



# **ICT in England's Rural Economies**

A Final Report to DEFRA

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## Executive Summary

1. In December 2004, DEFRA commissioned SQW – in partnership with NOP - to conduct research into the use of Information and Communications Technology (ICT) in England's rural economies, in order to:
  - capture the benefits of ICTs and broadband to rural businesses;
  - investigate whether there are barriers to adoption in rural areas, how these barriers manifest themselves and how they may be overcome;
  - investigate whether there are barriers to the effective use of ICTs in rural areas, again looking at ways in which they may be overcome.
2. NOP interviewed 2,436 businesses (1,756 rural and 680 urban) between February and April 2005 – exploring the adoption and impact of ICT. This report presents our analysis of the survey results, comparing differences in the responses of rural and urban firms, and assessing the importance of business size, industry sector and type of rurality.
3. Our conclusions are as follows:
  - **In general, rural businesses adopt ICT significantly more slowly than their urban peers.** As expected, ICT adoption increases as businesses get larger. However, at each size band, the average level of adoption is lower in businesses located in rural areas, and this is not just due to the different distributions of industries in urban and rural areas.
  - **This slower adoption is primarily attributable to a more limited range and intensity of 'influences' promoting the use of ICT, rather than 'barriers to adoption'.** In particular, rural businesses are significantly less exposed to advertising, discussions with peers and the influence of new recruits. Moreover, ICT decision makers tend to be older in rural businesses, and this factor appears to be associated with lower ICT adoption rates.
  - **Micro-businesses are particularly disadvantaged.** The 'ICT adoption gap' between rural and urban businesses is most pronounced in the 2-9 employment band, and this is also where there is most disparity in the adoption levels of firms in different industry sectors.
  - **There are few important differences across the various types of rurality.** The distinctions between rural and urban businesses in terms of ICT adoption and impact are more marked than the mostly insignificant differences observed for businesses based in different types of rural location. There was some evidence that ICT adoption

rates are lower in sparse rural areas than in less sparse areas. However, there was little variation between the various types of rural area, in terms of the cited barriers to adoption, influences on investment decisions and the importance attached to ICT.

- **Rural businesses are playing ‘catch up’ with broadband, now that it is (generally) available.** The issues with respect to broadband seem to be more about constraints than about influences (whereas for ICT in general, the opposite is the case). Whilst current overall broadband take-up is lower amongst rural businesses than urban businesses (c. 40% of rural internet users, versus 60% of urban internet users), this is due to broadband being made available later in rural areas. Penetration rates are very similar in urban and rural areas which have had broadband for more than a year.
- **Our research supports the argument that ICT developments are having a positive impact on rural economies.** Higher levels of ICT adoption are associated with higher turnover per employee and higher growth expectations in rural firms. The more advanced ICT adopters consider that recent developments in ICT have made it easier to operate from a rural location, and about 30% of urban businesses say that they may consider operating from a rural location now that broadband is available.
- **The most important productivity advantages of ICT only start to be realised when businesses go beyond ‘basic’ adoption levels – i.e. adopting ICT applications over and above the use of email and access to the worldwide web.**

4. It was not within the scope of this study to design or recommend specific policies or interventions. However, the research suggests the following key messages for consideration in rural ICT policy development:

- There *is* a case for intervention, to address an information-related demand-side market failure.
- There is an argument for focusing such interventions on micro-businesses.
- Existing mainstream public sector initiatives are positive – but unlikely to close the rural-urban gap on their own.
- Intervention should seek to exploit the web as an information channel, and should take advantage of the window of opportunity presented by the current boom in rural broadband take-up.
- There is a prospect of a new digital divide emerging between rural and urban areas, with the advent of next generation broadband and 3G services. Policy-makers will need to consider their responses to this challenge.

