

O₂
business



Business without boundaries

The role of connectivity
in business growth

October 2019

Authorship and acknowledgements

This study has been commissioned by O₂ Business and produced by Development Economics, a consultancy business that carries out research and market analysis for private and public sector clients.

The report began with a desk-based review of evidence on the business benefits of technology, alongside a review of the latest relevant UK business and economic datasets. In addition, fresh primary research evidence was generated through a new survey of over 500 UK businesses conducted by YouGov, based on a questionnaire developed by O₂. The distribution of survey responses achieved by company size was:

Small businesses (10-49 employees): 43%
Medium businesses (50-249 employees): 22%
Large businesses (250+ employees): 24%

Development Economics developed a modelling framework that translated baseline economic data and new survey findings into estimates of business benefits associated with connectivity – both in terms of current levels of benefits captured, as well as the potential for additional gains.

The survey results were used to produce estimates of productivity and revenue gains, as well as potential cost savings for businesses within different size bands and operating in different sectors. The benefits were then aggregated across the UK economy using data from current business datasets published by the office for national statistics.

The views expressed herein are those of the authors and are based upon independent research carried out by them.

About O₂

O₂ is a mobile network operator and the principal commercial brand of Telefónica UK Limited, which is part of the global telecommunications group Telefónica S.A, headquartered in Spain and operating in Europe, and North, Central and South America.

O₂ is the UK's favourite network*, providing 2G, 3G and 4G services to more than 33 million connections and operating a nationwide O₂ Wifi service. It has been named uSwitch Best Network Coverage provider for two years running and won Best Network Performance at the Mobile News Awards 2019. Global Wireless Solutions (GWS) named it Best Network for Reliability in 2018.

The company is the network of choice for mobile virtual network operators such as giffgaff, Sky Mobile and Lyca Mobile as well as managing a 50:50 joint venture with Tesco for Tesco Mobile.

O₂ has around 6,700 employees and over 450 retail stores and sponsors England Rugby, The O₂ and 19 O₂ Academy music venues across the UK. Through a comprehensive sustainability strategy O₂ is also creating work experience opportunities for 16-24 year olds via its GoThinkBig platform, enabling customers to reduce their impact on the environment by recycling their old devices through O₂ Recycle and, in partnership with the NSPCC, helping parents to keep their children safe online.

*Based on lowest customer churn and most connections to the network compared to other UK mobile networks.

Telefónica UK limited is registered in England and Wales. Registration number: 1743099. Its registered office is at: 260 Bath Road, Slough, Berkshire, SL1 4DX, United Kingdom.

Contents

Foreword	
Executive summary	1
1 Introduction	3
Background	3
Objectives	3
Why connectivity increasingly matters	3
Structure of report	4
2 National economic context	5
3 Methodology	8
Business survey	8
Connectivity and workforce efficiency	8
Estimation of benefits and gains	9
4 Connectivity benefits: national findings	10
Current levels of connectivity	10
Importance of connectivity for businesses	11
Approach to digital innovation	11
Importance of connectivity for customer satisfaction	12
Importance of connectivity for workforce engagement	12
Amount of time that could be saved from enhanced connectivity	12
Importance of connectivity for integration with suppliers and partners	13
Potential for increased revenues from enhanced connectivity	13
Potential for cost savings from enhanced connectivity	13
National findings: GVA impacts	14
National findings: scope for cost savings	15
National findings: scope for increased revenues	16
5 Connectivity benefits: sectoral analysis	17
Sector-based findings: GVA impacts	17
Sector-based findings: scope for cost savings	18
Sector-based findings: scope for increased revenues	19
6 Connectivity benefits: job role analysis	20
GVA gains by job role	21
Business cost savings by job role	21
Revenue gains by job role	22
7 Conclusions	23

Foreword

Getting back on the path to productivity growth

Despite so much uncertainty for UK Plc, there are reasons to be positive. As this report demonstrates, enhanced connectivity could be the welcome boost to productivity and growth that our country needs.



Imagine the impact of every employee gaining 3.14 hours a week. That is equivalent to an extra 18 working days per year. Or a total productivity gain of £34.1 billion.

So how can enhanced connectivity help us achieve this kind of growth?

The evidence is already there. Since our *Smarter Working Britain* report in 2014, good progress has been made in the uptake of tools to enable remote working. Thanks to increasing numbers of workers splitting their time between the office and home, Britain's biggest businesses are already benefitting from a £10.5 billion productivity boost.

Still, it is clear that more can be done to enhance connectivity in the UK.

As our *Business without boundaries: The role of connectivity in business growth* 2019 report reveals, there is much to gain if all employers embrace the benefits of connectivity - from video conferencing to collaboration apps. Giving employees the ability to work where, when and how they want adds to the bottom line. For instance, you only have to quantify the value of less time spent commuting and more time spent actually working.

The UK economy could see an extra £14.7 billion in productivity gains for SMEs plus a further £19.4 billion for large companies. The impact does not stop at employee convenience or organisational productivity. Our research shows that digitally enabled workforces deliver higher levels of customer satisfaction too.

It all adds up to potential additional revenues of £175 billion as well as operational cost savings of £185.4 billion.

Yet we are at risk of throwing away such huge gains. Without rapid action to enhance connectivity, tens of billions could be wiped from our economy. This should be a red flag for businesses in every sector.

We get that decision-making is harder in turbulent times but here is a proven way to improve productivity and, therefore, growth. Especially as milestone innovations like 5G start to transform the way we work.

The findings in this report are clear. Enhancing connectivity will pay huge dividends. Here at O2, we're already investing in the tools, technologies and infrastructure to support UK businesses but it's not about connectivity for connectivity's sake. It's about O2 giving businesses precisely what they need to boost productivity and growth. Our focus is on helping our customers to achieve their business objectives and deliver on their promises, because we believe that if every employee and every enterprise can work smarter, that £34.1 billion boost to UK businesses is well within our sights.

A handwritten signature in blue ink, appearing to read 'Jo Bertram'. The signature is stylized and fluid.

Jo Bertram

Managing Director, Business at O2

Executive summary

- This report has been commissioned by O2 to assess the current level of business and productivity benefits that could be delivered by UK businesses if workforces were provided with full access to a range of connectivity technologies and tools that enhance communication and collaboration. The research is an update and extension of an earlier piece of research also commissioned by O2 dating from February 2014 entitled *Smarter Working Britain: the economic benefits of connectivity*.
- The main objective of the study is to generate up-to-date evidence on the potential economic value of connectivity for UK businesses. The study included a new survey of over 500 UK businesses that asked questions regarding the relationship between business efficiency and workforce connectivity. Businesses were also asked questions about their businesses approach to investing in connectivity, and the potential scale of productivity gains from further investment. The survey also explored the potential for cost savings and revenues increases from enhanced connectivity.
- The survey results were used to estimate productivity and revenue gains and potential cost savings for businesses within different size bands and operating across different sectors of the economy. The benefits estimated were then aggregated across the UK economy using data from current business datasets published by the Office for National Statistics.
- Compared to the 2014 survey results, the new business survey found significantly greater levels of usage of connectivity enhancing tools and technologies among larger businesses. While levels of usage among smaller and medium-sized businesses – which were not covered by the 2014 study – were typically lower, there were still substantial levels of investment in and recognition of the business advantages of these technologies.
- Moreover, the survey revealed generally high levels of recognition of the business advantages of enhanced connectivity. For example:
 - When asked whether digital connectivity was critical to achieving high levels of customer satisfaction, 77% of businesses agreed, with 38% agreeing strongly;
 - When asked if they could respond to customers significantly faster if their workforce had full access to connectivity enhancing tools, 57% agreed, with 21% agreeing strongly;
 - When asked whether digital connectivity was critical to achieving high levels of employee engagement 67% agreed, with 28% agreeing strongly;
 - When asked whether digital connectivity was critical to achieving high levels of integration with suppliers and partners 64% agreed, with 21% agreeing strongly.

