Smarter Working Britain: the economic benefits of connectivity

A study for O_2

February 2014

Cebr

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Authorship and acknowledgements

This report has been produced by Cebr, an independent economics and business research consultancy established in 1992. The study was led by Shehan Mohamed, Cebr Senior Economist, with analytical and research support from Cebr Economist Chitraj Singh Channa, and insights from Douglas McWilliams, Executive Chairman. The views expressed herein are those of the authors only and are based upon independent research by them.

This study has been commissioned by O_2 and has utilised a combination of data provided through a bespoke survey as well as those available in the public domain through the Office for National Statistics (ONS) and a range of other sources.

The report does not necessarily reflect the views of O_2.

London, February 2014

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Foreword: Connectivity in business

As we enter 2014, growth and efficiency are top of the agenda in boardrooms across the UK. But as this report highlights, while our economy is starting to show tentative signs of recovery, productivity in our largest organisations is declining. The average output per hour worked is now nearly 5% lower than pre-recession levels.

O2 commissioned this Cebr study into smarter working to help understand the full impact of better connectivity on large British businesses and the public sector. Our aim is to uncover exactly how productivity benefits can be realised, and where the biggest gains can be made within specific job roles or industry sectors.

Despite many business leaders endorsing the benefits of smart, connected technology to empower the workforce, this report reveals how many are still struggling to harness the full benefits it can bring. 80% of businesses say staff are still without full remote access to key business systems which would allow them to work effectively away from the office.

To get our businesses fit for growth, we need to un-shackle our workforce from out-dated practices.

We often look to the UK's agile tech start-up community as an example of dynamic working. But if we're to reach our full potential and compete on a global stage, we need to create the same level of dynamism across every part of our economy. The staggering cost of long-term inefficiencies laid bare in this report is wake-up call for all employers.

It's time for us to work smarter – giving staff better access to information and tools that allow them to work as they would in the office, no matter where they are; be that nurses or social workers visiting people in local communities; engineers or architects on a construction site of a new building; or a sales force on the road visiting customers across the country.

By unlocking this opportunity we can improve efficiencies and concentrate on investing in what matters most: getting our organisations and our economy back on the road to growth.

Ben Dowd
Business Director – Telefónica UK

Executive Summary

This report by the Centre for Economics and Business Research (Cebr) evaluates the business outcomes and economic benefits generated by better connectivity in large UK businesses and the public sector[1]. By better connectivity, we mean gaining full access to business information systems and software applications from any location at any time of day. This enables employees to acquire information and expertise in real-time, unlocking productivity and customer service benefits. Mobile workers can get information on-the-move so there is less need to return to the office for uploading or downloading data. Information and communication tools can drive more effective meetings at customers' and partners' sites as information becomes instantly available and work from remote locations can be undertaken more efficiently. Our research demonstrates that increasing connectivity at the point of need can save organisations both time and money in the current economic climate.

Macroeconomic context

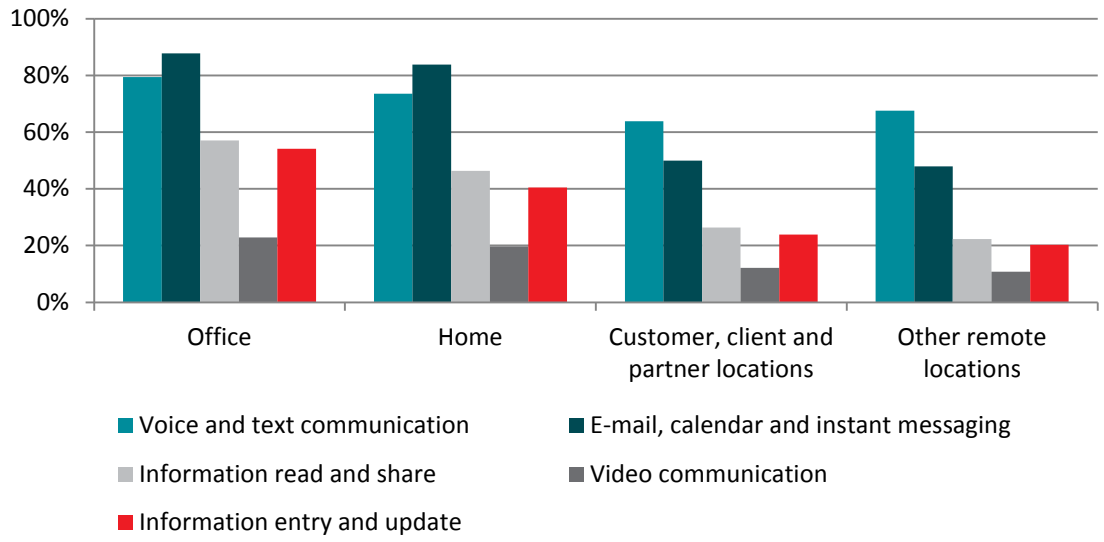
- In 2014, the UK economy is on course for the strongest economic growth recorded for seven years. Increased business confidence is expected to support hiring intentions and elevate business investments creating new jobs in the economy.
- Less slack in the labour market poses challenges for organisations in retaining and driving productivity amongst their workforce. Labour scarcity and skills shortages may have significant implications for economic growth unless productivity gains can be made by those in work.
- Information and Communication Technology (ICT) has historically played a significant part in unlocking worker productivity. Increases in ICT-related worker productivity recorded in the office-based sector have been estimated at 0.7% per year – responsible for 35% of the total rise in productivity between 2000 and 2012.
- As this report highlights, further economic gains are possible from the exploitation of next generation of applications that use smart devices, cloud computing and 4G from home, work and mobile locations.

National findings

- Current levels of connectivity are highest in the office and home, where access to information and communication tools is almost on par with each other. Connectivity in customer, client and partner sites, and other remote locations (e.g. airport lounges, coffee shops, building or construction sites etc.) is significantly lower as indicated in Figure 1.
- Less than 30% of teams have full access to 'read and share' (i.e. document sharing and editing collaboration tools) and 'entry and update' (e.g. bespoke apps for inputting and retrieving data from business systems) from customer/client and other remote locations.
- 85% of management in large organisations believed that there were tangible economic benefits to be gained from better connectivity. Improving connectivity from all locations can lead to productivity gains that increase working time by 178 hours per year[2] – an 8.9% increase. This translates into an average increase in annual Gross Value Added[3] (GVA) per worker of £1,895.

1 Large companies are defined as those which employ more than 250 employees.
2 The average worker in a 250+ employee organisations works 2,005 hours per year.
3 GVA is defined as the net value contributed to the economy by a company, industry or other economic entity. This includes compensation of employees, company profits and contribution to the Exchequer. Gross Domestic Product (GDP) is GVA plus net taxes on products (including value added taxes).

Figure 1 Proportion of middle-managers reporting that their team have full access to a given tool from a given location



Our findings show total annual economic benefits of £30 billion - equivalent to a 3.9% increase in annual productivity – nearly six times higher than the average annual productivity increase driven by ICT between 2000 and 2012. According to Cebr forecasts, the UK economy is expected to grow by 2.8% in 2014, which implies that better connectivity could boost economic growth by around 40%[4]. The gains in productivity are realised through:

- Increased effectiveness in external meetings through accessing business systems and information at point of need – worth £9.3 billion.
- More efficient working as tasks can be completed instantly from mobile locations rather than employees having to return to base to re-key information – adding £5.9 billion.
- Working from home (£4.1 billion) and remote working (£1.9 billion).
- Better access to business applications and systems when meeting customers or when engaging with citizens. This generates £8.8 billion from employees not having to leave customer sites at least once a week.

In addition to productivity gains, our findings show improvements in customer service KPIs such as customer satisfaction, speed of response, meeting SLAs to improve by an average of 24%. Leading to potential sales growth of 43% as trust, loyalty and market share increases.

Other key findings of the report

Cebr also quantified the productivity benefits to different job roles defined in terms of the nature of the work undertaken and requirements for individuals to move form location to location. The top-line findings were that 'Office Hoppers' and 'Mobile Knowledge Workers' could see a 235+ hour increase in productive working time per year. 'Mobile Task Workers' could see gains of up to 73 hours per year whilst 'Desk Huggers' could save 15 hours per year from being able to work from home. **Section 5 of the report provides a summary of the findings by job role.**

4 This uplift to economic growth is likely to be staggered over a number of years as there are gradual improvements in connectivity amongst organisations.

Finally, the benefits of improved connectivity were looked at according to five broad industry categories. This analysis shows that the biggest productivity gains resulting from better remote access to information and communication tools are expected within the Information, financial, professional and support services sectors, worth a potential £11.3 billion to the economy. Retail, Food and Transport (£8.8 billion) and the public health, education, defence, social and admin services (£7.2 billion) also stand to make significant productivity gains. **Section 6 of the report provides a summary of the findings by broad sector category.**

1 Introduction and background

Cebr were commissioned by O_2 to undertake a study into the economic benefits of improving connectivity amongst large UK businesses and public sector organisations. The study evaluated the productivity and customer service benefits created from gaining full access to key information and communication tools used in business.

Five economic benefit mechanisms were studied; working from home, meeting effectiveness, customer contact, task efficiencies and remote working. The tools examined in this study include software and devices which enable voice/text/video communication and e-mail, calendar and instant messaging software. Applications which allow remote access to business information systems, by enabling information read and share[5] and information entry and update[6] were also evaluated.

This is the first ever study looking into the macroeconomic impact of improving business connectivity through a host of technological improvements. This includes the use of software applications that rely on mobile and cloud computing power from the home, customer or partner sites and other remote locations.

Cebr have previously undertaken impact analysis of information and communication technologies (ICT) on worker productivity. Our analysis showed that worker productivity has increased by an average of 0.3% per year between 1970 and 2012 due to adoption of ICT in the workplace[7] – 21% of total average annual productivity growth. This captures the effects of a range of technologies that have been developed since the 1970s including e-mail, desktop, mobile phones, internet, 3G, and smartphone technologies. Since 2000, this contribution has increased to 35% - contributing 0.7% per year in productivity growth between 2000 and 2012.

There have also been several studies which look at the impact of mobile technology in particular. A study by the Groupe Speciale Mobile Association (GSMA) – a body that represents 800 of the world's mobile operators – places the productivity benefits to the European economy at €125 billion (£103 billion and equivalent to 1.0% boost to GDP) per year. The report states that the 'use of mobile networks to bring connectivity is evolving beyond basic provision of voice and data services through high speed broadband internet access to now include connectivity through smart devices, connected cars and buildings'[8].

In 2005, Cebr undertook a report on the benefits of mobile working and found the productivity benefits to be £8.9 billion per year through workers being able to undertake activities outside of the office[9]. Since then, the suite of technologies has changed greatly with the introduction of cloud computing, 3G, 4G, smartphones, tablets and mobile applications. Today's productivity benefits are likely to far outweigh those from a decade ago – this study attempts to quantify the impacts of better business connectivity with today's generation of ICT technologies.