# 1 Introduction

- 1.1 It is increasingly recognised that Information and Communication Technology (ICT) can have important effects on the productivity of economies. A number of recent studies<sup>1</sup> have found evidence of a substantial and growing economic impact of business adoption and usage of ICT – in defiance of Solow's (1987) paradox: “*You can see the computer age everywhere but in the productivity statistics*”. The recent document released by the Prime Minister's Strategy Unit with the DTI – *Connecting the UK: the Digital Strategy* (April 2005) – emphasises the need to “*harness the transformative power of ICT and to make that transformation available to all by overcoming the barriers to take-up*”.
- 1.2 In the Rural Strategy 2004, the Department for Environment, Food and Rural Affairs (DEFRA) identifies economic and social regeneration as one of its three key priorities. In particular, DEFRA has a Public Service Agreement (PSA) commitment to reducing the gap in productivity between the least well performing quartile of rural areas and the English median. DEFRA anticipates that the potential productivity benefits of ICT could help reduce this gap, but is also aware of indications in the research literature and from anecdotal evidence that rural businesses appear to be slower to adopt ICT than their urban counterparts.
- 1.3 In December 2004, DEFRA commissioned SQW – in partnership with NOP - to conduct research into ICT in England's rural economies, with a view to identifying ways in which ICT policy action could help to raise the productivity of England's rural areas.
- 1.4 In particular, the study's main objectives were:
- to capture the benefits of ICTs and broadband to rural businesses;
  - to investigate whether there are barriers to ICT *adoption* in rural areas, how these barriers manifest themselves and how they may be overcome;
  - to investigate whether there are barriers to the *effective use* of ICTs in rural areas, again looking at ways in which they may be overcome.
- 1.5 This report presents the findings of the study, and is structured as follows:
- Section 2 describes the study methodology;
  - Section 3 summarises the key findings regarding ICT adoption;
  - Section 4 summarises the key findings with respect to the impact of ICT; and

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<sup>1</sup> See, for example: *Productivity Growth and the Role of ICT in the United Kingdom: An Industry View, 1970-2000*, N. Oulton & S. Srinivasan, 2005; *ICT and Economic Growth*, OECD, 2003.

- Section 5 summarises our conclusions and the implications of the research findings for rural ICT policy development.

1.6 There are five annexes:

- Annex A presents the profile of the 2,436 businesses interviewed for this study;
- Annex B provides information on the weightings applied to the survey results;
- Annex C is the survey questionnaire;
- Annex D lists the questions used to determine respondents' 'adoption index'; and
- Annex E is a short glossary of certain ICT terms used in the report.

## 2 Methodology

### Development of the survey questionnaire

2.1 At the start of this study SQW conducted a brief review of the literature on the adoption, usage and impact of ICT in rural areas. From this, and using our previous ICT experience, we then developed a set of 58 hypotheses to be tested by the research. These included 'positive', 'neutral' and 'negative' hypotheses regarding both adoption and impact; for example:

- *For businesses at similar levels of adoption, rural businesses benefit more than urban businesses from ICT, because it helps to redress their disadvantage in accessing markets/customers* [Positive hypothesis on Impact]
- *Rural businesses and urban businesses tend to have similar levels of adoption of broadband, in areas where it has been available for a year or more* [Neutral hypothesis on Adoption]
- *Rural businesses tend to adopt ICT in general more slowly than urban businesses because their managers are exposed to less ICT advertising* [Negative hypothesis on Adoption]

2.2 We then developed a questionnaire to test our hypotheses as fully as possible within a 15 minute telephone interview.<sup>2</sup> After a review of the hypotheses and the draft survey questionnaire with the project steering group, NOP conducted a pilot of the questionnaire with 19 businesses. This pilot identified a few areas for improvement in the questionnaire – in terms of the terminology, response options and routing – which were subsequently incorporated into the final version, which can be seen in Annex C.

### Sample and survey fieldwork

2.3 In order to be able to test for significant differences between the results for sample sub-groups, we set target quotas for respondents' rurality type, employment size band and business sector.

2.4 The seven rurality types used were those identified in Rural and Urban Area Classification 2004. Five employment size bands were used, with the employment size band being determined by the respondent's answer to Question 68 ('How many people work for your firm at this site?'). In terms of industries, the study sought to focus on private sector businesses. Six broad industry groupings were agreed with the project steering group, based on UK

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<sup>2</sup> We considered 15 minutes to be the maximum duration that would be tolerated by our business interviewees for this study.

Standard Industrial Classification of Economic Activities - UK SIC(92) sections. The table below summarises the sub-groups of our sample.

Table 2-1 Sample sub-groups

Type of rurality	Employment size band (employment at site)	SIC grouping
Urban	1	A, B (Agriculture, hunting and forestry; Fishing)
Less sparse rural	2-9	C, D (Mining and quarrying; Manufacturing)
- Town and urban fringe	10-49	
- Villages	50-249	E, F, I (Electricity, gas and water supply; Construction; Transport, storage and communication)
- Dispersed	250+	G (Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods)
Sparse rural		H (Hotels and restaurants)
- Town and urban fringe		J, K (Financial intermediation; Real estate, renting and business activities)
- Villages		
- Dispersed		

2.5 Using information provided by DEFRA on the broad rurality types of each of England's postal sectors, NOP specified and obtained sample data from the Experian business database. This data included contact details (including postcode); SIC code; and approximate employment.

2.6 NOP's survey fieldwork commenced on 15<sup>th</sup> February 2005 and finished on 6<sup>th</sup> April 2005. In total, NOP completed 2,436 interviews: with 680 urban businesses and 1,756 rural businesses. A breakdown of the base of respondents in each sub-group (by rurality type, employment size band and SIC grouping) is given in Annex B.