“Overall weekly time savings ... amounted to 3.14 hours per employee per week”

- The business survey also asked about the potential for time savings per employee – from reduced amounts of time needed to travel to meetings – if their employees could have full access to the necessary information and communication tools from any location. The overall weekly time savings per employee that was identified by the survey amounted to 3.14 hours per employee per week, equivalent to 12 hours per month, or 144 hours (roughly one month’s work) per year.
- Businesses were also asked about the potential for the generation of additional annual business revenues if their employees could have full access to connectivity enhancing tools from any location. The average potential boost to revenues revealed by the survey (including from those who did not envisage any boost to revenues) was an additional 13.7% per year compared to existing turnover.
- Based on the survey responses it is possible that UK businesses could generate additional revenues totalling around £175 billion if their workforces had full access to tools and technologies that deliver enhanced connectivity.

- The largest portion of these gains (nearly £101 billion, 58% of the total) is associated with the UK's larger businesses. However, a significant boost to revenue amounting to nearly £75 billion (nearly 42% of the overall total) could also be generated by UK SMEs if their workforces also had full access to enhanced connectivity.
- The potential for higher levels of revenue when workers have full access to tools and technologies that enable enhanced connectivity could, for example, be linked to enhanced levels of client/ customer satisfaction leading to increased orders from existing customers and/or enhanced rates of conversion of client prospects into actual customers.
- In addition, businesses were asked about the potential scope for operational cost savings if their employees could have full access to the necessary information and communication tools in order to communicate with their customers, employees or suppliers from any location. In terms of the estimated average annual cost savings, the mean proportionate savings in annual operating costs was estimated by respondents to be 11.6%. This average takes into account the 29% of businesses who did not foresee any potential for cost savings from enhanced connectivity.
- It is estimated that UK businesses could generate further savings of £185.4 billion in operational costs if their workforces had full access to connectivity enhancing tools and technologies. The largest share of these gains (£115.7 billion, 62% of the total) are associated with the potential savings that could be achieved by the UK's larger businesses. However, significant gains amounting to £69.7 billion (38% of the overall total) could also be captured by SMEs if full access to connectivity was extended to the workforces of smaller and medium sized businesses.
- The types of savings linked to full access to enhanced connectivity include:
 - Reduced need for office floorspace;
 - Savings from reduced travel costs to meetings;
 - Savings linked to a greater proportion of work tasks being completed effectively;
 - Reduced incidence of defective goods and services;
 - More efficient procurement.
- Based on all of these data points, the study has shown that future additional output gains of **£34.10 billion** could be generated by UK businesses if employees had full access to tools that enhance communication and collaboration. This figure comprises an estimated £7.58 billion that could be generated by small businesses, £7.01 billion by medium sized businesses and £19.45 billion by large businesses.

1 Introduction

Background

- 1.1 This report has been commissioned by O₂ to assess the current level of business and productivity benefits that could be delivered by UK businesses if workforces were provided with full access to a range of technologies and tools that enhance communications connectivity.
- 1.2 The research focuses particularly on the business efficiency and productivity gains associated with tools (ie, devices and software) that enable workers to access and share data in situations when they are away from their employer's premises. This could be when they visit client or supplier premises, when they work from home, or when they are working on the move.
- 1.3 The research is an update and extension of an earlier piece of research also commissioned by O₂ dating from February 2014 entitled *Smarter Working Britain: the economic benefits of connectivity*. The 2014 study, undertaken by CEBR, focused in particular on connectivity benefits for larger businesses. In the present study, the focus of attention is on businesses of all sizes – including SMEs – as well as larger businesses. This is appropriate, as SMEs account for around 99% of all UK businesses that have at least 1 employee: they also account for around 50% of all Gross Value Added (GVA) generated by UK businesses that have at least 1 employee.
- 1.4 Although the main focus in this report is on reporting the current contribution of technology, where appropriate comparisons are drawn with the earlier findings of the 2014 CEBR research.

Objectives

- 1.5 The principal objectives for the research as specified by the brief can be expressed as follows:
 - To generate up-to-date evidence on the potential economic value of connectivity for UK businesses; and
 - To explore and understand the relationship between enhanced connectivity and business productivity levels.
- 1.6 The approach to the study involved several key steps:
 - A desk-based review of evidence on the business benefits of technology and the latest relevant UK business and economic datasets.
 - In addition, fresh primary research evidence was generated through a new survey of 500 UK businesses undertaken by YouGov, based on a questionnaire developed by O₂ and its advisers.
 - Development Economics developed a modelling framework that translated baseline economic data and new survey findings into estimates of businesses benefits associated with connectivity, both in terms of current levels of benefits captured as well as the potential for additional gains that are currently foregone as a result of various constraints.

Why connectivity increasingly matters

- 1.7 There are a number of reasons why communications connectivity increasingly matters to businesses and their workforces. A key reason is the increasing trend towards a greater number and greater proportion of the UK workforce working flexibly, including working from home. An increasing proportion of workforce is also working from a variety of other locations, including client premises. In addition, a greater proportion of the workforce is mobile, moving between business appointments in a variety of locations. Such workers increasingly need to access business data and other information so they can perform their roles efficiently and effectively.
- 1.8 The increasing trend towards a flexible, mobile workforce is driven in part by the trend towards full employment. As economic activity rates approach historically high levels, in order to enable remaining inactive persons to re-join the workforce it will be necessary to tap into under-utilised resources, such as older workers, those with other responsibilities (such as caring for children or other relatives) or those who have mobility constraints (such as the 10 million or so people in the UK who have some form of disability).

- 1.9 Meanwhile, technology is increasingly available that can enable mobile workers and/or those working at home or on the move to operate just as efficiently and effectively as their colleagues who are working from their employer's premises.

“The UK still faces challenges in terms of lagging productivity compared to many of its main international competitors”

- 1.10 The potential to enhance connectivity – and the productive potential of the UK's increasingly flexible and mobile workforce – therefore matters to UK businesses and their current and potential future workforces (i.e. to potential workers who have not yet been recruited). However, connectivity also matters to the UK economy as a whole, because the UK still faces particular challenges in terms of lagging productivity compared to many of its main international competitors such as the US, Germany and France. For example, average labour productivity in the UK is now estimated to be 20% lower than in France.¹
- 1.11 The *Smarter Working Britain* report of 2014 cited CEBR research that attributed around 35% of the average productivity improvement that had occurred in the UK to increasing use of information and telecommunication technologies. Given that the workforces of many UK businesses do not yet have full access to connectivity enhancing tools, it follows as a matter of logic that more widespread full access could have an important role to play in helping to address the UK's lagging productivity performance.

Structure of report

- 1.12 The remaining chapters of this report are structured as follows:
- **Chapter 3:** provides a brief summary of the principal trends affecting the UK economy over the period since 2014 (i.e. since the previous report was prepared).
 - **Chapter 4:** supplies further details of the approach and the sources of data used in the research to estimate the benefits of connectivity to UK businesses.
 - **Chapter 5:** sets out the main updated findings of the assessment at a national level in terms of business outcomes and principal economic indicators such as Gross Value Added. As well as the estimated national total these results are disaggregated by business size-band (i.e. separately identified for small, medium-sized and larger businesses).
 - **Chapter 6:** provides a breakdown of the national benefits in terms of the impact of connectivity on the various UK business sectors.
 - **Chapter 7:** presents a disaggregation of the national benefits in terms of the impact of connectivity on workers with defined roles and locational needs.
 - **Chapter 8:** provides some brief conclusions.