5 This category includes collaboration tools, real-time document sharing and editing.
6 This category includes bespoke business applications for accessing and inputting data from business systems which can be used from remote locations.
7 O_2 / Cebr Individual Productivity Index – how ICT drives the UK office economy (October 2013)
8 GSMA/Boston Consulting Group Mobile Economy Europe (2013)
9 O_2 / Cebr 'I can't imagine working without my mobile' – an analysis of how mobile phone use contributes to business productivity (December 2005).

1.1 Main objectives of the study

The main objectives of this study are to:-

- Quantify productivity benefits of better connectivity amongst large organisations
- Quantify customer service benefits of better connectivity amongst large organisations
- Quantify impacts for specific roles within a company for a variety of roles with different skills and locational requirements.
- Quantify the industry-specific benefits for; i) production & construction, ii) retail, food & transport, iii) information, financial, professional and support services and iv) public health, education, defence, social and administrative services.

1.2 Structure of the report

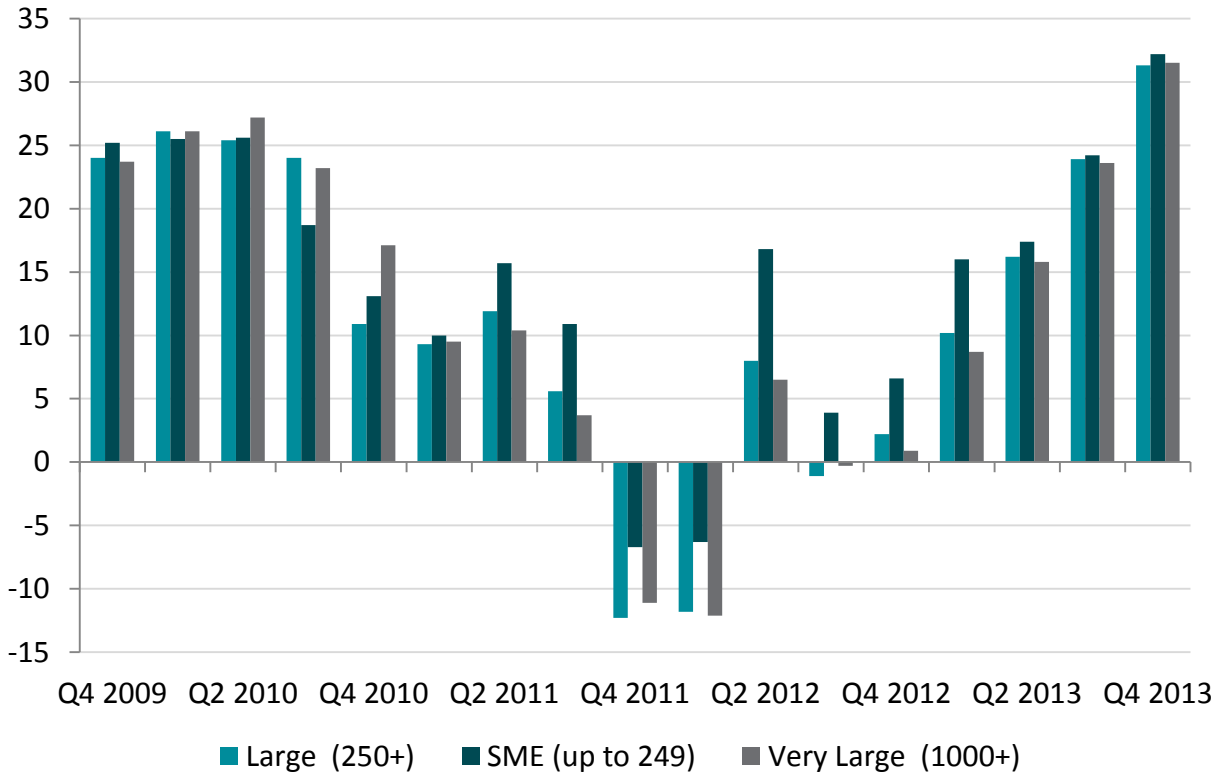
The structure of this report is set out as follows:

- Section 2 - Economist's view: this section outlines the economic context of this study, analysing current economic conditions, business confidence and trends in productivity growth in the UK economy since the 2008 recession.
- Section 3 - Methodology: this section describes our approach to estimating the potential benefits of improved connectivity to UK PLC, and translating these into economic impacts.
- Section 4 – Benefits of improved connectivity in large organisations: national findings: presents current levels of connectivity, business outcomes and economic impacts of better connectivity.
- Section 5 – Benefits of improved connectivity by job role: presents estimates of business outcomes and economic impacts of improved connectivity on individuals with different roles and locational requirements.
- Section 6 – Benefits of improved connectivity by broad sector: presents current levels of connectivity, business outcomes and economic impacts at the broad sector level.

2 Economist's view

The UK economy is growing at its fastest rate since the 2007/8 financial crisis at a year-on-year rate of 1.9% in Q4 2013. In 2014, increased business confidence is expected to boost hiring intentions and unlock further business investment. According to the ICAEW Business Confidence Monitor, confidence in the private sector is at its highest level for at least ten years or more. This also holds for organisations which employ more than 250 workers (i.e. 'large' companies) which are the focus of this study. Large organisations contribute £774bn in GVA and employ around 15.9m workers across both private and public sectors. Figure 2 illustrates the headline index for the ICAEW/Cebr Business Confidence Monitor indicators for firms of different sizes in the private sector.

Figure 2 Headline index of ICAEW/Cebr Business Confidence Monitor by firm size



Source: ICAEW Business Confidence Monitor, Cebr analysis

For companies employing more than 250 individuals, the business confidence indicator reached +31.3 in Q4 2013 compared to just +2.2 in Q4 2012. These figures are still less than the confidence levels reported by smaller companies. This is partly explained by the more uncertain global macroeconomic environment to which larger companies tend to be exposed. Subdued growth in the Eurozone and a slowdown in the Chinese economy over than next 12 months are expected to weigh on sentiment at listed global organisations. As overall economic sentiment strengthens, we expect further hiring in the economy which is likely to reduce unemployment. Indeed, the unemployment rate has eased back to 7.1% in the three months to November 2013 from 7.7% over the same period a year earlier.

For the economy as a whole, less slack in the labour market poses challenges for all organisations in retaining their skilled and productive workers, as there is an increasingly scarcer pool of talent to draw

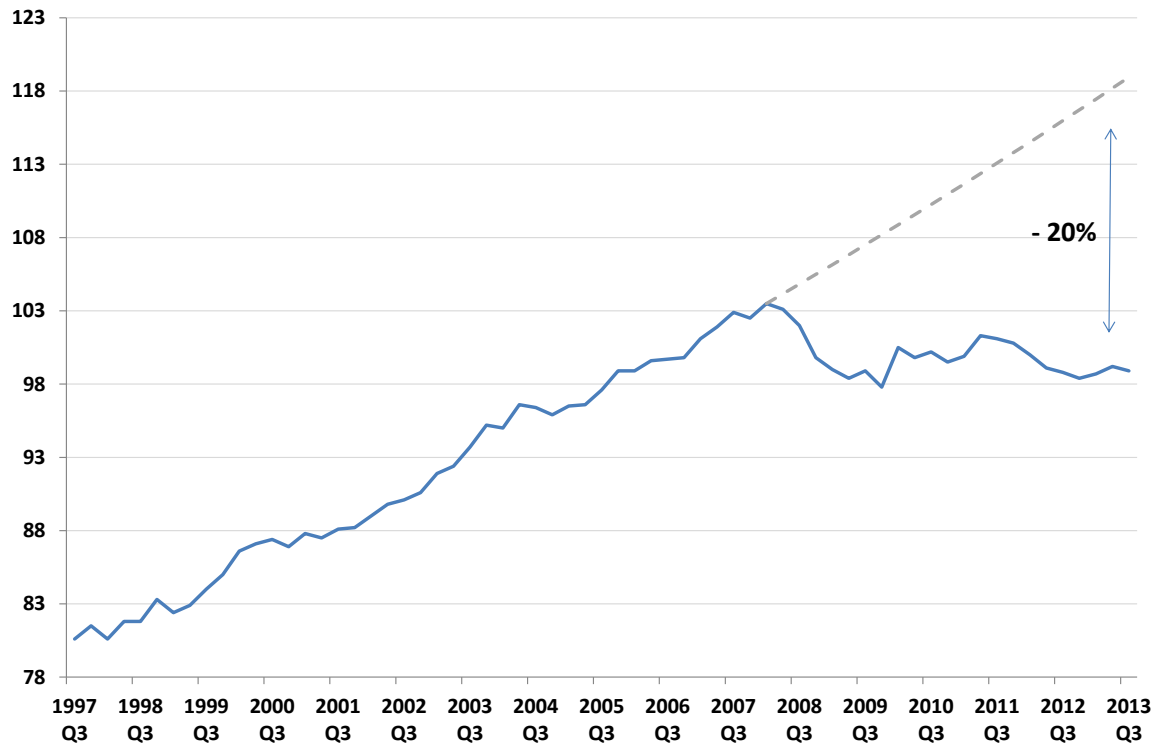
on. In 2014, Cebr forecast a further pick-up in economic growth of 2.8% compared to 1.9% in 2013 – this is likely to heighten competition for the best employees.

In the public sector, economic conditions still remain significantly weak as the Government continues to make efficiency cuts. The Government is expected to undertake a further 2.7% reduction in annual government spending between 2014 and 2020 – translating in a cumulative saving of £54bn over this period. This poses significant challenges for public sector workers who are being tasked to be more efficient whilst still maintaining desirable levels of citizen-facing services. The public sector employs 5.7m workers[10] and contributes up to £283bn[11] to the UK economy in terms of annual GVA.

The issue of labour scarcity manifests itself through challenges posed by high staff turnover and skill shortages at different levels of the organisation. According to the ICAEW Business Confidence Monitor, a net balance of 19% of large companies are reporting greater challenges due to staff turnover, whilst 14% are finding it difficult to recruit workers with the right management skills. The scarcity of skilled labour has the capacity to challenge sustainable economic growth and job creation into the future.

Taking measures which increase worker productivity and facilitate flexible working practices is likely to be important as the availability of labour starts to tighten. Average output per hour worked is 4.4% lower in Q4 2013 compared to the peak reached during the pre-2007/8 financial crisis period. Figure 3 illustrates the shortfall in productivity which businesses have been faced with since the credit crunch.

Figure 3 Average output per hour in whole of UK economy (Q1 2012=100)



Source: Office for National Statistics, Cebr analysis

10 This estimate of employment is derived from the ONS Public Sector Employment bulletin and includes jobs in central and local government, the NHS, Education, Police, HM Forces and Public Administration.
11 This estimate of GVA is based on the 'pubic administration, defence, social security, education, health and social work' categories. As such, some of the GVA contributed in this figure is generated by private sector companies working in certain sector e.g. education and health.