### Data tabulations and analysis

2.7 On completion of the fieldwork, the postcode of each of the 2,436 respondents was tagged by DEFRA to indicate the specific rurality type and English region, and whether the respondent is in a "PSA District" – i.e. in one of the Public Service Agreement Target 4 indicator districts (in the least well performing quartile of rural areas).

2.8 We are grateful to BT for providing information on whether (ADSL) broadband is available at each of the respondents' postcodes, and the date on which it was made available.

2.9 A key aspect of this study was to assess relative levels of ICT adoption, and the relationship between ICT adoption and firm performance. We therefore defined a simple 'adoption index', by summing the number of ICT facilities/applications used by each respondent. The adoption

index assigned to a respondent varied from 0 to 18, and was equal to the total number of 'Yes' responses to questions 1- 4, 12, and 17- 29 of the survey questionnaire (see Annex D). For the data tabulations we used six adoption index groupings, which are given (together with illustrative 'labels' and examples) in the table below:

Table 2-2 ICT 'adoption index' bands used in this report

<b>Adoption index band</b>	<b>Illustrative label for firms at that adoption level</b>	<b>Illustrative examples</b>
0	<i>"Non users"</i>	A firm with no ICT other than a fixed phone line and a mobile phone.
1	<i>"ICT islanders"</i>	A firm using a computer (e.g. for word processing) – but without any connectivity to the outside world.
2-5	<i>"Basic communicators"</i>	A firm with computers linked together with a Local Area Network, and using email and the worldwide web through an internet connection.
6-9	<i>"Mid range users"</i>	A firm with computers linked together with a Local Area Network, using email and the worldwide web through an internet connection, and with its own website. The firm uses a software package for its accounts, and orders some supplies online.
10-13	<i>"Advanced users"</i>	A firm with computers linked together with a Local Area Network, using email and the worldwide web through an internet connection, and with its own website. The firm orders some of its supplies online, uses a software package for its accounts, and has a shared customer database which is used to manage all orders. Key documents and data are stored on a shared server accessible to all staff.
14-18	<i>"Power users"</i>	A firm with three sites, each of which has computers linked together with a Local Area Network, with internet connectivity for access to email, the web and internal company applications. The firm has its own website, and orders some of its materials online. It is a supplier to a leading manufacturer, and uses the manufacturer's online supply chain management system for many day-to-day communications with this major customer, including purchase orders, shipping information and invoices. Most business processes revolve around the firm's intranet – which provides all staff with online access to the customer database, stock information, and key documents and data. The intranet is also used for compiling annual appraisal forms, and for providing senior managers with live financial information.

- 2.10 The above adoption index (AI) bands were selected in order to be able to differentiate between those businesses that do not have a computer ("non-users" at AI=0), those businesses that have a computer but no connectivity ("ICT islanders" at AI=1), and those businesses with higher levels of ICT adoption (grouped into four further bands). We restricted ourselves to a total of six adoption index bands, in order to have sufficient sample in each band to permit statistical significance testing.
- 2.11 The distribution of survey respondents (in terms of sector and employment) is inevitably somewhat different to the actual distribution of businesses in England. The data tabulations therefore applied weightings where appropriate, in order to make the data reflect the actual distributions of business units.

- 2.12 We analysed the data using two different weighting schemes:
- “Urban/rural weights” - where the urban results were weighted to reflect the size/sector distribution of business units in England’s urban areas, and the rural results were weighted to reflect the distribution of business units in England’s rural areas.
  - “National weights” - where both the urban and the rural results were weighted to reflect the overall size/sector distribution of business units in England. Using these weightings, we were able to test the results for effects that were solely or predominantly due to the different distributions of business types in urban and rural areas (e.g. rural businesses tending to be smaller; businesses in SIC sections A & B being much more prevalent in rural areas than in urban areas; etc.).
- 2.13 For certain results – for example where the rural results have been broken down by SIC grouping, employment size band and/or adoption index – we considered it more appropriate to analyse unweighted results. Each chart in this report explicitly states the weighting approach used. Details of the specific weightings used are given in Annex B.
- 2.14 Note that we specifically chose to weight these survey results to reflect the distribution of *business units* rather than the distribution of *employment*. We chose the business unit approach because this study is primarily aimed at informing rural ICT policy, which needs to be focused on influencing and supporting individual ICT decision makers in rural businesses; we considered the distribution of business units to be more meaningful for our purposes than the distribution of employment in rural businesses (which would be skewed towards larger businesses).
- 2.15 The format of the data tabulations was agreed with the project steering group, and was designed to allow us to test the original hypotheses. Five volumes were produced by NOP:
- Volume 1a presents a comparison of the overall responses of urban and rural businesses, using “Urban/rural weights”.
  - Volume 1b presents a comparison of the overall responses of urban and rural businesses, using “National weights”.
  - Volume 2 presents a detailed view of the (unweighted) rural results, breaking down the responses by type of rurality, employment size band, SIC grouping, and adoption index.
  - Volume 3 presents a detailed view of the (unweighted) urban results, breaking down the responses by employment size band, SIC grouping, and adoption index.