¹ McKinsey Global Institute: Solving the United Kingdom's Productivity Puzzle in a Digital Age, September 2018

2 National economic context

- 2.1 The 2014 *Smarter Working Britain* report was written at a time when the UK was starting to experience a stronger period of sustained economic growth compared to the previous 5 years or so. It was also prepared at a time when business and consumer confidence was growing strongly.
- 2.2 The purpose of this chapter is to briefly review the evolution of economic conditions here in the UK since the 2014 report was prepared.
- 2.3 One challenge, of course, is that many of the relevant economic datasets published by the Office for National Statistics lag significantly. For example, the Annual Business Survey (ABS) results published in May 2019 – which provide data on business population, aggregate turnover and GVA contributions – only provide annual data up to 2017. For this reason, the analysis of recent trends over the past 5 years necessarily includes a review of economic data over the 2012-2017 period.²
- 2.4 All of the principal economic datasets show that the most recent 5-year period for which we have the relevant data has been a period of continued business growth. For example, the 2012-2017 ABS data shows strong growth in the UK business population, the aggregate turnover generated by these businesses and their overall GVA contribution. The table below summarises these key results.³

Table 3.1: Key UK Business indicators, 2012-2017 (excluding financial services)

	2012	2017	% change
Number of enterprises	1,945,158	2,436,962	25.3%
Total turnover £million	3,331,193	3,814,741	14.5%
Aggregate GVA £million	937,039	1,225,905	30.8%

Source: ONS Annual Business Survey 2019, published May 2019

- 2.5 The UK business population (excluding financial services) has grown strongly since 2014, from 1.945 million to 2.437 million (a gain of 25.3%). Over the same period the total turnover generated by UK businesses has risen by 14.5%, whilst the GVA contribution has risen by 30.8%. Note, there is no inflation adjustment made for the financial values in the table.
- 2.6 The largest source of growth in the UK business population over this period has been from micro businesses (1-9 employees). Overall, the number of micro-enterprises (1-9 employees) grew by 27.0%, compared to 10.8% for medium sized businesses (50-249 employees).
- 2.7 Micro-businesses also grew their aggregate turnover at the fastest rate (37.6%), especially compared to the largest businesses (2.9%). However, interestingly it was medium sized businesses (50-249 employees) who experienced the strongest growth in contribution to overall GVA (45.4%), followed by small businesses (10-49 employees), who grew their GVA contribution in aggregate by 31.8%.

² Similarly, at the time of writing of the February 2014 *Smarter Working Britain* report the most recent disaggregated national data would have been for the year 2012.

³ Note: the ONS data from the ABS excludes the contribution of the UK financial services sector. It should also be noted that the data presented here covers businesses with at least one employee.

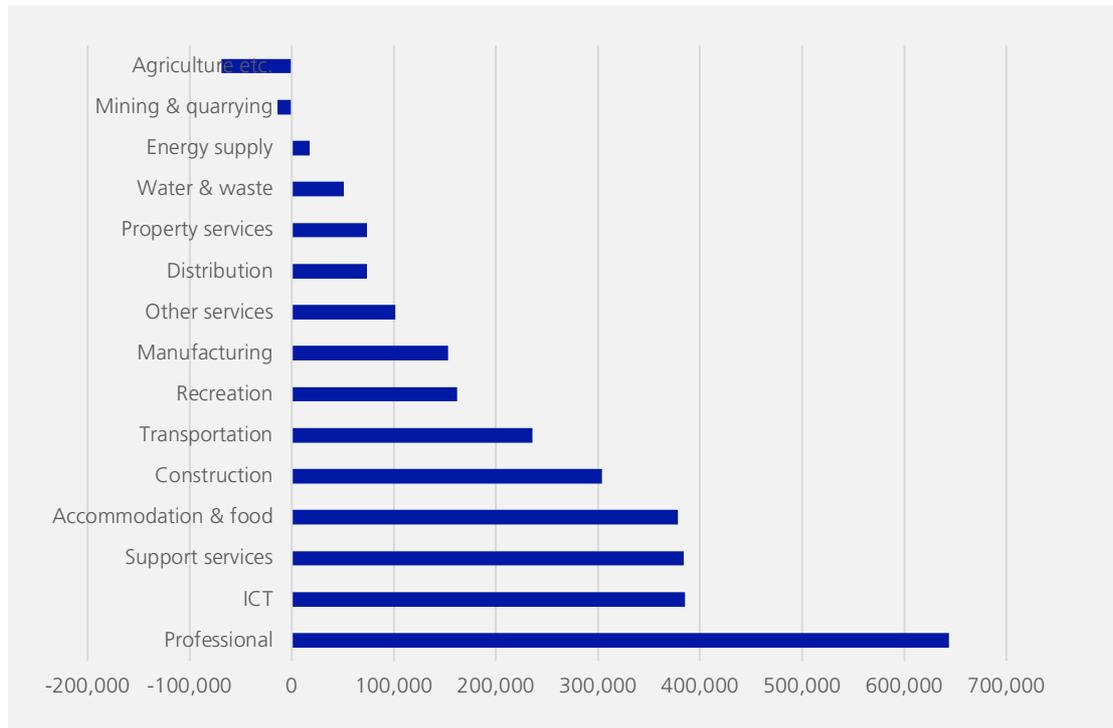
Table 3.2: Proportionate change in business indicators, 2012-2017

Size band (employees)	Number of enterprises	Total turnover (£ million)	Aggregate GVA (£ million)
1 to 9	27.0%	37.6%	25.8%
10 to 49	12.9%	24.8%	31.8%
50 to 249	10.8%	27.8%	45.4%
250 and over	12.9%	2.9%	27.8%
Overall	25.3%	14.5%	30.8%

Source: ONS Annual Business Survey 2019, published May 2019

- 2.8 The period since 2012Q1 has also seen continued strong growth in employment. The latest disaggregated data (which includes the period up to 2019Q1) shows overall growth in private sector employment (excluding financial services) amounting to 2.86 million additional workforce jobs.⁴
- 2.9 Overall, private sector employment (excluding financial services) has been growing at an annual average of 1.7% p.a. over the 5-year period 2012Q1-2017Q1, and 2.1% p.a. over the 7-year period 2012Q1-2019Q1.
- 2.10 It is also worth noting the main sectoral breakdown of employment growth in the UK economy over this period. The change in the number of jobs is set out in the table below.

Figure 3.1: Sectoral sources of job growth, 2012-2019



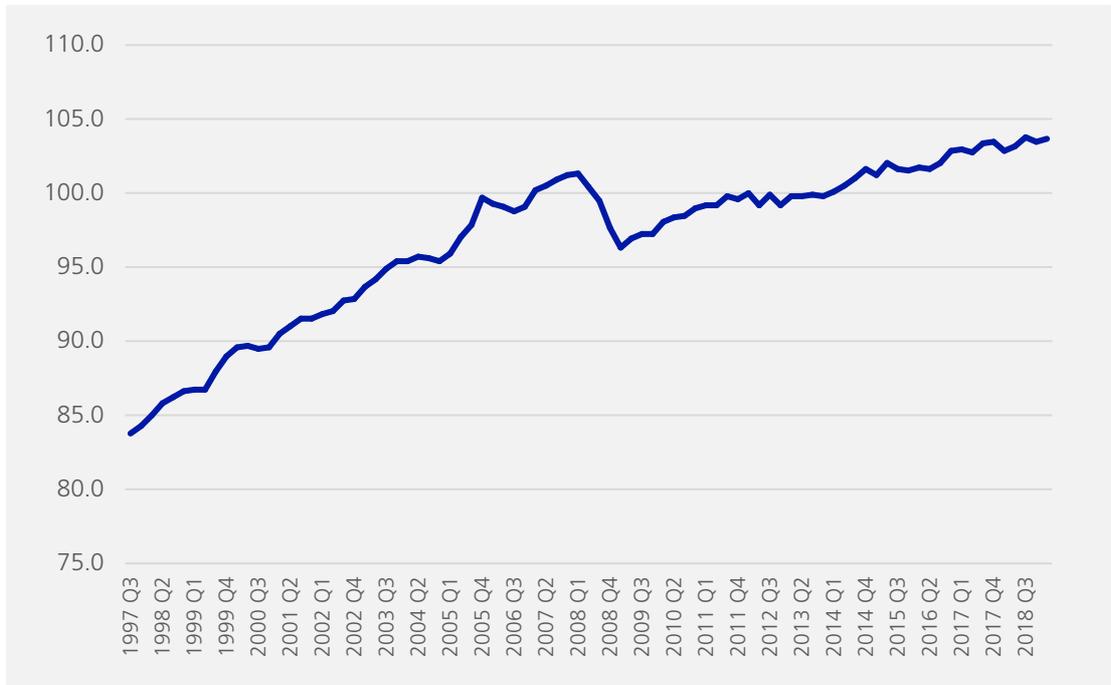
Source: ONS Workforce Jobs data series. Data accessed 23/7/2019

- 2.11 By far the strongest contributions to private sector job growth came from Professional services (+643,000 jobs), Information and Communication services (+385,000 jobs), Business support services (+384,000 jobs) and the Hospitality sector (+378,000 jobs). The only sectors that declined in terms of jobs were Agriculture (-69,000 jobs) and Mining & quarrying (-14,000 jobs).

