprise Partnership (LEP) funding to improving adoption

The Department for Communities and Local Government (CLG) and BEIS, with funding from HMT, should link future funding of LEPs – including monies allocated through the Shared Prosperity Fund – to driving the adoption of tested technology and management best practice, based on local industrial strategies.



To drive technology uptake among business locally, addressing the digital and management skills needs; increasing business support available; increasing firms' exposure to international competition; and helping firms to spend their available capital effectively, the CBI recommends:

OVER THE NEXT 12 MONTHS	IN THIS PARLIAMENT
<ul style="list-style-type: none"> • BEIS and the Treasury should run a competition for LEPs and Growth Hubs to deliver pilots providing practical support. The pilots should help firms to be better adopters of tried-and-tested technologies and management practices across a range of business sectors and sizes.ⁱ Governments in devolved nations should look to run a similar campaign. • The insights should inform a roll-out of national, targeted support and share best practice for the devolved nations. Target firms should be identified using big data. Success should be measured through evaluating adoption of a basket of key technologies. • The Institute for Apprenticeships and LEPs should deliver a set of pilots for pooling apprenticeship levy funds among firms that find it difficult to use these funds, with some targeting digital and management skills. LEPs should assist with the identification of SMEs that face challenges utilising levy funds and support the provision of relevant 'pooling mechanisms'. For example, the LEP could be the 'fund holder'. • DIT should transform their approach to supporting more firms into more export markets by recruiting a Digital Marketing Officer and team capable of using big data analytics, and digital and social marketing techniques, for supporting a broader range of firms into new export markets. 	<ul style="list-style-type: none"> • CLG and BEIS, with funding from HMT, should link future funding of LEPs – including monies allocated through the Shared Prosperity Fund – to driving the adoption of tested technology and management best practice, based on local industrial strategies. • With insight from local pilots, BEIS/CLG to introduce place-based targeting through LEPs, to support the uptake of new-to-firm management and technological innovations, using match-funded grants and expert resource. This should help in the development of the Shared Prosperity Fund. • A set of pilots for pooling apprenticeship levy funds should inform the roll out of a widespread mechanism by 2021. • The Department for Education should give companies greater flexibility to invest their apprenticeship levy in the skills training of most value to their business. • British Business Bank should work with the Be The Business to conduct a review into existing finance options to identify opportunities for supporting investments in and longer-term investments related to innovation adoption.

ⁱ The CBI's recommendation could be linked to the proposal in the IDR for a six-month pilot to increase and accelerate the development and diffusion of Industrial Digital Technologies (IDT) by SMEs in manufacturing

Improve the sharing of information on effective technology and management best practice, driving adoption through greater understanding of what 'good' looks like

Firms need the 'will' to change their approach to management practice and use of technology, but they also need the 'skill'. Many businesses lack information and understanding of the benefits of being a Magpie – of how new technology or ways of working can impact their business. Providing more clear information and making it easier to navigate the information that exists will be vital to knocking down this barrier. This includes supporting firms to access the help most suited to them. Businesses successful at adopting have a role to play too. By sharing best practice with the firms they engage with, best performing firms could help lift productivity across the wider economy.

4. Run a campaign on the 'Five technologies all companies could adopt'

BEIS should partner with the Be The Business movement and the CBI to run a campaign on the 'five technologies that all companies could adopt'. The CBI will run a series of workshops in 2018 to support this campaign and companies adopting the five technologies.

5. Create a TripAdvisor-style e-platform for assessing technology and business support

Innovate UK should launch a competition to establish a TripAdvisor-type e-platform, acting as a one stop shop for firms to assess technologies and technology providers, and navigate business support services for adopting technology and management best practice.