The average growth in output per hour worked between 1997 and 2007 was around 2.6% per year. This compares to declining average productivity growth of around -0.7% per year between 2008 and 2013. Had productivity continued to grow at the rate seen before the financial crisis, then average output per hour worked would be a full 20.3% higher than it is today.

There are two main reasons that productivity growth (in terms of output per hour worked) in the UK has been so lacklustre since the financial crisis. Firstly, most businesses in the economy have suffered a drop in demand from the customer. Many of these areas are such that once the tools of production are in place; productivity is essentially determined by demand. An example of this is a telephone network - once it is set up, productivity is almost entirely driven by demand. Secondly, a decline in productivity in the financial services sector has contributed to the depressed figures. Output per hour worked in the financial sector has fallen by 13.6% from its peak level in Q2 2008 to Q3 2013. In Government services, output per hour has fallen by 6.5% over the same period.

It is therefore important for the whole economy that productivity growth be achieved in order to sustain growth and job creation. Measures to boost productivity would support output expansion, which would in turn help to increase employees' real earnings through either higher nominal wages or reduced prices for goods and services produced in the economy.

In this study, we analyse the benefits of increased connectivity amongst the 15.9 million people employed by organisations with 250+ employees across both the private and public sectors. Such increases in connectivity have the potential to translate into productivity gains for organisations; through time savings, and more effective working practices at the workplace, at home and in mobile working. This is particularly important given the changing demographics of the workplace as the UK's population continues to age. There are now 1.3 million more over 50s in employment in 2013 compared to 2004. The over 50s now make up 29% of the workforce compared to 26% in 2004.

Taking steps which ensure that the UK's labour resource is used in most fruitful and efficient manner, amidst a changing nature of the workforce will therefore be vital to securing the UK's economic recovery and addressing the squeeze on real incomes.

3 Methodology

This section of the report outlines the methodologies used to calculate economic impacts of better connectivity to UK PLC. The methodologies developed follow a three-stage approach, utilising a combination of primary research, official statistical datasets and Cebr's proprietary macroeconomic models of the UK economy. The study specifically focussed on productivity and customer service benefits to large companies and public sector organisations - defined as those hiring more than 250 employees.

Stage 1: Primary research

A total of 1,000 middle-managers in large companies and public sector organisations were interviewed through a survey conducted by Opinium, exclusively for CEBR and O_2 between 22nd November 2013 and 6th December 2013. Middle-managers were defined as any employee who indicated that they were a senior-manager, middle-manager, junior-manager, team leader or supervisor. Respondents were asked a number of questions on the potential business outcomes of improving connectivity **to the team that they manage** in home, office, client, customer, partner and other remote locations[12]. Targeted questions were asked to groups of workers which were likely to have similar locational requirements. For example, those groups currently spending most time working from their desk (termed 'Desk Huggers' in this study), those more likely to be mobile (termed 'Desk Hoppers') and those considered to be 'Mobile Task Workers' undertaking scheduled jobs were respectively asked a different set of questions.

Stage 2: Identifying productivity and customer service mechanisms

The findings of the primary research revealed five productivity mechanisms and four customer service mechanisms through which time savings and monetary benefits could be realised. The productivity benefits were i) working from home, ii) meeting effectiveness, iii) customer contact, iv) task efficiencies and v) remote working. For each mechanism, a set of business outcomes that unlock a time saving and an increase in productive hours were quantified (e.g. savings in number of external meetings, travel time and inefficient task completions etc.). The customer service benefits were increases in i) customer satisfaction, ii) speed of serving customers/responsiveness, iii) number of SLAs met and iv) sales figures. Section 4 of the report provides a more detailed description of the mechanisms and their positive business outcomes.

Stage 3: Calculating employee-level and aggregate benefits

As the economic benefits of connectivity are driven by increases in productive hours worked, Cebr first had to estimate the typical Gross Value Added (GVA)[13] per hour contributed by employees in a 250+ employee organisation. Cebr utilised wage data split by firm size and industry from the Office for National Statistics (ONS) Labour Force Survey. GVA per employee was then estimated by estimating typical profits made over and above wages paid using the ONS Supply and Use Tables (SUT). The SUT tables provide data on wages, profits and taxes generated across 106 industries at the national level. Our findings revealed that the average employee in a 250+ employee organisation generates £48,838 across all sectors of the economy. These estimates were converted into hourly figures based on the typical hours worked by an employee in a large organisation in each sector – taken from the ONS Labour Force Survey. Our findings show that the typical employee works for 2,005 hours per year which implies an average GVA per hour of £24.40. It is based on these calculations undertaken across each broad

12 The majority of middle-managers sampled and interviewed tended to manage 'white-collar' workers as opposed to those who undertake manual labour e.g. skilled trade.

13 GVA is defined as the net value contributed to the economy by a company, industry or other economic entity. This includes compensation of employees, company profits and contribution to the Exchequer. Gross Domestic Product (GDP) is GVA plus net taxes on products (including value added taxes). GVA as a measure was used because this is enables us to calculate the direct contribution made by each broad sector.

sector that the economic benefits of increases in productive hours from better connectivity are computed. A detailed explanation of how time savings were converted into economic benefits can be found in Figure 6 in Section 4 of this report.

In order to aggregate to UK economy-wide economic impacts, Cebr applied the employee-level benefits to the number of employees working for large organisations in each broad sector category. The economic benefits, in terms of GVA, are therefore estimated for all large organisations in the UK economy – which employ a total of 15.9m workers.

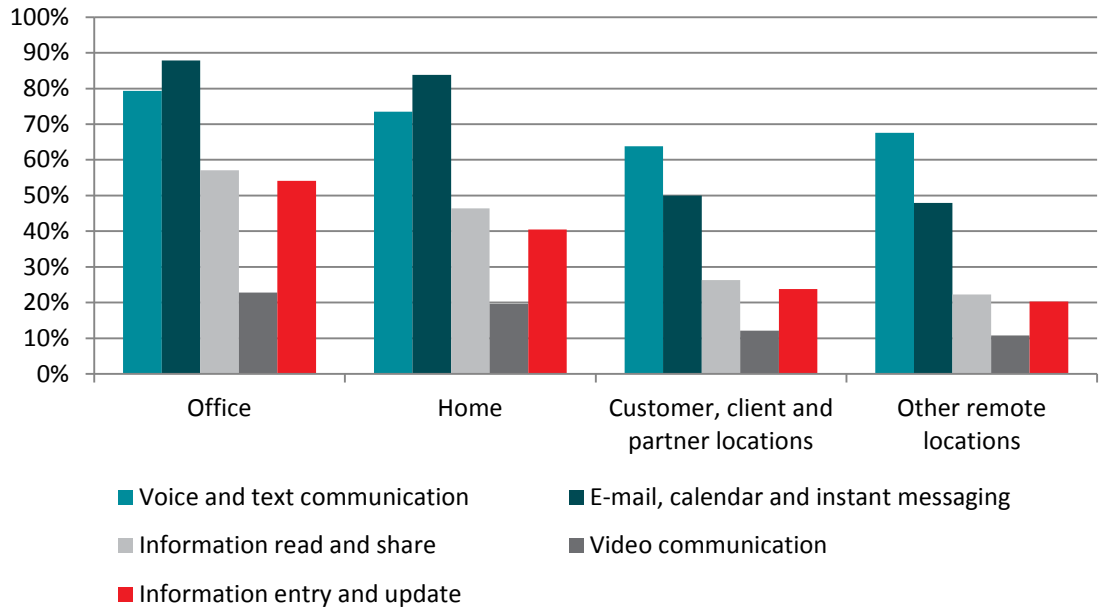
4 Benefits of improved connectivity in large organisations: national findings

This section of the report presents results of Cebr's findings into the potential economic benefits of better connectivity in the UK's large businesses and public sector organisations. Firstly, we examine current levels of technology adoption. We then analyse the business outcomes from better connectivity and estimate economic benefits to businesses on employee-level and aggregate basis. The findings are based on a survey of 1,000 middle-managers conducted by Opinium between 22nd November 2013 and 6th December 2013 on behalf of Cebr and O_2. The average middle-manager interviewed oversaw a team of 14 workers.

4.1 Current levels of connectivity

The natural starting point for estimating the economic benefits of improved information and communication accessibility is to evaluate current levels of adoption. Figure 4 illustrates the proportion of middle-managers stating that their team has 'full access' to a particular information and communication tool from a given location.

Figure 4 Proportion of middle-managers reporting that their team have full access to a given tool from a given location