⁴ If the period 2012-2017 only is considered the increase amounts to 2.42 million jobs.

- 2.12 Another feature of the UK economy that has changed since the 2014 report was prepared is the annual trajectory for productivity growth. At the time the *Smarter Working Britain* report was prepared in early 2014 the UK economy was apparently experiencing a flattening out of annual growth in productivity, as measured by the average value per hour worked across the whole economy. However, it now appears that the UK has resumed on a pattern much more similar to the longer-term period prior to the 2008 crisis. The chart below illustrates the trends.

Figure 3.2: Average output per hour worked, whole UK economy (2012Q1 = 100.0)



Source: ONS

- 2.13 Of course, at the time of writing this report there is increasing uncertainty and concern about the potential impact on the UK economy of the country's expected imminent departure from the European Union and the European Single Market. Linked to this there has been increasing recent speculation from a variety of commentators of the increasing risk of the UK being on the brink of a new economic recession.⁵

⁵ <https://www.ft.com/content/5e12351e-baaf-11e9-96bd-8e884d3ea203>

3 Methodology

3.1 This study involved three principal stages:

- New primary research in the form of a survey targeting just over 500 UK businesses;
- Assessment of the mechanisms through which connectivity enables business competitiveness and productivity gains;
- Estimation of benefits for workers, individual businesses, sectors and the UK as a whole.

3.2 One key difference compared to the 2014 study is that the coverage is extended to include all UK businesses, including SMEs. However, micro-businesses (i.e. those with 9 or fewer employees) were not included in the coverage of the survey or estimation of benefits.

Business survey

3.3 A total of 504 IT decision-makers in UK businesses were surveyed by YouGov using a questionnaire designed by O2 and its consultant advisers. Survey fieldwork took place between 14th June and 4th July 2019. Interviewees were asked questions regarding the relationship between business efficiency and workforce connectivity. Interviewees were also asked questions about their businesses approach to investing in connectivity, and the potential scale of productivity gains from further investment in connectivity. They were also asked about the potential for cost savings and revenue increases from enhanced levels of connectivity.

3.4 To ensure a level of continuity with the 2014 *Smarter Working Britain* report, the survey asked interviewees to categorise effects and gains from connectivity among their workforces in a variety of locations: i.e. home, client premises, partner premises and other remote locations. Questions were also asked concerning groupings of workers likely to have similar locational requirements. For example, those groups currently spending most time working from their desk (termed 'Desk Huggers' in the 2014 study), those more likely to be mobile (termed 'Desk Hoppers') and those considered to be 'Mobile Task Workers'.

3.5 The distribution of survey responses achieved by company size was:

- Small businesses (10-49 employees): 43%
- Medium businesses (50-249 employees): 22%
- Large businesses (250+ employees): 24%.

3.6 Responses were also collected from 14 sector-based groupings including Telecoms/Media/Technology (17%), Business services (16%) and Manufacturing (13%).

Connectivity and workforce efficiency

3.7 The logic model that underpins the research is that the use by workers and businesses of a range of modern technologies and connected devices can achieve uplifts to business performance by increasing average labour productivity and effectiveness. The principal mechanisms through which this improvement is expected to operate – which were identified in the original *Smarter Working Britain* report – are:

- **Working from home.** Enhanced connectivity makes it easier for workers to work from home, either on a part time or full-time basis. This in turn can generate significant productivity benefits through saved time from commuting, a portion of which could be utilised for work-related activities. An increase in the proportion of workers working from home (for at least some of the time) also offers opportunities for businesses to introduce or expand 'hot-desking' and thereby potentially economise on the scale of office workspace they need.
- **Meeting effectiveness.** Enhanced connectivity can make external meetings more effective by enabling access to important business information in real time during meetings. This can deliver benefits through more successful outcomes, but also by reducing the need for follow-up meetings, with consequent reductions in time-spent and travel costs.
- **Client contact.** Enhanced connectivity can help increase the quality and effectiveness of time spent with clients, leading to improved client satisfaction and responsiveness.

- **Task efficiency.** After certain meetings or visits, employees may need to upload data. Enhanced connectivity can enable the completion of such tasks in remote locations in real time, for example during or immediately following meetings. This can result in reduced travel time (i.e. if a return to the office to upload data is circumvented). The ability to upload data immediately may also increase the volume and accuracy of business data that is uploaded.
 - **Remote working.** Enhanced connectivity can enable increased productivity when workers visit other locations, such as when visiting construction sites, remote infrastructure, or when touching down at public venues such as coffee shops or while using public transport.
- 3.8 Working from home is becoming a notable feature of the UK labour market. In tandem, there is also a steady increase in the numbers of workers in the UK who are working remotely.
- 3.9 For example, according to data from the Office for National Statistics (ONS) as of March 2017 there were approximately 4.56 million workers in the UK who work predominantly from home or use their home as a base, representing over 14% of the overall UK workforce.⁶ Moreover, the data suggests that the number of workers in the UK working from home or using their home as a base is increasing by around 4% per annum.

“The number of workers in the UK working from home or using their home as a base is increasing by around 4% per annum”

- 3.10 When the definition is expanded to include workers operating from home (or otherwise remotely) at least 1 day per week, the proportion increases to just over 30% of the UK workforce.
- 3.11 Technological innovation is also making it easier for workers to work more flexibly and remotely. Developments such as super-fast broadband, cloud computing and the ubiquity of tablets and smartphones mean that it is easier for staff to operate efficiently whilst working where, when and how they prefer. These trends will be further boosted by the imminent arrival of the UK’s fifth generation (5G) mobile network.

Estimation of benefits and gains

- 3.12 The starting point for the estimation of potential business benefits of connectivity is to estimate:
- The average number of hours worked and the average GVA generated per hour worked for employees of UK businesses, based on evidence from ONS business survey datasets (in particular, the ONS Annual Business Survey and the ONS Annual Survey of Hours and Earnings).
 - Estimates are also made of variations from the overall average output per hour among employees working for employers of different sizes (small, medium and larger businesses) and by employees working for businesses operating in the different sectors of the UK economy.
 - Evidence from the business survey was then used to estimate the potential amount of time saved and the increase in efficiency of hours worked through use of technology and devices that enhance connectivity. These responses were disaggregated by size of business and by industrial sector. From use of this data a series of estimates were yielded of average per worker gains from connectivity for workers in businesses or different size categories and industries.
 - These estimates were then harnessed with the data sourced from ONS business datasets to yield economy-wide estimates of productivity gains linked to enhanced connectivity.
- 3.13 More details on the method used to estimate gains and the specific ONS data sets that are utilised as sources of data or assumptions are highlighted in the chapters that follow.

⁶ Source: ONS Labour Force Survey, March 2019

4 Connectivity benefits: national findings

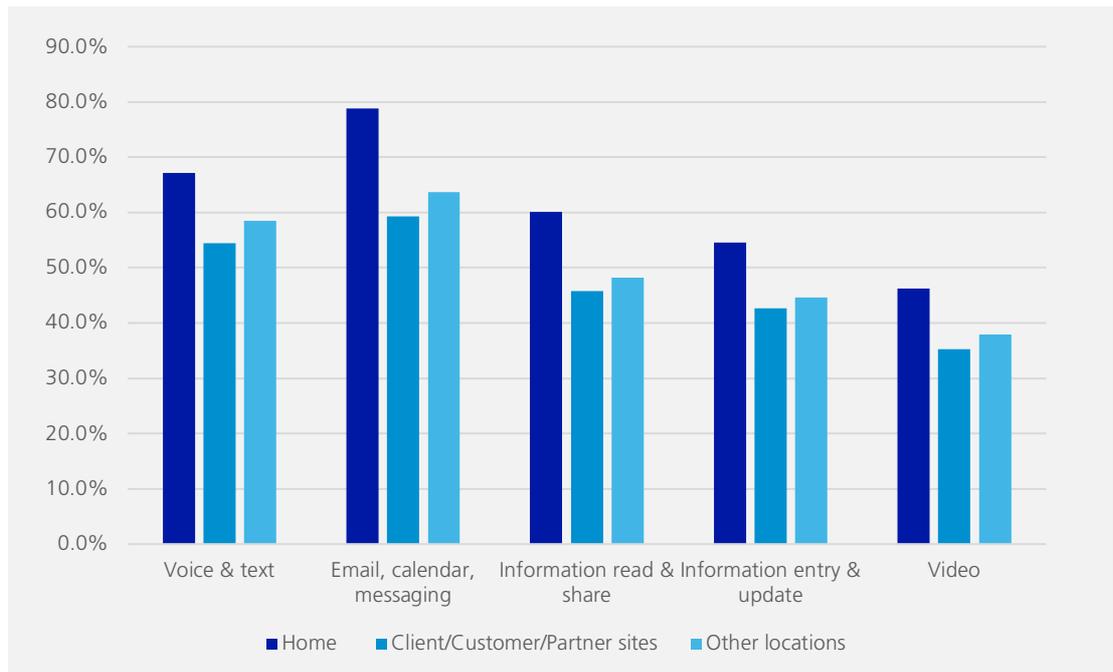
- 4.1 This chapter presents some of the results of the survey of 500 UK businesses undertaken by YouGov that explores aspects of business connectivity and the inter-relationship between connectivity and business performance, particularly in terms of the potential for productivity gains, cost savings and/or revenue growth.
- 4.2 The chapter also presents the results of the current contribution of connectivity to national economic output (GVA). These estimates have been produced by Development Economics through a bespoke model that harnesses both data from various ONS datasets plus new insights gleaned from the YouGov business survey results.