To promote more collaboration among businesses and the sharing of best practice; provide clearer channels of support for businesses; and raise awareness of ideas and technologies proven to raise productivity, the CBI recommends:

OVER THE NEXT 12 MONTHS	IN THIS PARLIAMENT
<ul style="list-style-type: none"> • BEIS should partner with Be the Business and the CBI to run a campaign on the 'five technologies that all companies could adopt'. These technologies should be proven to raise productivity across a range of sectors and have below-par penetration across UK businesses, compared with comparator countries.ⁱ • The CBI will run a series of workshops in 2018 on the five identified technologies. The workshops should share tested tools and techniques for adopting technologies and ideas. The workshops should bring together successful adopters and key players able to share best practice with firms that would benefit from greater adoption, tracking the number who increase their adoption levels as a result. • Working with the CBI, BEIS and Innovate UK should launch a competition to establish a TripAdvisor-type e-platform, acting as a one stop shop for firms to assess technologies and technology providers, and navigate business support services for adopting technology and management best practice. • Be the Business should incentivise a coalition of pioneer firms to engage and improve the performance of firms they engage with. This should increase industry support to other firms, such as those within their supply chains, by facilitating knowledge transfer and embedding technical innovation. Incentives should include provision of tailored information for high productivity firms to use to support firms they engage with; and regional 'accelerator' programme run by LEPs. 	<ul style="list-style-type: none"> • The CBI to explore a b-2-b platform for facilitated secondments to increase sharing and embedding of best practice. • Innovate UK to expand the Knowledge Transfer Partnership (KTP) model and to increase visibility of the Catapult Network. It should give businesses more opportunities to work with business schools, for example through shorter management-focused programmes, and raise business awareness of routes to identify innovative technologies that can confer competitive advantage. This should be funded as part of a broader increase in Innovate UK's responsive funding.

ⁱ The CBI's recommendation could be linked to the proposed Made Smarter campaign in the IDR, to raise awareness of how new digital technologies can transform productivity for manufacturing and production sectors

- 1 *Unlocking regional growth*, CBI, 2016
- 2 In October 2017, the CBI published its report *Disrupting the future* with practical learnings for businesses adopting cutting-edge technologies such as artificial intelligence, blockchain and Internet of Things
- 3 *Global growth: Can productivity save the day in an aging world?* (Exhibit E5) – McKinsey Global Institute report, Jan 2015
- 4 *How good is your business really?*, Productivity Leadership Group, 2016
- 5 Productivity puzzles, speech by Andy Haldane (member of the Bank of England Monetary Policy Committee), 20 March 2017
- 6 *The future of productivity*, Criscuolo & Andrews, OECD, 2015
- 7 Economic Outlook, OECD, Volume 2016 Issue 1
- 8 A 9.8% rise in productivity translates to reduction in inequality as measured by the P90/P10 ratio, from the current 3.9 to 3.7, based on P90 and P10 household incomes of £946 and £244 per week, respectively assuming the wage uplift applies only to P10 household incomes. Academic research suggesting a 100% increase in GVA yields a 45-55% rise in wages.
- 9 *Pathways to impact*, High Value Manufacturing Catapult, June 2015
- 0 *Now is the time to innovate*, CBI, 2017
- 11 Industrial Digitalisation Review, 2017
- 12 *A better off Britain*, CBI, November 2014
- 13 *Innovation Survey 2016*, CBI, 2016
- 14 World Management Survey, 2014
- 15 McKinsey OHI database, 2017
- 16 Each driver reflects three underlying metrics
- 17 Eurostat, 2016
- 18 *The Global Innovation Index, 2017; The Global Competitiveness Report*, World Economic Forum, 2016-17
- 19 *Global Competitiveness Index 2016-17*, WEF, 2017
- 20 McKinsey OHI database, 2017
- 21 *Global Competitiveness Index 2016-17*, WEF, 2017
- 22 *2016/17 Global Report*, Global Entrepreneurship Monitor, 2017
- 23 OECD statistics, 2015



For further information on this report,
or for a copy in large text format contact:

Patrick Day
Senior policy adviser
T: +44 (0)20 7395 8103
E: patrick.day@cbi.org.uk

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