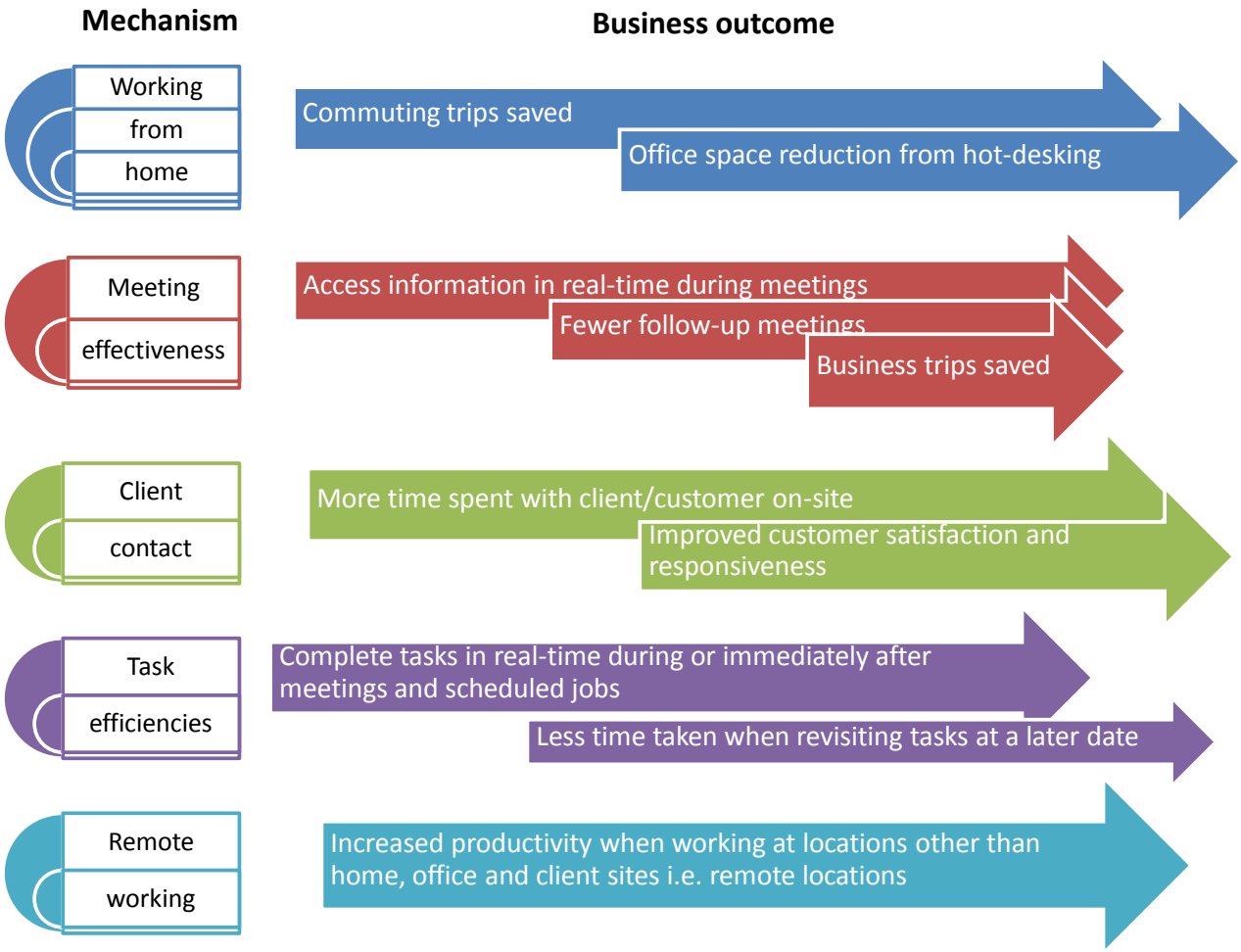
Source: Opinium survey, Cebr analysis

Our findings show that, as might be expected, there is a higher level of access to all business information and communication tools in the office than from any other location. However, the connectivity gap in the home environment does not lag too far behind. From customer, partner and other remote locations, access to collaboration tools which enable video communication and sharing of documents and information with colleagues is particularly low. Furthermore, only 20% of teams have the ability to update key business systems (i.e. 'information entry and update') on the move. Our research findings also show that 62% of teams are satisfied with using collaborative applications when working together from different locations whilst only 44% of those teams which mainly use e-mail actually prefer this method of working.

4.2 Business outcomes of better connectivity

The suite of technologies that unlock better connectivity can create tangible economic benefits through time savings and increased productivity. In this study, we interviewed the middle-management of organisations with 250+ employees in order to assess business outcomes of better access to information and communication tools. Figure 5 illustrates the five productivity benefit mechanisms which were investigated in our study, to which middle-managers stated positive business outcomes resulting from better connectivity.

Figure 5 Productivity benefit mechanisms of better connectivity and business outcomes



Source: Cebr analysis

Positive business outcomes associated with better connectivity have an effect in the home, during meetings, at customer/partner sites and in remote locations (e.g. coffee shops, construction sites or while travelling). A brief outline of the nature of each benefit mechanism is presented below:

- **Working from home** – improved access from home enables workers to save commuting time and be as productive at home as in the workplace. There is greater ability to start and finish work flow at either end of the working day. Home workers are able to start work in the morning from maximum levels of productivity as they do not have to spend time commuting. The ability to work from home can also increase the responsiveness of workers to demands from the business and their customers.

There are also potential reductions in desk/office space arising from hot-desking solutions as fewer hours are spent in the office by members of staff.

- **Meeting effectiveness** – improved connectivity during meetings through use of business information and communication tools allows individuals to access certain information crucial to progress a meeting - but which could not have been anticipated in advance. There is less of a requirement for additional 'follow-up' meetings because all necessary information was accessed, discussed and shared during the initial meeting. This in turn would generate time savings as a result of less business travel and less time spent in unnecessary follow-up meetings.

  For example, during the course of a regional meeting a member of the finance department in a large company may be asked to provide profit indicators for a specific product line. Without access to the right information and communication tools, this would not be possible and an additional meeting would need to be arranged in order to continue.

- **Customer contact** – access to proprietary company data via the corporate network when working off-site enables individuals to spend more time engaging with clients and customers. This is because there is less of a need to return to the workplace in order to access data or complete a task. Better connectivity can also improve customer service through better responsiveness and ability to meet Service Level Agreements (SLAs).

  For example, an auditor working from a client location may require information stored on a company computer in order to carry out his task. With the right information and applications, he would be able to do this from the client's site, as opposed to travelling to his workplace. The travel time saved could then be reallocated to customer contact, boosting that individual's overall productivity.

- **Task efficiencies** – After certain meetings, scheduled jobs or appointments, some employees need to return to their workplace to complete a task or to enter in information to corporate systems, because limited connectivity from the initial meeting's location prevents them from doing so there and then. As these individuals are not able to complete such tasks during or immediately after the meeting, they need to revisit and familiarise themselves with the tasks at a later point in time and as a result, they take longer to complete. Better access to tools which allow information and update through business applications would allow these employees to carry out their tasks more efficiently from the initial job or meeting's location.

- **Remote working** – When working from remote locations other than at home or at customer, client or partner locations (e.g. public or retail spaces, construction or engineering sites or while travelling) individuals do not enjoy the same access to the information and communication tools that they need. As a result they are less productive. Higher adoption of tailored business applications and unified communications would allow individuals to access the information that they need and collaborate efficiently with their colleagues and clients.

  For example, a site manager at a construction site would be able to communicate with an architect by video conference in order to discuss and show progress. In the health sector, district nurses would be able to consult with other health professionals and experts to receive a second opinion on a particular condition that needs urgent treatment and attention.

4.3 Key national level-findings: business outcomes

This section presents a summary of the potential economic impacts for greater connectivity in large UK businesses and public sector organisations. From a survey of 1,000 managers across 250+ employee firms (i.e. a 'large' organisation), we find that improved access to information and communication tools has the capacity to make **178 hours** of the working year more productive. The average employee in a large company works for 2,005 hours a year[14] which implies an increase in productive hours worked of 8.9% unlocked by better connectivity. The productive hours are unlocked through a mixture of i) less hours spent travelling to/from locations and ii) more effective use of working hours:

- Fewer hours spent travelling to/from locations – working from home cuts out commuting time and increases hours spent working. Increased meeting effectiveness and access to information from customer sites imply fewer requirements for making business trips. The net impact on productivity (as measured in terms of Gross Value Added[15]) depends on whether any of the hours spent travelling are productive or the extent to which the lost hours can be recouped. Figure 6 explains how we deal with translating time savings into productivity gains.

- More effective use of working hours – better connectivity during meetings or appointments means that workers are able to complete after-meeting tasks in less time (or eliminate them by completing these activities directly within the meeting or appointment itself) and are therefore able to increase the volume of work they undertake. Further, the technology enables workers to increase their effective hours when working remotely.

The business outcomes that create additional productive hours are wide-ranging and vary by benefit mechanisms described in Figure 5. Our interrogation of the survey data shows the following potential benefits of improved connectivity at the employee-level:

1) Working from home

i) The average employee in a large company currently spends **25.5 days** per year working from home.

ii) A total of **51%** of middle-managers estimate that their team would work more days from home if better access to information and communication tools is achieved.

iii) An additional **28.7 days** per year could be spent working from home according to middle-managers – a 113% increase.

iv) Our calculations suggest an average saving of **57** commuting trips per year which would save a total of 27 hours per year in commuting time[16]. As a certain proportion of this time will be used for leisure, we have assumed that around 50% of the increase in available time translates into more productive work.

The average increase in GVA per worker from improved connectivity in the home is £259[17] which is unlocked through a 14 hour increase in productive time over the year.

[14] Labour Force Survey, usual hours worked data

15 GVA is defined as the net value contributed to the economy by a company, industry or other economic entity. This includes compensation of employees, company profits and contribution to the Exchequer. Gross Domestic Product (GDP) is GVA plus net taxes on products (including value added taxes).

16 The Department for Transport (DfT) National Travel Survey indicates that the average commuting trip takes a total of 28 minutes.

17 All employee-level GVA benefits are estimated using weighted averages of GVA benefits calculated at the broad sector level.

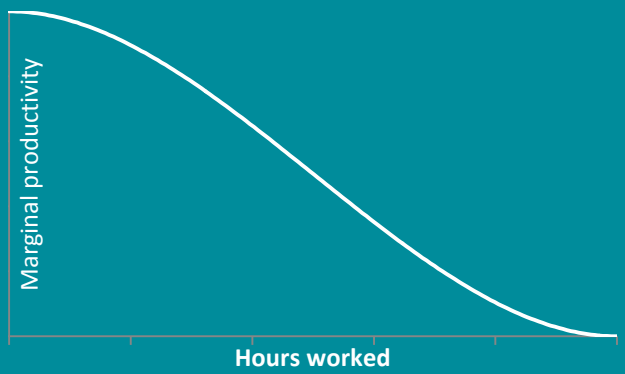
Furthermore, our calculations show that the increase in working from home would lead to an average 12% reduction in office desk space (1.7 desks within an average team size of 14). Based on an average UK desk space area of 10.9 square metres[18] and an average commercial rent of £155 per sqm[19], each desk saved would result in a financial saving of £1,690. At an aggregate level there are savings of **£3.1 billion** in real-estate costs to be made as a result of improved access to information and communication tools[20].

Figure 6 Translating time savings gained from better connectivity into productivity benefits

This study attempts to evaluate the productivity benefits accruing to organisations as a result of reduced need to travel and more effective working from mobile locations. The basis of valuing these productivity benefits is to quantify the value placed on employee's time by organisations. According to our calculations, the average Gross Value Added (GVA) per hour generated by a typical worker in a 250+ employee organisation is £24.40. This is based on an average 2,005 hours worked per year by a typical employee. The main assumption in our study is that increases in working hours unlock productivity increases at the marginal rather than average rate. This is because workers' marginal productivity tends to decrease as the day goes on as a greater proportion of productive work tends to be undertaken towards the beginning of the day. The figure below illustrates how marginal productivity falls as more hours are worked.

Towards the end of the day, marginal productivity begins to decrease. As such, any additional hours worked would be realised at the marginal rate which is assumed to be 50% of average GVA per hour. This assumption has been applied to time savings realised due to meeting effectiveness, enhanced client contact, task efficiencies and remote working.

When working at home, the individual forgoes a commuting trip to the office which saves time at both ends of the working day. Working from home enables the employee to start the day at maximum levels of productivity without needing to undertake a morning commute. As such, we have valued the time savings accruing from being able to work from home at average rather than marginal levels of productivity.



18 British Council for Offices - Occupier Density Study (September 2013)

19 This figure is based on the rateable value per square metre of commercial floor space as given by the Valuation Office Agency.

20 This potential saving cannot be directly compared to our earlier estimates of the impact of connectivity on GVA. Expenditure on real-estate is part of a company's "intermediate consumption"; that is, it forms part of the inputs that a company requires in order to produce its outputs. This reduction in intermediate consumption would reduce the revenues and the GVA of the real estate sector and therefore the overall net GVA impact would not be simply equivalent to the saving experienced by large companies. However, it is likely that the overall impact of the reduced demand for office space will be positive. Downward pressure on real estate prices would attract commercial interest and would encourage further economic activity.