Current levels of connectivity

- 4.3 One of the early questions posed by the survey concerned current levels of utilisation by workforces of various connectivity tools. In particular, the survey asked businesses about the proportion of their workforces that have access to the following types of tools:
- Voice and text communications
 - Email, calendar and instant messaging
 - Information read and share
 - Information entry and update
 - Video communications
- 4.4 The survey respondents were asked about the proportion of their workforce that have full access to these connectivity tools in three situations where employees were working somewhere other than their employer's premises, viz:
- when working at home (whether routinely or occasionally); and/or
 - when visiting client, customer or partner sites; and/or
 - when in other locations – such as when travelling, when 'touching down' in public locations such as coffee shops, at railway stations or on trains, etc., or when working at remote sites or locations (such as construction sites).
- 4.5 The chart below provides the overall responses from the survey. Overall, the survey results indicate that the highest level of full access connectivity – averaging 61.4% across the 5 types of tools – was the home location. This was followed by 'other locations' (average full access: 50.6% of workforce) and client/customer/partner sites (average full access: 47.5% of locations).

“The highest level of full access connectivity ... was the home location”

Figure 5.1: Proportion of workers having full access to given tools from particular locations



Source: YouGov Survey of 504 UK businesses, June-July 2019

- 4.6 The chart also shows that of the various types of tools, the ones for which employees working away from the main office most frequently have full access to are:
- Email, calendar and instant messaging (average: 67.3% full access across the three location types)
 - Voice and text communications (average: 60.0% full access)
- 4.7 The tool that workers working away from the main office had least access to was video communications (average of 39.8% across the three location types).
- 4.8 Compared to the results of the survey undertaken for the 2014 report, the latest survey results show that a much higher proportion of workers now have access to at least two types of tools when working away from the main office:
- **Information read and share:** the proportion having full access to this tool from home locations has increased from around 45% to around 60%. The proportions with full access to this tool from client sites and other locations has increased from around 25% to 45% since the 2014 survey was undertaken.
 - **Video communications:** the proportions having full access to video communications from client sites and other locations has increased from around 25% to 35% since 2014.
- 4.9 However, when making these comparisons it is important to note that while the 2014 survey focused on large businesses, the latest (2019) survey expanded coverage to small and medium-sized businesses. The increase in access by employees of large firms between 2014 and 2019 has increased to a greater extent: for example, the proportion of employees with full access to video communications from customer/client/partner sites increased from around 25% in 2014 to nearly 60% by 2019.

Importance of connectivity for businesses

- 4.10 The businesses were also asked a series of questions about their company's approach to innovation, communications and other relevant considerations. This sub-section sets out some of the responses as they provide useful context against which some of the later quantified estimates of effects of connectivity can be understood.

Approach to digital innovation

- 4.11 When asked about their company's attitude to digital innovation, overall 19% said that their business was a digital innovator, while 32% said they were early adopters. On the other hand, 37% said that they were in the late majority of adopters, while 7% said that their businesses were laggards.

- 4.12 This pattern of responses differed significantly by company size, with somewhat higher proportions of larger businesses stating that they were innovators or early adopters while a higher proportion of small and medium sized businesses conceded that they were either late adopters or laggards with respect to digital innovation. For example, while 17% of smaller businesses (10-49 employees) said they were digital innovators, 27% of those with 250-499 employees said this.

Importance of connectivity for customer satisfaction

- 4.13 When asked whether digital connectivity was critical to achieving high levels of customer satisfaction, 77% agreed, with 38% agreeing strongly. Generally, larger businesses were more likely to say that digital connectivity was critical compared to medium sized and (especially) small businesses.
- 4.14 When asked about if they were investigating new methods of interacting with customers via technology (e.g. through virtual reality, artificial intelligence or video) at any time, from any location, 63% agreed that they were, with 25% agreeing strongly. Again, larger businesses were much more likely to say that this was being investigated compared to small businesses with 85% of larger companies investigating compared to 47% of smaller companies.
- 4.15 Moreover, companies that considered themselves to be innovators and early adopters were nearly twice as likely to say that these new types of tools were currently being investigated compared to late adopters and laggards.
- 4.16 When asked if their business could potentially serve or respond to customers significantly faster if their workforce had full access to the necessary information and communication tools (from any location) a total of 57% agreed, with 21% agreeing strongly. However, while 41% of small businesses agreed, nearly double the proportion (81%) of larger businesses did so, exemplifying the tendency for higher levels of recognition regarding the perceived importance of digital technology among larger businesses in the survey sample compared to smaller firms.
- 4.17 When asked if they could significantly improve customers' satisfaction levels if their workforce had full access to necessary information and communication tools (from any location) a total of 56% agreed, with 20% agreeing strongly.

Importance of connectivity for workforce engagement

- 4.18 When asked whether digital connectivity was critical to achieving high levels of employee engagement 67% agreed, with 28% agreeing strongly. However, while 57% of small businesses agreed, the proportion of larger businesses (500+ employees) that agreed with this was over 80%.
- 4.19 Moreover, 54% of all businesses surveyed agreed that their employee's satisfaction and engagement levels would increase significantly if they had full access to the right information and communication tools.
- 4.20 When asked if their employees were likely to be significantly more productive if they had full access to the necessary information and communication tools (from any location), a total of 60% agreed, with 21% agreeing strongly. The range of agreement to this question increased by company size (e.g. while 47% of small businesses and 54% of medium-sized businesses agreed, the proportion of businesses with 500-2,500 employees agreeing was 85%).

Amount of time that could be saved from enhanced connectivity

- 4.21 Interviewees were asked about the potential for time savings per employee – from reduced amounts of time needed to travel to meetings – if their employees could have full access to the necessary information and communication tools (from any location), in order to communicate with their suppliers, partners, customers or colleagues.
- 4.22 In terms of weekly time savings, the overall average (including from those who said that no time savings were likely to be achieved) was 3.14 hours per employee per week. However, somewhat above average responses (ie, over 4 hours per employee per week) were provided by interviewees whose firms operated in sectors such as Construction and the Utilities.
- 4.23 It is also notable that the average expected time savings were significantly greater for larger businesses (~4.9 hours per employee per week) compared to small businesses (~2.2 hours) and medium sized businesses (~2.8 hours).

“Average expected time savings were significantly greater for larger businesses”

Importance of connectivity for integration with suppliers and partners

- 4.24 A total of 81% of respondents agreed that relationships with suppliers and partners was critical to business success.
- 4.25 When asked whether digital connectivity was critical to achieving high levels of integration with suppliers and partners 64% agreed, with 21% agreeing strongly. There was a slightly lower than average response from small businesses to this question (54% agreed) while among larger businesses the response was greater than average (e.g. 86% of firms with a workforce between 500 and 2,500 agreed).
- 4.26 When asked if they were exploring new technologies to enable collaboration with suppliers (e.g. through virtual reality, artificial intelligence etc.) a total of 55% agreed, with 19% agreeing strongly. Once again it was the larger businesses that were significantly more likely to say they were actively exploring this area, with 32% of larger businesses agreeing strongly compared to 7% of smaller businesses.
- 4.27 Also, when asked if the value that suppliers or partners deliver to their business would increase significantly if their workforce had full access to information they needed (from any location), a total of 53% agreed, with 16% agreeing strongly.