2) Meeting effectiveness

i) The average employee attends **126** external (e.g. 'out-of-the-office') meetings per year and a total of **15 follow-up** meetings are undertaken due to not having all the information to hand at the initial meeting. Full access to information and communication tools from external meeting locations implies an 11.9% reduction in numbers of external meetings required.
ii) A total of **76%** of middle-managers estimate that improved information access would reduce the need to arrange follow-up meetings.
iii) The average business trip requires **216 minutes** (3.6 hours) of which 132 minutes (2.2 hours) is travel and 84 minutes (1.4 hours) is the length of the meeting itself.
iv) Our calculations show that better connectivity can save **54 working hours** in unproductive time spent in unnecessary meetings and business travel.

The average annual increase in GVA per worker from improved connectivity during external meetings is £589 which is unlocked through the 54 hour increase in working time.

3) Customer contact

i) A total of **60%** of middle-managers report that their team members are regularly forced to leave a client, customer or partner location – around 49 times per year - due to not having access to the right information and communication tools.
ii) Employees are required to return to the workplace or home to continue working or accessing data. The average duration of such a trip is **72 minutes** (1.2 hours).
iii) Our calculations suggest a total of **59 hours** per year in travel could be saved through improving access to information and communication tools from customer and partner locations. This time could be re-allocated to improve services offered to customers and end-users.

The average annual increase in GVA per worker from better customer contact is expected to be £553 which is unlocked through a 59 hour increase in working time over the year.

In addition to increased GVA unlocked through improvements to productivity, Table 2 illustrates that customer service indicators are also expected to improve by an average of 24%.

Table 2 Expected change in customer service indicators

Customer Service Measure	% Change expected
Customer Satisfaction	24%
Speed of serving customers/responsiveness	24%
Number of Service Level Agreements (SLAs) met	23%
Potential increase in sales	43%

Source: Opinium survey, Cebr analysis

The expected potential increase in sales registered the largest percentage increase of 43%[21]. This indicates that middle-managers working within large companies in the UK feel that poor access to information and communication tools is preventing them from increasing their sales substantially.

21 It should be noted that the likely increase in sales may be an order of magnitude given that there is likely to be a number of firms competing for the same customers in the same industry. For this reason it is not included in our economic analysis.

According to the Institute of Customer Service (ICS), the six-monthly UK Customer Satisfaction Index peaked in January 2013 at 78.2 and has since fallen to 77.1 in January 2014[22]. The reasons for this fall are explained by recent cuts in business and public sector investments, and less tolerance from customers facing increasing choice and financial pressures. Customer satisfaction scores are highest for the non-food retail sector (83.1) and lowest for central public services (71.9), local public services (72.8) and the transport sector (72.5). All of these sectors have seen falls in reported levels of customer satisfaction between July 2013 and January 2014. Our findings show that middle managers expect better connectivity to help address this issue. The ICS's research also suggests that greater customer satisfaction can drive trust, increase loyalty and increase the number of recommendations made.

4) Task efficiencies

i) For an average of **46 external** meetings, appointments or scheduled jobs per year (36.5%), managers state that team members take longer to complete post-meeting tasks because they do not have access to the requisite tools at the initial location.
ii) A total of **66%** of middle-managers report that their team would be able to carry out after-meeting tasks more efficiently – taking around an average of **52 minutes** less post meeting.
iii) Our findings show that the typical employee would save **40 hours** per year through more efficient execution of tasks after meetings or appointments through better connectivity during meetings.

The average increase in annual GVA per worker from improved connectivity during external meetings, appointments or scheduled jobs is £374 which is realised through the 40 hour increase in working time over the year.

5) Remote working

i) The average employee in a large company spends **112 hours** per year working from remote locations other than the office, home, customer or partner locations.
ii) A total of **67%** of middle-managers report that they expect their team members to be more productive when working remotely from having better connectivity.
iii) Currently, workers report that they are 44% as productive from remote locations as they are from the office. Improved access increases their level of productivity to 54% of office-based productivity. Productivity from remote locations is therefore expected to increase by around **10%** from having improved access to information and communication tools. This is equivalent to gaining an additional **11 working hours** from an employee.

The average increase in GVA per worker from improved connectivity when working remotely is £121 which is unlocked through an 11 hour increase in productive time.

22 UKCSI Customer Satisfaction Index – January 2014, Institute of Customer Service
http://www.instituteofcustomerservice.com/files/ICS_UK_Exec_Summary-FINAL.pdf

4.4 Key national level-findings: GVA impacts

In total, 178 working hours are unlocked through improving connectivity at home, during meetings, on client/customer sites and in other remote locations (i.e. coffee shops, stations etc.). The total increase in GVA per worker is estimated to be £1,895 annually which is an effective increase in economic output of 3.9%. Table 3 illustrates the percentage increase in GVA generated by each productivity benefit mechanism.

Table 3 Benefits of better connectivity, percentage increase in GVA per worker, £

Mechanisms	Percentage increase in GVA per worker
Working from home	0.5%
Meeting effectiveness	1.2%
Customer contact	1.1%
Task efficiencies	0.8%
Remote working	0.2%
Total	**3.9%**

Source: Opinium survey, Cebr analysis

Our findings show that the bulk of the 3.9% increase in productivity is unlocked through improved meeting effectiveness, customer contact and task efficiencies. These mechanisms account of 80% of the productive benefits per worker. Further, meeting effectiveness, customer contact and task efficiencies are all benefits which are typically unlocked by technologies that improve connectivity at customer/partner locations and other remote locations.

Cebr have extrapolated the findings on an individual basis to the aggregate economy-wide level. This is based on data from the Office for National Statistics which states that there are 15.9 million workers employed by 250+ employee organisations of which 12.9 million workers are specifically employed by 1,000+ employee organisations. Table 4 illustrates the total economic benefits of better connectivity by the five mechanisms by company size.

Table 4 Annual economic benefits of improved connectivity, £ billion of GVA

Mechanisms	250+ companies	1,000+ companies
Working from home	4.1	3.3
Meeting effectiveness	9.3	7.4
Customer contact	8.8	7.1
Task efficiencies	5.9	4.9
Remote working	1.9	1.5
Total	**£30.0bn**	**£24.1bn**

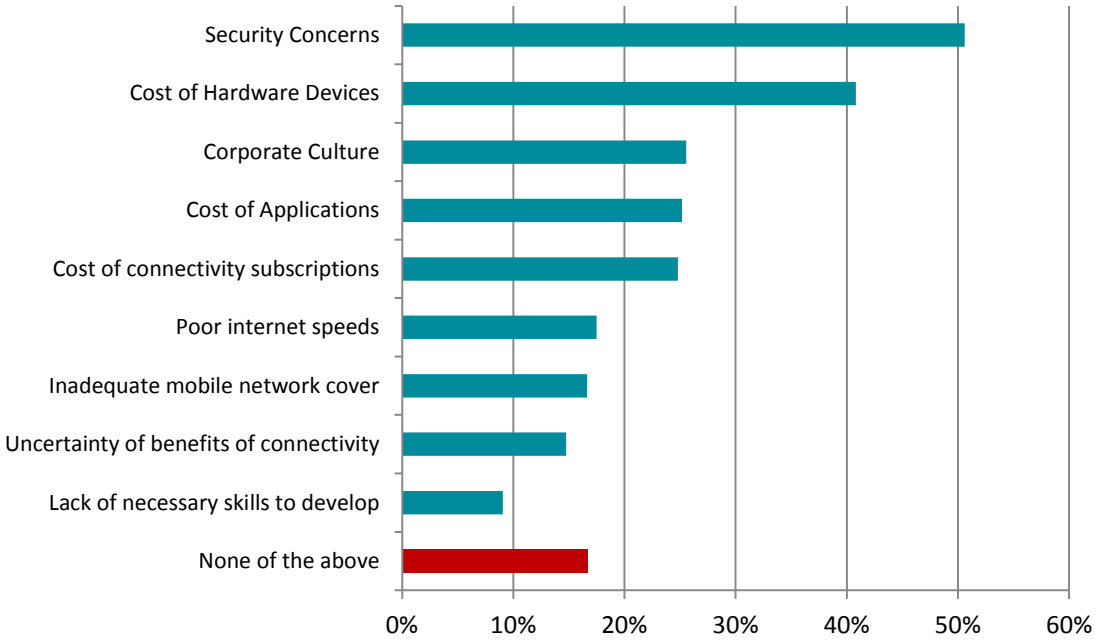
Source: Opinium survey, Office for National Statistics, Cebr analysis

Our findings show that large UK organisations (those that employ more than 250 employees) can increase economic output by £30.0 billion of which £24.1 billion would be gained by those employing more than 1,000 workers. The largest gains from better connectivity accrue from increased meeting effectiveness (£9.3 billion), enhanced customer contact (£8.8 billion) and task efficiencies (£5.9 billion).

4.5 Barriers to connectivity

Middle-managers were also asked to report the key reasons that they felt were stopping their employers from increasing access to the information and communication tools that they required. This allows us to explore the core reasons that are preventing large organisations from unlocking these benefits and contributing more the economy. This is shown in Figure 7.

Figure 7 Proportion of middle-managers who gave each reason as a barrier to connectivity improvements



Source: Opinium survey, Cebr analysis

Security concerns are identified as the biggest reason preventing organisations from improving access to the right tools from different locations, with 51% of middle-managers reporting this as a key concern. Meanwhile, our survey results indicate that the majority of middle-managers feel that there is already sufficient infrastructure to unlock some of potential business and economic benefits alluded to in this report. This is suggested by the fact that less than one in five middle-managers report that inadequate mobile network cover or poor internet speeds were a barrier to improving access to the information and communication tools from different locations. Rather than technology itself being a barrier, issues such as security, investment costs and corporate culture are preventing organisations from addressing their connectivity deficit.

5 Benefits of improved connectivity by job role

This section of the report discusses the business outcomes and economic benefits for different roles within large companies and public sector organisations as a result of better connectivity. The roles are defined in terms of the nature of the work undertaken and the requirements for individuals to move from location to location. The following roles were analysed:

Desk Huggers – these individuals spend at least 80% of their time at a fixed desk, in the office or at home. Examples of this include back office, call centre and administrative roles. As such, this group has the capacity to benefit from technologies which enable increased working from home.

Office Hoppers – Like Huggers, Hoppers typically work in the back office, including finance, IT, call centre and administrative roles. 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. As such, this group has the capacity to benefit from the full gamete of benefit mechanisms discussed in earlier sections of the report.

Mobile Knowledge Workers – this category is reserved solely for individuals who are working in knowledge based roles, such as in professional services, frontline public services or are mobile field representatives. In addition, they spend at the majority of their working 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 this include shop assistants, concierge & reception and customer information roles.

Mobile Task Workers – 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, they spend the majority of their time at client, customer, partner and other remote locations.

In the following section we discuss the main findings of our research at the individual employee level.