Potential for increased revenues from enhanced connectivity

- 4.28 Interviewees were asked about the potential for the generation of additional annual business revenues if their employees could have full access to the necessary information and communication tools in order to communicate with their customers, employees or suppliers.
- 4.29 In terms of the estimated average additional business revenues linked to enhance workforce connectivity from any location, the mean proportionate increase in revenues stated by respondents was 13.7%. This average takes into account the nearly 30% who did not foresee any potential for revenue increases from enhanced connectivity.
- 4.30 However, as with other questions the average response varied significantly by company size:
- For small businesses the average response was 9.5%
 - For medium-sized businesses it was 12.8%
 - For businesses with 250-499 employees it was 23.1%
 - For businesses with 500-2,500 employees it was 19.3%

Potential for cost savings from enhanced connectivity

- 4.31 Finally, respondents were asked about the potential scope for operational cost savings if their employees could have full access to the necessary information and communication tools in order to communicate with their customers, employees or suppliers.
- 4.32 In terms of the estimated average annual cost savings, the mean proportionate savings in in annual operating costs was estimated by respondents to be 11.6%. This average takes into account the 29% of businesses who did not foresee any potential for cost savings from enhanced connectivity.
- 4.33 Significantly above-average potential for savings was reported by firms in certain sectors, such as Utilities (16.8%), Construction (15.4%) and Retailing (14.2%).
- 4.34 Once again larger businesses were more likely to report significant potential for cost savings from enhanced connectivity compared to smaller companies:
- For small businesses the average response was 7.5%
 - For medium-sized businesses it was 10.3%
 - For businesses with 250-499 employees it was 21.4%
 - For businesses with 500-2,500 employees it was 15.8%

National findings: GVA impacts

- 4.35 This sub-section provides a summary of the potential output (GVA) gains associated with enhanced connectivity from the UK private sector economy. The estimated gains have been calculated using the following:
- The evidence from the bespoke business survey, which provided data on the estimated amount of average time that workers could save from enhanced connectivity.
 - ONS data on the average amount of time spent per week working by employees across each of the different UK industries.
 - Analysis undertaken by Development Economics (using various ONS datasets) which yielded estimates for hourly productivity averages for workers of different sized companies operating across the various sectors of the UK business economy.
- 4.36 The potential for companies to make additional efficiency gains from greater connectivity is linked to:
- (1) **Time savings from reduced commuting and/or business travel.** As already indicated, home working creates considerable potential to reduce time spent commuting and a portion of the time saved is potentially available for work related tasks. In addition, increased effectiveness of meetings at client or collaborator sites can reduce the need for follow-up visits to those locations.
 - (2) **More effective use of working time.** Improved access to business data during external meetings or when operating from home or in remote locations is likely to increase the amount of effectiveness of meetings and also to increase both the volume and value of work that can be undertaken when employees are operating away from their usual places of work.
- 4.37 As an illustration, firms in the survey that are operating in the Business services sector reported that they anticipated average efficiency gains of about 3.1% per employee if their workers could have full access to the necessary information and communication tools (from any location) in order to communicate with their suppliers, partners, customers or their colleagues.
- 4.38 This survey result was then harnessed with data originating from the ONS that identified:
- The overall size of the UK workforce employed by firms operating in the Business services sector among businesses in the three size bands (i.e. the number of employees working for, respectively, small businesses, medium-sized businesses and larger businesses)
 - The total number of hours worked and the estimated total value of production in the Business services sector (and, therefore, an estimate of the average value of GVA produced per hour by employees) working for businesses in that sector in each size band
 - This resulted in an estimate of the aggregate amount of GVA by Business services firms in each of the three size bands that could be saved by this sector if full access to information tools was extended across the sectoral workforce
 - This process was then repeated for the 17 other business sectors in the UK economy.^{7 8}
- 4.39 Derived from this approach, the table below provides a breakdown of the estimated value of the boost to national GVA that could be delivered if the UK business workforce had full access to tools that unblock efficiency gains linked to connectivity. The results are disaggregated by business size band using standard ONS definitions, i.e.⁹
- Small businesses: 10-49 employees
 - Medium-sized businesses: 50-249 employees
 - Large businesses: 250 or more employees

⁷ Note: because of gaps in data for the Financial services sector it was necessary to make a number of additional assumptions to estimate potential gains in this sector. For example, it was assumed that current per employee hourly productivity in Financial services sector is similar to that experienced by the Professional services sector.

⁸ The assessment covered the Education and Health services sectors of the economy. However, the data used for these sectors excluded organisations and workforces that are within the public sector.

⁹ No estimates were produced for micro-businesses (i.e. those with 0-9 employees). This is because the YouGov business survey did not target UK businesses in this size category.

Table 5.1: Estimated potential GVA gains from enhanced connectivity

Business size band	Potential GVA gains (£ millions)	% of total
Small	7,580	22.2%
Medium	7,096	20.8%
Large	19,425	57.0%
UK total (excluding micro)	34,100	100.0%

Source: Development Economics estimates based on YouGov business survey responses

- 4.40 Overall, based on survey responses and ONS data, we estimate that UK businesses could generate direct GVA gains worth a total of £34.1 billion (£34,100 million) from efficiency gains linked to enhanced connectivity. The largest share of these gains (£19.425 billion, 57% of the total) stand to be delivered by the UK's larger businesses, but significant gains could also be delivered by small and medium sized businesses (SMEs) amounting to £14.675 billion.
- 4.41 The equivalent figure from the 2014 report was an estimated £30.0 billion GVA gain. However, the previous report focused on large businesses only, so the equivalent figure from this updated review is the £19.425 billion figure in the table above.

National findings: scope for cost savings

- 4.42 Businesses were also asked in the survey about the potential to achieve cost savings from enhanced connectivity. The types of savings linked to full access to tools and technologies that enable enhanced connectivity could include:
- Savings linked to reduced need for office and other commercial floorspace: e.g. if a greater proportion of a firm's workforce could transition to working from home or hot-desking;
 - Savings from reduced travel costs to meetings (e.g. saved staff time and travel expenses) or from a reduced amount of time needed to follow-up tasks after meetings, such as inputting data;
 - Savings linked to a greater proportion of work tasks being completed effectively;
 - Reduced incidence of defective goods and services;
 - Any other production cost efficiency, such as more efficient procurement.
- 4.43 Business survey responses – when combined with ONS sector-based data on aggregate business operating costs, disaggregated by business size band – yielded the following estimates for potential business cost savings that could be generated if workforces had full access to connectivity enhancing tools and technologies.

Table 5.2: Estimated potential for cost savings from enhanced connectivity

Business size band	Potential cost savings (£ millions)	% of total
Small	31,754	17.1%
Medium	37,968	20.5%
Large	115,682	62.4%
UK total (excluding micro)	185,403	100.0%

Source: Development Economics estimates based on YouGov survey responses

- 4.44 Overall, UK businesses could generate operating cost savings worth a total of £185.4 billion from efficiency gains linked to enhanced connectivity. The largest share of these gains (£115.7 billion, 62% of the total) are associated with potential savings that could be achieved by the UK's larger businesses. However, significant gains amounting to £69.7 billion (38% of the overall total) could also be captured by SMEs if full access to connectivity was extended to the workforces of smaller and medium sized businesses.
- 4.45 The 2014 report did not explore the potential for business cost savings in this way so these results cannot be compared to those in the previous study.

- 4.46 It is important to note that cost savings achieved by one business is likely to result in reduced revenues experienced by other UK-based companies (i.e. the suppliers of goods and services for which cost savings are achieved). On that basis, it is not appropriate to add the potential cost savings to the estimates for enhanced GVA presented earlier in this chapter.