5.1 Main findings by job role

The largest economic benefits accrue to those roles which involve spending less time in the office and more time mobile working. The average **Desk Hopper** is expected to see productivity benefits worth £2,488. Hoppers are expected to see benefits from enhanced customer contact, meeting effectiveness, task efficiencies, working from home and remote working. The average Hopper:

- Has 184 external meetings/appointments per year of which 13% are unnecessary follow-up meetings due to poor connectivity at the initial location (81 hours of meeting and travel time per year can be saved).
- Is currently forced to leave customer or partner sites 61 times per year and would save 78 hours in travel time from not having to leave these locations.
- Is unable to complete necessary tasks during or immediately after 23% of external meetings because they do not have access to the tools required - when revisiting these tasks at a later point in time, the

average Hopper took an average of 60 minutes longer to complete them (42 hours per year can be saved).

- Spends 157 hours per year working from remote locations other than the office, home, customer or partner locations. They are currently 48% as productive in these locations compared to the office and improved connectivity will increase productivity to 58% (saving 16 hours per year).

Our findings show that around 63% of the productivity benefits to Hoppers accrue from meeting effectiveness and enhanced customer contact.

Mobile Knowledge Workers are expected to achieve similar benefits to Office Hoppers, with the greatest benefits coming from meeting effectiveness, task efficiencies and customer contact.

The average Mobile Knowledge Worker is expected to see a productivity benefit worth £2,598 – 4.4% higher than the average Hopper. The driver of this higher level of productivity increase is higher task efficiency benefits. The average Mobile Knowledge Worker has 278 external meetings compared to 184 for Hoppers. For 32% of these meetings, the mobile knowledge worker is unable to complete necessary tasks during or immediately after the meeting. A total of 72 hours per year can be saved through not having to revisit tasks at a later point in time.

Desk Huggers spend the majority of their working hours at their desk/office. As such there are potential gains from shifting some of this work to the home. Technologies which facilitate productive working from the home enable Huggers to spend less time commuting and start the working day at maximum levels of productivity. The average Hugger currently spends only 16 days per year working from home and better access to information and communication tools can increase this by 30 days (a 188% increase). Each Hugger would benefit from making 60 fewer commuting trips and could therefore gain 15 productive hours per year (assuming half of the time saved is spent for leisure)[23] if they could access the tools needed to work from home. Our findings suggest an average increase in GVA of £276 per year for the typical Hugger. This does not include the potential office space cost savings unlocked through hot-desking. The average desk space is worth £1,690 per year in commercial rent costs.

Mobile Customer Service Workers are involved in customer or citizen-facing roles in retail, leisure, hospitality, food and transport. The Key Performance Indicators (KPIs) for this group are typically linked to customer service metrics. Our findings show that better access to information and communication tools can increase the speed of serving customers and responsiveness by 38%. There was also a capacity to improve effectiveness in meeting of Service Level Agreements (SLAs) by 40% and increase general customer satisfaction by 39%. Finally, those in customer service roles report that a 46% increase in sales could be achieved through better access to information and communication tools[24].

Mobile Task Workers provide customer support services such as maintenance & repair, inspection, deliveries, catering and security services, often on a call-out basis, or they may be skilled tradesmen such as those working on construction sites. The main economic benefits to this group are related to task efficiencies and effectiveness of scheduled jobs. The average Mobile Task Worker:

23 The Department for Transport (DfT) National Travel Survey indicates that the average commuting trip takes a total of 28 minutes.
24 It should be noted that the likely increase in sales may be an order of magnitude given that there is likely to be a number of firms competing for the same customers in the same industry. As a result this analysis has not been calculated as part of the economic benefit figures.

- Attends 142 jobs per year of which 7% are unnecessary follow-up jobs which are carried out as a direct result of limited access to the requisite information and communications at the initial job. The average time saved is 2 hours 30 minutes per job (1.5 hours on the job and 1 hour travelling) – 25 hours could be saved per year.
- Has to wait until they return to their base location to rekey information due to poor remote access to key business systems for 20% of the 142 schedule jobs. Better connectivity could save 48 hours in this regard.

Our findings suggest that the average Mobile Task Worker could see a productivity increase worth £736 from these two mechanisms.

5.2 Summary of monetary benefits by job role

We summarise the findings of the monetary benefits of improved connectivity for each job role in the table below.

Table 5 Percentage breakdown of productivity benefits by job role and total productivity benefit, pounds and increase in productive hours

Mechanisms	Desk Hugger	Office Hopper	Mobile Knowledge Worker	Mobile Task Worker	Mobile Customer Service
Working from home	100%	14%	8%		
Meeting/job effectiveness		32%	36%	34%	
Customer/partner contact		31%	24%		100%
Task efficiencies		17%	27%	66%	
Remote working		6%	5%		
Total productivity benefits	**£276**	**£2,488**	**£2,598**	**£736**	**n/a**[25]
Increase in productive hours	**15hrs**	**235hrs**	**252hrs**	**73hrs**	**n/a**[25]

Source: Opinium survey, Office for National Statistics, Cebr analysis

Our findings show that for Office Hoppers and Mobile Knowledge Workers have the most to gain, with the majority of benefits realised through meeting effectiveness, customer contact and task efficiencies. Mobile Knowledge Workers are expected to see the largest productivity benefits (£2,598 per worker). Mobile Task workers are also expected to see gains through increased effectiveness in scheduled jobs and task efficiencies – saving almost 9 days per year (73 hours), worth £736 per employee. The benefits for Huggers are lower at £276 albeit this does not include potential commercial space cost savings from hot-desking. Whilst we have not explicitly quantified the Mobile Customer Service Worker benefits, increase in customer satisfaction indicators by 38% are likely to lead to increases in trust, sales growth and market share which would have monetary benefits attached to them.

In the next sections, we summarise the key findings from the industry-specific analyses into the benefits of improved connectivity.

25 It should be noted that the likely increase in sales may be an order of magnitude given that there is likely to be a number of firms competing for the same customers in the same industry. As a result this analysis has not been calculated as part of the economic benefit figures.

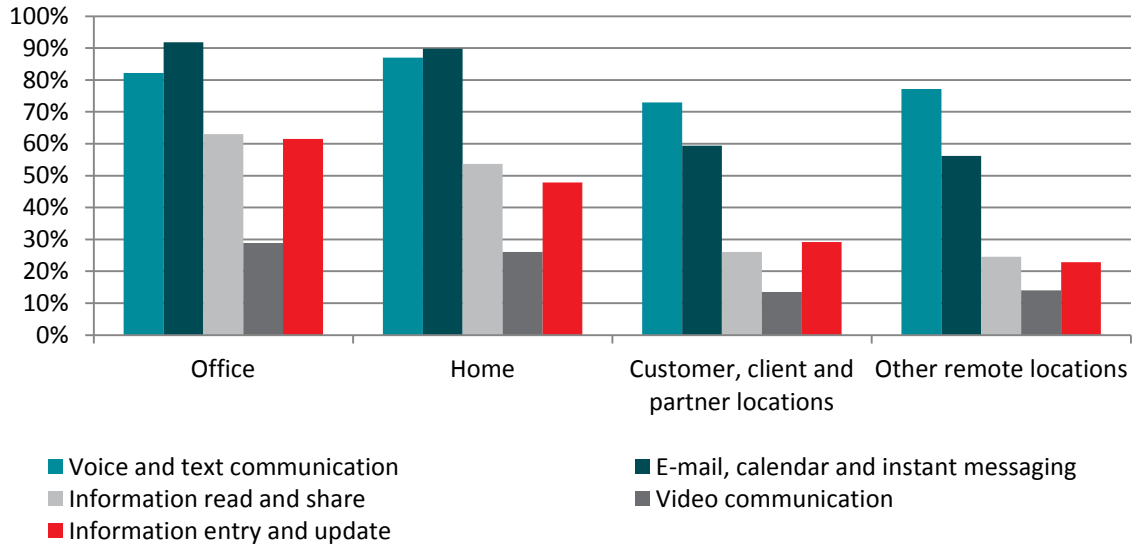
6 Benefits of improved connectivity by broad sector

This section of the report presents the business outcomes and economic benefits of improved connectivity by four broad sector categories. For each sector, research into the current levels of connectivity, the main business outcomes and productivity benefits by mechanism are analysed.

6.1 Production and construction

Large companies in the production and construction sector currently generate around £131.6 billion in GVA and employ a total of 1.56 million workers. The average middle-manager surveyed in production and construction manages a team of 15 workers where each team member generates £84,110 in GVA/year. Figure 8 illustrates the current levels of connectivity amongst teams overseen by middle-managers in the production and construction sector.

Figure 8 Production and construction, proportion reporting that their team have full access to a given tool from a given location



Source: Opinium survey, Cebr analysis

Our findings show that over 80% of middle-managers in the production and construction sector report full access to voice/text communication and e-mail, calendar and IM from both the home and office, the highest level of connectivity compared to other sectors of the economy. Access to other tools however, particularly from customer sites and remote locations such as construction sites, or on the move, is still patchy. Less than one in three report the ability to access tools which enable document read and share, video communication or the update of key business systems when working remotely, something which could obviously have a significant impact on the construction sector.

The business outcomes arising from better connectivity are outlined below for each benefit mechanism (aggregate economic benefits are in brackets).

Meeting effectiveness (£713 million)

- A total of 78% of middle-managers indicate that access to the right information and communication tools would reduce the need for additional meetings.
- The average employee in production and construction attends 88 external meetings per year. A total of 11 (13%) of these meetings are required due to access to the necessary information and communication tools not being available at the initial meeting.
- The average external meeting requires 3.8 hours, of which 143 minutes (2.4 hours) is spent travelling and 83 minutes (1.4 hours) is spent in meeting time.
- Therefore, poor access to the right tools from external meeting locations are costing the average employee in this sector up to 42 hours of productive time a year.

Customer contact (£399 million)

- A total of 57% of middle-managers report that their team members are regularly forced to leave client, customer or partner locations because they do not have access to the business tools and information that they require.
- When actually working from these locations, the average employee is forced to leave 22 times a year (25% of the time) because they do not have access to the right tools.
- The average duration of a trip to these locations is 63 minutes.
- This means that having access to the right tools from these locations could save each employee up to 23 hours per year – time which could then be used productively, for example by allocating it to providing further services for clients.

In terms of improvements to customer service indicators, middle-managers report an expected 17% improvement in satisfaction, speed of responsiveness and meeting Service Level Agreements (SLAs). Looking at where this could have the greatest impact, the Production and Construction sector includes utilities firms which had an average UKCSI Customer Satisfaction Index score of 69.0 in January 2014. The average score for all sectors was 77.1, indicating that the Utilities sector had a below average score. Indeed, the sector saw the largest drop in customer satisfaction between July 2013 and January 2014.

Task efficiencies (£257 million)

- A total of 59% of middle-managers report that their team could reduce the time taken to complete post-meeting/appointment tasks, if they had access to the right tools from the original location.
- Middle-managers stated that after meeting/appointment tasks could be reduced or avoided 20% of the time with connectivity to the right tools, equivalent to 18 external meetings a year (20% of meetings).
- When revisiting tasks at a later point in time, middle-managers report that the average worker took 50 minutes longer to complete them.
- Full access to the necessary information and communication tools from the meeting or appointment's location would allow each worker to eliminate or complete these tasks more quickly, and save up to 15 hours a year.

Remote working (£112 million)

- 72% of middle-managers report that with access to the right tools they expected their team to be more productive when working remotely.
- The average employee in this industry spends 74 hours a year working from remote locations.

- Middle-managers estimate that the average employee is 40% as productive as he or she normally is in the office, when they are working remotely.
- Middle-managers also estimate that access to the right tools and information would increase productivity from remote locations to 49% of office-based productivity – representing a 9% increase in worker productivity from remote locations. This increase in productivity would be equivalent to what would occur if the average employee worked an additional 7 hours a year.

The combined benefits of the technology translate into a 91 hour increase in productive hours which increases GVA per employee by £1,043 - representing a 1.2% increase in overall productivity. Table 6 shows the estimated impact to annual GVA at the aggregate industry level, broken down by benefit mechanism.

Table 6 Production and construction increase in annual GVA due to improved connectivity, £m

Mechanisms	250+ companies	1,000+ companies
Working from home	151	98
Meeting effectiveness	713	462
Customer contact	399	259
Task efficiencies	257	167
Remote working	112	73
Total	**£1,632m**	**£1,058m**

Source: Opinium survey, Office for National Statistics, Cebr analysis

Our findings show that potential economic benefits worth £1.6 billion to large organisations in the production and construction sector, of which £1.1 billion would accrue to firms employing more than 1,000 workers.

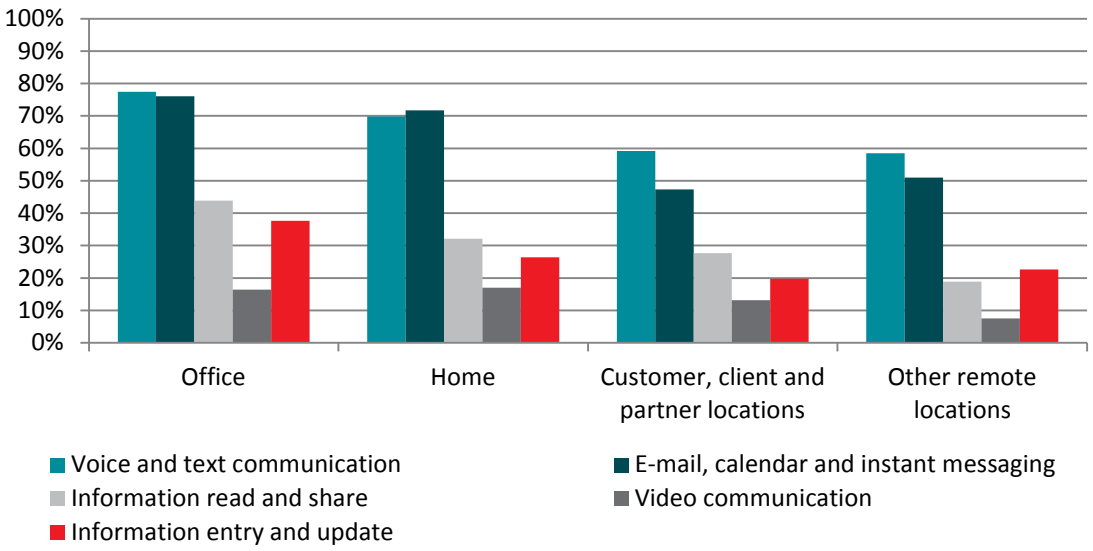
6.2 Retail, food and transport

Large companies in the retail, food and transport sector currently generate around £148.4 billion in GVA and employ a total of 4.36 million workers. The average middle-manager surveyed in this industry manages a team of 19 workers where each team member generates £33,998 in GVA.

Figure 8 illustrates the current levels of connectivity amongst teams overseen by middle-managers in the retail, food and transport sector.

Our findings show that this sector has the lowest levels of connectivity when compared the other industries reported in this study. The sector has the lowest levels of connectivity from customer, client and partner locations – particularly for 'information read and share' and 'information entry and update' tools. Given that this industry grouping includes retail environments, where connectivity levels have traditionally been low, this finding is not unexpected. Below average levels of connectivity in the sector suggest that retail, food and transport are likely to see larger gains than other industries from any improvements in connectivity. The business outcomes of better connectivity are detailed as follows:

Figure 8: Retail, food and transport, proportion reporting that their team have full access to a given tool from a given location



Source: Opinium survey, Cebr analysis

Customer contact (£2.7 billion)

- A total of 75% of middle-managers surveyed report their team members are regularly forced to leave customer or partner locations because they do not have access to the business tools and information that they require.
- When actually working from these locations, the average employee is forced to leave 61 times a year because they do not have access to the right tools.
- Middle-managers report that the average duration of a trip to these locations is 84 minutes (1.4 hours).
- This means that middle-managers expect that having access to the right tools from client, customer or partner locations could save each employee up to 85 hours a year – time which could then be allocated to providing further services for customers.

In terms of improvements to customer service indicators, middle-managers report an expected 32% improvement in satisfaction, speed of serving customers and meeting Service Level Agreements (SLAs). There are an estimated 1.7m individuals working in sales and customer service roles in the retail, food and transport sectors (38.6% of the total workers employed in this sector). The expected increase in sales is 45% as a result of better connectivity. Research by the Institute of Customer Service (ICS) suggests that those firms with above average levels of customer satisfaction see higher sales growth. Food retailers with an above-average customer satisfaction score for the sector saw a year-on-year increase in sales of 9% in Q3 2013 compared to an increase of just 3% amongst those food retailers with a below-average score[26]. The ICS research also showed that those food retailers with above–average levels of satisfaction saw their market share increase between Q3 2012 and Q3 2013.

According to the UKCSI Customer Satisfaction Index published by the ICS, Retail (non-food) and Retail (food) had the highest levels of customer satisfaction compared to other industries with scores of 83.1 and 81.0 respectively compared to the national average of 77.1 in January 2014. Nonetheless, both

26 UKCSI Customer Satisfaction Index – January 2014, Institute of Customer Service
http://www.instituteofcustomerservice.com/files/ICS_UK_Exec_Summary-FINAL.pdf

sectors saw drops in customer satisfaction between July 2013 and January 2014 which better connectivity could help address. The transport sector has one of the lowest levels of customer satisfaction with a score of 72.5 – suggesting that the industry may see substantial customer service benefit from improved connectivity.

Task efficiencies (£2.6 billion)

- A total of 83% of middle-managers report that their team could reduce the time taken to complete post- meeting/appointment tasks, if they had access to the right tools from the original location.
- With access to the right information and communication tools during meetings, the average worker could avoid or reduce the time taken to complete post-meeting tasks following 87% of his or her external meetings. When revisiting these tasks at a later point in time, middle-managers report that the average worker took 63 minutes longer to complete them.
- Full access to the necessary information and communication tools from the meeting's location would allow each worker to eliminate or complete these tasks more quickly, and save up to 70 hours a year.

Meeting effectiveness (£1.8 billion)

- A total of 79% of middle-managers indicated that access to the right tools and information during meetings would reduce the need for additional follow-ups.
- The average employee in this sector attends 77 external meetings a year.
- Our survey shows that each of these employees needs to arrange an average of 11 external follow up meetings a year (14% of the time) because they do not have access to the tools they need from the original location.
- The average external meeting requires 4 hours, of which 150 minutes (2.5 hours) is spent travelling and 90 minutes (1.5 hours) is spent in meeting time.
- Therefore, poor access to the right tools from external meeting locations is costing the average employee in this sector up to 44 hours a year.

The combined benefits of the technology translate into a 238 hour increase in productive hours which increases GVA per employee by £2,022 - representing a 5.9% increase in overall productivity. Table 7 shows the estimated impact to annual GVA at the aggregate industry level, broken down by benefit mechanism.

Table 7 Retail, food and transport, increase in annual GVA due to improved connectivity, £m

Mechanisms	250+ companies	1,000+ companies
Working from home	1,115	947
Meeting effectiveness	1,818	1,544
Customer contact	2,693	2,287
Task efficiencies	2,630	2,234
Remote working	569	483
Total	**£8,825m**	**£7,495m**

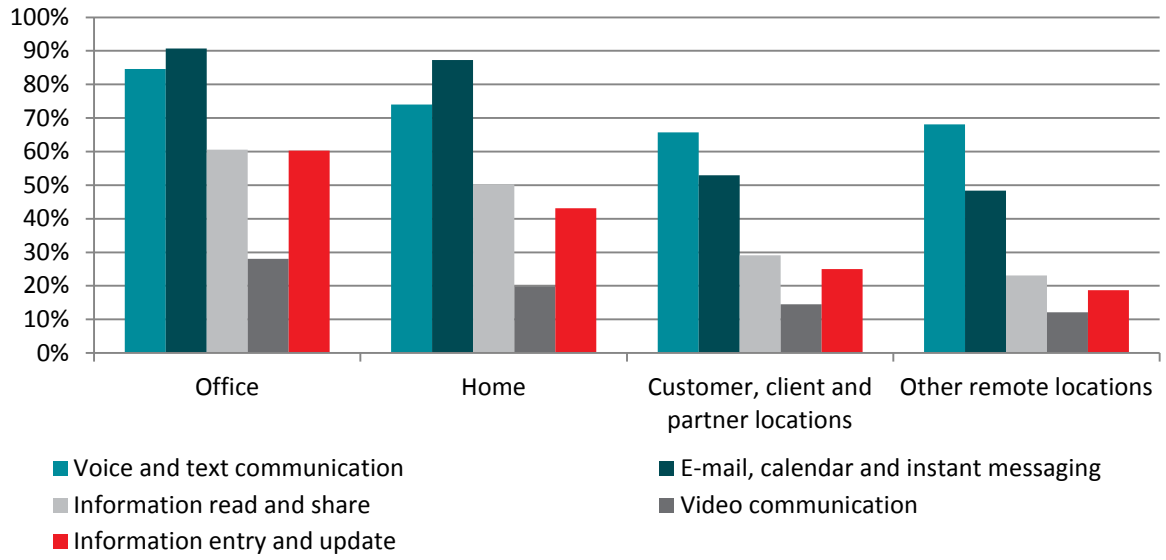
Source: Opinium survey, Office for National Statistics, Cebr analysis

Our findings show potential economic benefits worth £8.8 billion to large organisations in the retail, food and transport sector, of which £7.5 billion would accrue to firms employing more than 1,000 workers.

6.3 Information, financial, professional and support services

Large companies in the information, financial, professional and support services sector currently generate around £254.7 billion in GVA and employ a total of 3.64 million workers. The average middle-manager surveyed in this sector manages a team of 12 workers where each team member generates £69,925 in GVA. Figure 9 illustrates the current levels of connectivity in the information, financial, professional and support services sector.