National findings: scope for increased revenues

- 4.47 Participants in the business survey were also asked about the potential for enhanced connectivity to generate greater amounts of business revenue for their businesses. The potential for higher levels of revenue when workers have full access to tools and technologies that enable enhanced connectivity could, for example, be linked to:
- Enhanced levels of client/customer satisfaction leading to increased orders of existing products or services already sold; and/or
 - Expansion of the range of products or services sold to existing customers; and/or
 - More effective meetings leading to enhanced rates of conversion of client prospects into actual customers.
- 4.48 Estimates for the potential for additional business revenue was combined with ONS sector-based data on aggregate business turnover by business size band and sector. This approach led to the following estimates for potential additional business revenues that could be unlocked if UK business workforces had full access to connectivity enhancing tools and technologies.

Table 5.3: Estimated potential for additional revenues from enhanced connectivity

Business size band	Potential for increased revenue (£ millions)	% of total
Small	34,594	19.7%
Medium	39,922	22.8%
Large	100,920	57.5%
UK total (excluding micro)	175,436	100.0%

Source: Development Economics estimates based on YouGov survey responses

- 4.49 Overall, based on the survey responses it is possible that UK businesses could generate additional revenues totalling around £175 billion if their workforces had full access to tools and technologies that deliver enhanced connectivity.
- 4.50 The largest portion of these gains (nearly £101 billion, 58% of the total) is associated with the UK's larger businesses. However, a significant boost to revenue amounting to nearly £75 billion (nearly 42% of the overall total) could also be generated by UK SMEs if their workforces also had full access to enhanced connectivity.
- 4.51 It is important to note that potential revenue increases experienced by one business could result in a reduction of turnover by other UK-based companies that are in competition. On that basis, it is not valid to add the potential cost savings to the estimates for enhanced GVA presented earlier in this chapter.

Also, because the 2014 report did not explore the potential for possible revenue increases these results cannot be compared to those in the previous study.

5 Connectivity benefits: sectoral analysis

- 5.1 In the previous chapter the national results were presented for expected future gains experienced by UK businesses in aggregate in terms of enhanced revenues and reduced operational costs. The economy-wide benefits measured by expected future gains in economic output (GVA) were also set out.
- 5.2 While these various benefits were disaggregated in the previous chapter by business size band, it is also useful to present the results by business sector, which is the purpose of this chapter.

Sector-based findings: GVA impacts

- 5.3 The table below sets out the sector-based breakdown of the expected £34.1 billion boost to national economic output that could be achieved by enhanced business connectivity (i.e. of business workforces had full access to connectivity-enhancing tools). As a reminder, the estimated impacts focus on SMEs and larger businesses: the potential impacts on the UK's micro-business population (i.e. those with fewer than 10 employees) is not included in the assessment.¹⁰

Table 6.1: Estimated potential GVA gains from enhanced connectivity

Sector	Total GVA (£ millions)	% of total
Agriculture etc.	12	0.0%
Minerals	157	0.5%
Manufacturing	4,875	14.3%
Electricity, gas	949	2.8%
Water & waste	724	2.1%
Construction	2,912	8.5%
Wholesale & retail distribution	4,980	14.6%
Transport & storage	2,489	7.3%
Accommodation & food services	1,449	4.2%
Information & communication	3,906	11.5%
Property services	833	2.4%
Financial services	1,642	4.8%
Professional services	3,714	10.9%
Business support services	3,074	9.0%
Education (part)	449	1.3%
Health (part)	1,222	3.6%
Arts & recreation	427	1.3%
Other services	286	0.8%
Total	34,100	100.0%

Source: Development Economics estimates

- 5.4 Of the overall potential boost to national GVA, it is anticipated that over half (51.2%) would be generated by just four business sectors:
- **Wholesale & retail distribution:** with a potential annual boost of £4.98 billion of GVA, 14.6% of the overall total
 - **Manufacturing:** a potential annual increase of £4.88 billion (14.3%)
 - **Information & communications services:** £3.91 billion p.a. (11.5%)
 - **Professional services:** £3.71 billion (10.9%)

¹⁰ It should also be noted that table estimates the private sector components only of two sectors: education and health (i.e. the potential impact of enhanced connectivity on public sector provision of health and education services is excluded from the assessment).

- 5.5 Three other sectors that would stand to receive a significant boost are Business support services (£3.07 billion), Construction (£2.91 billion) and Transportation (£2.49 billion). When combined with the four sectors listed above, the 7 sectors together account for over three-quarters (76.1% of the potential boost to economic output that could be delivered if the UK's business workforce was provided with full access to connectivity enhancing tools.

Sector-based findings: scope for cost savings

- 5.6 The table below provides a similar breakdown for business cost savings that could be unlocked if the workforce was given full access to connectivity enhancing tools.

Table 6.2: Estimated potential for cost savings from enhanced connectivity

Sector	Potential total cost savings (£ millions)	% of total
Agriculture etc.	36	0.0%
Minerals	291	0.2%
Manufacturing	38,412	20.7%
Electricity, gas	14,059	7.6%
Water & waste	3,052	1.6%
Construction	18,679	10.1%
Wholesale & retail distribution	36,693	19.8%
Transport & storage	6,988	3.8%
Accommodation & food services	2,716	1.5%
Information & communication	14,606	7.9%
Property services	12,039	6.5%
Financial services	1,980	1.1%
Professional services	12,945	7.0%
Business support services	11,940	6.4%
Education (part)	1,833	1.0%
Health (part)	2,071	1.1%
Arts & recreation	6,203	3.3%
Other services	858	0.5%
Total	185,403	100.0%

Source: Development Economics estimates

- 5.7 The two leading sectors for potential savings are:
- Manufacturing (£38.4 billion, 20.7% of the total); and
 - Wholesale & retail distribution (£36.7 billion, 19.8%).
- 5.8 These two sectors stand out in part because of the pattern of the business survey results but also because these sectors have particularly large procurement expenditures. Hence, there is additional scope for savings from more efficient and effective performance by procurement managers working for firms operating in these two business sectors.
- 5.9 Other notable sectoral sources of potential savings include Construction (£18.7 billion), Information services (£14.6 billion) and Property services (£12.0 billion).

Sector-based findings: scope for increased revenues

5.10 The other dimension to business benefits is the scope for enhanced revenues from full access connectivity. The table below sets out the potential boost to UK business revenues by sector.

Table 6.3: Estimated potential for revenue increase from enhanced connectivity

Sector	Potential revenue boost (£ millions)	% of total
Agriculture etc.	40	0.0%
Minerals	535	0.3%
Manufacturing	20,152	11.5%
Electricity, gas	4,724	2.7%
Water & waste	3,604	2.1%
Construction	11,385	6.5%
Wholesale & retail distribution	27,474	15.7%
Transport & storage	9,203	5.2%
Accommodation & food services	3,651	2.1%
Information & communication	16,454	9.4%
Property services	17,470	10.0%
Financial services	17,029	9.7%
Professional services	18,785	10.7%
Business support services	15,549	8.9%
Education (part)	2,267	1.3%
Health (part)	4,074	2.3%
Arts & recreation	1,820	1.0%
Other services	1,218	0.7%
Total	175,436	100.0%

Source: Development Economics estimates

5.11 Of the overall potential annual revenue boost of £175.4 billion, the Distribution sector stands to gain the most, with a potential gain of £27.5 billion per annum (15.7% of the total). Other sectors with a large potential share of gains include:

- **Manufacturing:** potential additional annual revenues amounting to £20.2 billion (11.5%);
- **Professional services:** potential gains of £18.8 billion p.a. (10.7%);
- **Property services:** potential gains of £17.5 billion (10.0%);
- **Financial services:** potential gains of £17.0 billion (9.7%); and
- **Information & communications:** potential gains of £16.5 billion p.a. (9.4%).