Figure 9 Information, financial, professional and support services, proportion reporting that their team have full access to a given tool from a given location



Source: Opinium survey, Cebr analysis

Our findings show that the sector has the second highest level of connectivity compared to other industry groupings in this study. However, outside the home and office environments, only a third of teams have full connectivity to 'read and share' and 'entry and update' applications. The business outcomes arising from better connectivity are outlined below for each benefit mechanism (aggregate economic benefits are in brackets).

Meeting effectiveness (£4.0 billion)

- A total of 73% of middle-managers surveyed indicated that access to the right tools during business meetings or appointments would reduce the need for additional follow-ups.
- On average, each person working in this industry attends 156 external meetings a year.
- Our survey shows that the average employee needs to arrange an average of 19 external follow-up meetings a year because they do not have access to the tools they need at remote meeting locations – 12% of all meetings.
- The average external meeting requires 3.5 hours, of which 133 minutes (2.2 hours) is spent travelling and 80 minutes (1.3 hours) is spent in meeting time.
- Therefore, poor access to the right tools from external meeting locations is costing the average employee in this sector up to 67 hours a year.

Customer contact (£3.1 billion)

- 61% of middle-managers report that team members are regularly forced to leave client, customer or partner locations because they do not have access to the business tools and information that they require.
- When actually working from these locations, the average employee is forced to leave 45 times a year due to a lack of access.
- The average duration of a trip to these locations is 72 minutes (1.2 hours).
- This means that middle-managers expect that having access to the right tools from client, customer or partner locations could save each employee up to 54 hours a year – time which could then be allocated to providing further services for clients.

In terms of improvements to customer service indicators, middle-managers report an expected 24% improvement in satisfaction, speed of serving customers and meeting Service Level Agreements (SLAs).

According to the UKCSI Customer Satisfaction Index published by the ICS, Banks and building societies and Insurance companies have above-average levels of customer satisfaction; however customer satisfaction amongst Insurance companies fell between July 2013 and January 2014. This suggests that Insurance, in addition to the Telecommunications sector, which has a below-average level of customer satisfaction with a score of 73.3 – may see customer satisfaction benefits from improved connectivity.

Working from home (£1.8 billion)

- A total of 56% of middle-managers report that their team members would work more days from home if they had access to the right tools.
- The average employee in this industry currently spends 29.5 days a year working from home.
- According to our survey middle-managers expect that the average employee could spend up to another 33 days a year (a 112% increase) working from home if they had access to the right tools.
- This would mean an average of 67 fewer commuting trips a year per employee.
- The latest available data from the ONS' National Travel Survey show that the average one-way commuting trip lasts 28 minutes.
- Therefore the average employee could save up to 32 hours a year by commuting less (50% of which is assumed to be spent on work), if they had access to the right tools and information from home.

Task efficiencies (£1.6 billion)

- A total of 64% of middle-managers report that their team could reduce the time taken to complete post-meeting/appointment tasks, if they had access to the right tools from the original location.
- With better connectivity, the average worker could avoid or else reduce the time taken to complete post meeting tasks following 24% of his or her external meetings. When revisiting these tasks at a later point in time, middle-managers report that the average worker took 74 minutes longer to complete them.
- Full access to the necessary information and communication tools from the meeting's location would allow each worker to eliminate or complete these tasks more quickly, and save up to 30 hours a year.

These benefits from improved connectivity, together with the productivity gains achieved in remote working, translate into a 180 hour increase in productive hours per employee, per year. This increases GVA per employee by £3,115 - representing a 4.5% increase in overall productivity.

Table 8 shows the estimated impact to annual GVA at the aggregate industry level, broken down by benefit mechanism.

Table 8 Information, financial, professional and support services, increase in annual GVA due to improved connectivity, £m

Mechanisms	250+ companies	1,000+ companies
Working from home	1,817	1,362
Meeting effectiveness	3,988	2,988
Customer contact	3,136	2,350
Task efficiencies	1,588	1,190
Remote working	819	614
Total	**£11,349m**	**£8,504m**

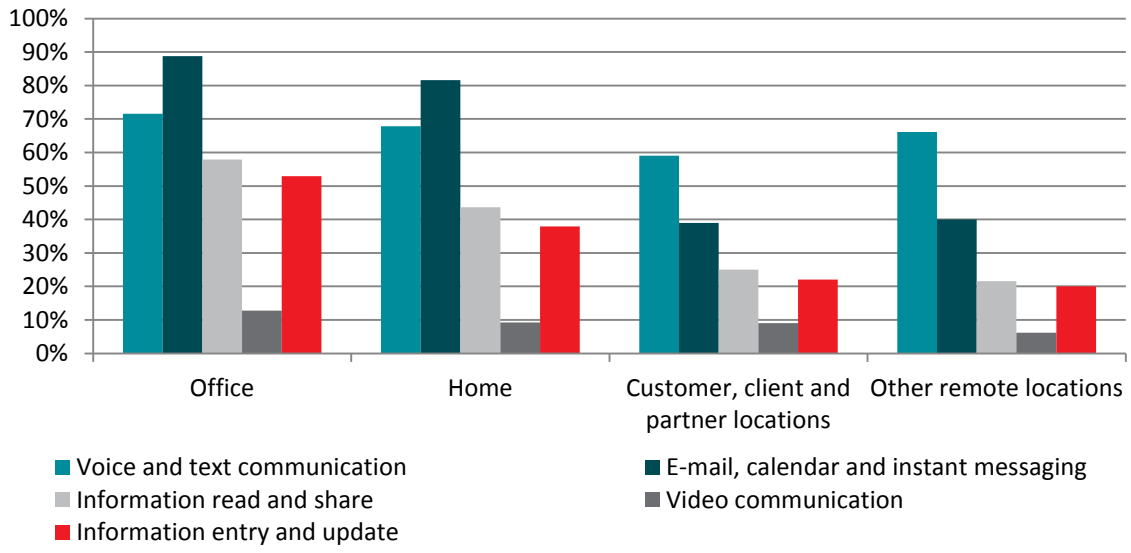
Source: Opinium survey, Office for National Statistics, Cebr analysis

Our findings show potential economic benefits worth £11.3 billion to large organisations in the information, financial, professional and support services sector, of which £8.5 billion would accrue to firms employing more than 1,000 workers.

6.4 Public health, education, defence, social and administrative services

Large organisations in the public health, education, defence, social and administrative services sector currently generate around £201.8 billion in GVA and employ a total of 5.86 million workers. The average middle-manager surveyed in this sector manages a team of 14 workers where each team member generates £34,465 in GVA. Figure 10 illustrates the current levels of connectivity amongst teams overseen by middle-managers in the public sector.

Figure 10 Public health, education, defence, social and administrative services, proportion reporting that their team have full access to a given tool from a given location



Source: Opinium survey, Cebr analysis

Our findings show that the sector has below-average levels of access when compared to other sectors – particularly at home, customer/partner and other remote environments. The sector has the lowest levels of access to video communication tools. The business outcomes arising from better connectivity are outlined below for each benefit mechanism (aggregate economic benefits are in brackets).

Meeting effectiveness (£2.4 billion)

- A total of 80% of middle-managers surveyed indicate that access to the right tools during external meetings or appointments would reduce the need for additional follow-ups.
- On average, each person working in this sector attends 154 external meetings or appointments a year.
- Our survey shows that each of these employees needs to arrange an average of 16 external follow ups a year (11% of the time) because they do not have access to the tools they need from the original location.
- The average external meeting requires 206 minutes (3.4 hours). This includes 114 minutes (1.9 hours) of travel time, and 92 minutes (1.5 hours) for the actual meeting.
- Therefore, poor access to the right tools from meeting or appointment locations is costing the average employee in this sector up to 55 hours a year.

Customer/citizen contact (£2.2 billion)

- 51% of middle-managers report that team members are regularly forced to leave customer or partner locations because they do not have access to the right tools and information that they require.
- When actually working from one of these locations, the average employee is forced to leave 49 times a year due to a lack of access.
- Middle-managers also report that the average duration of a trip to these locations is 65 minutes.
- This means that having access to the right tools from customer or partner locations could save each employee up to 53 hours a year – time which could then be allocated to providing further services.

In terms of improvements to customer service indicators, middle-managers report an expected 20% improvement in satisfaction, speed of serving customers and meeting Service Level Agreements (SLAs).

According to the UKCSI Customer Satisfaction Index published by the ICS, Public services (local) and Public services (national) with scores of 72.8 and 71.9 respectively are low compared to the national average of 77.1 in January 2014 – indicating that the public sector could stand to gain from the customer service benefits delivered through improved connectivity.

Task efficiencies (£1.4 billion)

- A total of 70% of middle-managers report that their team could reduce the time taken to complete post-meeting/appointment tasks, if they had access to the right tools from the original location.
- With better connectivity, the average worker could avoid or else reduce the time taken to complete post meeting/appointment tasks following 30% of his or her external meetings. When revisiting these tasks at a later point in time, middle-managers report that the average worker took 42 minutes longer to complete them.
- Full access to the necessary information and communication tools from the meeting's location would allow each worker to eliminate or complete these tasks more quickly, and save up to 32 hours a year.

Working from home (£855 million)

- A total of 49% of middle-managers report that their team would work more days from home if they had access to the right tools and information.
- The average employee in the UK working in the public health, education, defence, social and administrative services sector currently spends 24.5 days a year working from home.
- According to our survey middle-managers expect that the average employee could spend up to another 22 days a year (a 90% increase) a working from home if they had access to the right tools.
- This would mean an average of 44 fewer commuting trips a year per employee. The latest available data from the ONS' National Travel Survey show that the average one-way commuting trip lasts 28 minutes.
- Therefore the average employee could save up to 20.4 hours a year by commuting less if they had access to the right tools from home. Half of this time is assumed to be spent for leisure whilst the other half is used for work.

These benefits from improved connectivity, together with the productivity gains achieved in remote working, translate into a 157 hour increase in productive hours per employee, per year. This increases GVA per employee by £1,230 - representing a 3.6% increase in overall productivity. Such an increase could enable an additional 46 external meetings out in the community to take place per employee each year.

Table 9 shows the estimated impact to annual GVA at the aggregate industry level, broken down by benefit mechanism.

Table 9 Public health, education, defence, social and admin services, increase in annual GVA due to improved connectivity, £m

Mechanisms	250+ organisations	1,000+ organisations
Working from home	855	758
Meeting effectiveness	2,425	2,150
Customer contact	2,216	1,965
Task efficiencies	1,391	1,233
Remote working	313	278
Total	**7,200**	**6,383**

Source: Opinium survey, Office for National Statistics, Cebr analysis

Our findings show potential economic benefits worth £7.2 billion to large organisations in public health, education, defence, social and admin services, of which £6.4 billion would be gained by organisations employing more than 1,000 workers.

About this report

This report by the Centre for Economics and Business Research (Cebr) evaluates the economic and customer service benefits generated by better connectivity in large UK businesses and the public sector. It was commissioned by O2, and based on a survey conducted by research agency Opinium, exclusively for CEBR and O_2 between 22nd November 2013 and 6th December 2013. The survey interviewed over 1,000 middle-managers in large companies and public sector organisations.

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