6 Connectivity benefits: job role analysis

- 6.1 Another way to 'cut' the expected business benefits associated with full access to connectivity tools and technologies is with reference to the roles that employees play in terms of the nature of the work they undertake and their need to move between different locations to perform their work duties.
- 6.2 The 2014 report defined five different occupational roles within companies, as follows:
- **Desk Huggers:** are defined as individuals whose roles require them to spend at least 80% of their time at a fixed desk, whether in the office or at home. Examples include workers in many back office, call centre and administrative roles. This group has the potential to gain particular benefits from technologies which enable increased and/or more productive working from home.
 - **Office Hoppers:** are workers who typically work in the back office, including finance, IT, call centre and administrative occupations. However, they spend their hours between a number of different locations including customer, partner or other remote locations as well as the office or home.
 - **Mobile Knowledge Workers:** this category covers individuals who are working in knowledge-based roles (such as in professional services, frontline public services or are mobile field representatives). In addition, such workers may spend a high proportion of their time either at client, customer or partner sites, or other remote locations. Examples of this may include consultants, lawyers, social workers and health professionals.
 - **Mobile Customer Service Workers:** this category includes customer-facing roles in retail, leisure, hospitality, food, and transport. Examples of such roles include shop assistants, concierge & reception and customer information roles.
 - **Mobile Task Workers:** this category covers individuals that offer mobile business and customer support (e.g. maintenance & repair, inspection, deliveries, catering, security services and call-out based services) or skilled tradesmen. In addition, workers in this category spend a large proportion of their working time at client, customer, partner and other remote locations.
- 6.3 In order to maintain continuity with the 2014 research we continue to use these job-role definitions in this study. As part of the new business survey, interviewees were asked about the proportions of their workforces that correspond to each of the job role types listed above. The proportions varied to some degree by business size, and also by sector. For example, the proportion of roles by business size band and overall are set out in the table below.

Table 7.1: Worker roles in different size bands (averages)

Worker role	Small	Medium	Large	Overall
Desk hugger	58.8%	49.7%	37.3%	49.4%
Office hoppers	8.8%	9.4%	14.0%	11.0%
Mobile knowledge workers	14.5%	16.0%	18.5%	15.7%
Mobile customer service workers	8.5%	9.1%	16.7%	11.4%
Mobile task workers	9.4%	15.8%	13.6%	12.5%
Total	100.0%	100.0%	100.0%	100.0%

- 6.4 Overall, about half of all jobs are of the 'desk hugger' type, but the proportion of jobs in small businesses of this type is larger, at around 59%. Larger businesses, on the other hand, are more likely to have workers in mobile roles.
- 6.5 In this chapter we present the overall and per-worker expected gains if the UK business workforce within each of the five occupational role categories was given full access to connectivity enhancing tools.

GVA gains by job role

- 6.6 The table below sets out the expected breakdown of GVA gains from full access to connectivity, with the overall results disaggregated by worker role category.
- 6.7 Overall, of the expected gains of £34.1 billion, about £15.2 billion (45.6%) are expected to accrue to workers in desk hugger type roles. The group with the next highest level of gains are mobile knowledge workers (£5.8 billion, 17.1%).

Table 7.2: Potential GVA gains by worker type

Worker role	Aggregate GVA gains (£ millions)	% of total	Average GVA gain per worker (£)
Desk hugger	5,224	44.6%	1,359
Office hoppers	4,058	11.9%	1,953
Mobile knowledge workers	5,819	17.1%	1,711
Mobile customer service workers	4,533	13.3%	2,211
Mobile task workers	4,466	13.1%	1,477
Total	34,100	100.0%	1,567

Source: Development Economics estimates based on YouGov survey responses

- 6.8 The table also sets out in the final column the expected average gains per worker, with an overall average of £1,567 per employee. This column of results makes it clear that the smallest average gain is expected to accrue to desk hugger workers, at £1,359 per employee. These gains are largely associated with the potential for productivity gains associated with increased working from home compared to the office environment.
- 6.9 The largest gains are expected to be experienced by mobile customer service workers, at £2,211 per employee, which is 41% higher than the overall average of £1,567 per worker.

Business cost savings by job role

- 6.10 The table overleaf sets out the expected breakdown of business cost savings that could be achieved by providing the workforce with full access to tools to enable connectivity, where the overall total is disaggregated by job role type.
- 6.11 Overall, of the expected savings of £185.4 billion, about £80.6 billion (43.5%) are expected to be associated with 'desk hugger' workers. Savings accrued by mobile knowledge workers would be expected to amount to £32.0 billion (17.3%) and by mobile customer service workers £25.5 billion (13.7%).

Table 7.2: Potential cost savings by worker type

Worker role	Aggregate cost savings (£ millions)	% of total	Average savings per worker (£)
Desk hugger	80,657	43.5%	7,197
Office hoppers	22,588	12.2%	10,869
Mobile knowledge workers	32,026	17.3%	9,419
Mobile customer service workers	25,470	13.7%	12,420
Mobile task workers	24,658	13.3%	8,157
Total	185,403	100.0%	8,520

Source: Development Economics estimates based on YouGov survey responses

- 6.12 Obviously, the aggregate savings are linked to the number of workers of each type in the overall workforce. The final column of the table also provides estimates of the average savings that could be achieved by workers of each occupational type. The largest average savings are associated with mobile customer service workers (£12,420 per worker) and office hoppers (£10,869).

Revenue gains by job role

- 6.13 The table below sets out the expected breakdown of business revenue growth that could be achieved for each category of worker if the workforce was provided with full access to tools to enable connectivity.

Table 7.3: Potential revenue increases by worker type

Worker role	Aggregate revenue gains (£ millions)	% of total	Average gains per worker (£)
Desk hugger	77,801	44.3%	6,943
Office hoppers	20,948	11.9%	10,080
Mobile knowledge workers	30,025	17.1%	8,830
Mobile customer service workers	23,426	13.4%	11,423
Mobile task workers	23,231	13.2%	7,685
Total	175,436	100.0%	8,062

Source: Development Economics estimates based on YouGov survey responses

- 6.14 Overall, of the expected savings of £175.4 billion, about £77.8 billion (44.3%) is expected to be associated with 'desk hugger' workers. Gains accrued by mobile knowledge workers would be expected to amount to £30.0 billion (17.1%) and by mobile customer service workers £23.4 billion (13.4%).
- 6.15 The final column of the table also provides estimates of the average revenue gains that could be achieved by workers of each occupational type. The largest average increase is associated with mobile customer service workers (£11,423 per worker) followed by that estimated for office hoppers (£10,080).

7 Conclusions

- 7.1 This report has been commissioned to assess the current potential for productivity gains, cost savings and revenue increases that could be delivered by UK businesses if workforces were provided with full access to a range of technologies and tools that enhance communications connectivity.
- 7.2 In terms of additional productivity, the study has found that additional output gains of £34.10 billion could be generated by UK businesses if employees had full access to tools that enhance connectivity. This includes £7.58 billion that could be generated by small businesses, £7.01 billion by medium sized businesses and £19.45 billion by large businesses.

“£34.10 billion could be generated by UK businesses if employees had full access to tools that enhance connectivity”

- 7.3 The estimated boost to large business productivity (£19.45 billion) is somewhat smaller than the equivalent figure identified by the 2014 report (£30.0 billion). There are several possible reasons:
- First, it is possible that some of the businesses surveyed have now achieved some of the original boost to productivity performance when connectivity tools were first introduced. At the time of the 2014 study, while less than half of the workforce had access to most of connectivity tools when working away from the office, the proportions were typically in the range 25%-40%. By 2019, well over half of the workforce have access to these tools, with a significant percentage having had access to them for at least 5 years. It could be that the original impact in boosting worker productivity for the early adopting businesses and workers has become normalised, to the extent that this is no longer considered an aspect worth noting when asked in a survey.
 - A second related possibility is that the five types of connectivity tools considered by the 2014 report are now considered by businesses to be routine rather than new technologies. Therefore, the businesses that are using them see a more limited potential for further gains, especially among workers that have been using them for a number of years.
 - A third possible explanation is that the 2019 survey was undertaken at a time when UK business confidence is declining, and that the future estimates of additional productivity gains are being under-reported due to the influence of a more negative outlook by larger firms.
- 7.4 Nevertheless, the £34.1 billion figure for potential future productivity gains is still a very large figure. It is also worth noting that the estimated future gain on the part of small and medium-sized businesses reflects in part a lower level of awareness and enthusiasm for technology amongst many of the businesses in those size-bands. If levels of awareness and appetite for investment were higher, even larger gains could be realised.
- 7.5 As well as estimate boost to GVA, this new report has for the first time produced estimates of the potential revenue increases and business cost savings that could be generated if business workforces had full access to connectivity enhancing tools and technologies.
- Cost savings worth up to £185.4 billion were identified
 - Potential revenue gains of £175.4 billion were also identified.