- Volume 4 presents the (weighted) rural results for each of eight English regions (excluding London).

2.16 Each volume identified statistically significant variations in the responses<sup>3</sup>, using the standard t-test at a 95% confidence level<sup>4</sup>. In this report, the word “significant” is reserved for those variations in responses for which we have 95% confidence that there is a genuine difference, rather than the variation being due to mere chance.

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<sup>3</sup> On the charts in the following sections, we have highlighted significant variations in the survey responses by circling the relevant pairs of data – except in the situations where to do so would materially detract from the clarity of the charts.

<sup>4</sup> By way of an example: For sample bases of 200 in each of sub-groups x and y, for a given question, we can be 95% confident that there is a genuine difference between the x and y populations as a whole, if 30% of the x sample say ‘yes’ and only 20% of the y sample say ‘yes’. But we could not be 95% confident in this result if the sample bases were 140 or less in each sub-group.

### 3 ICT adoption

3.1 In this section we present the key research findings regarding the *adoption* of ICT by businesses. First we compare ICT adoption levels, barriers and influences for rural and urban businesses. We then focus in on rural businesses, and explore the differences in adoption between different rurality types, business sizes, and sector.

#### Analysis of ICT adoption – rural versus urban

3.2 As we show later on, there are relatively few important differences in ICT adoption between different types of rurality. For the sake of clarity, we therefore start with a comparison of the urban responses against the aggregate rural response (rather than comparing the urban responses against the response for each type of rurality).

3.3 In comparing the urban and rural responses to our survey, we have uncovered some aspects in which urban and rural businesses are remarkably alike in their adoption of ICT, and other aspects in which there are marked differences. The key “rural versus urban” messages regarding ICT adoption are summarised below.

#### **Rural businesses are generally slower than urban businesses at adopting ICT...**

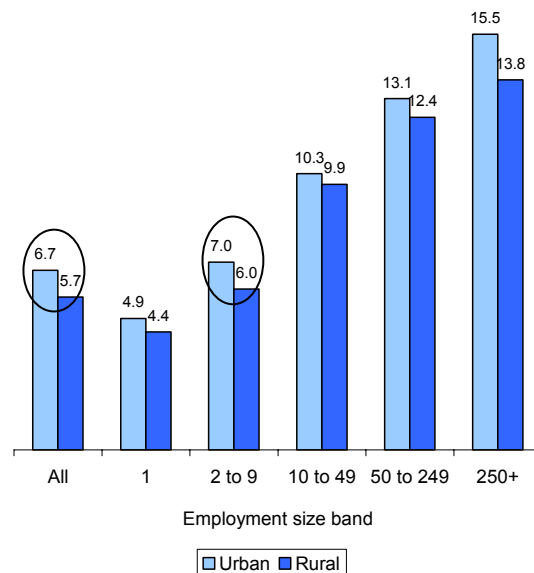
##### **Our survey revealed lower ICT adoption levels in rural areas at all employment size bands**

- Using Urban/rural weightings, the mean adoption index is 6.7 for urban businesses versus 5.7 for rural businesses.
- Sector distributions explain only part of this difference. When *National* weightings are applied, the difference remains significant, with an overall mean adoption index of 6.7 for urban versus 6.1 for rural.
- The difference is particularly pronounced for sites in the 2-9 employment band (note that the mean urban/rural employment levels in this band were similar, albeit not exactly equal: 3.8 for rural versus 4.1 for urban respondents).

##### **Unsurprisingly, ICT adoption increases as business size increases**

- As the businesses become larger and more complex, their usage of ICT increases.
- The mean adoption index for rural businesses rises from 4.4 (for sole traders) to 13.8 (for 250+ sites).

Figure 3-1 Mean adoption index (maximum 18) per employment size band



Base: All  
Note: Small base for 250+ employment size band  
Weighting: Urban/rural weights

**Urban and rural businesses are remarkably comparable in their adoption of computers and of the internet**

- 85% of urban businesses use computers, versus 80% of rural businesses. This gap becomes smaller still when National weightings are applied – i.e. normalising for size and sectoral differences (85% vs 82%).
- 76% of urban businesses have internet access, versus 74% of rural businesses. This gap disappears when National weightings are applied (76% vs 76%).

**There is a significantly lower use of Electronic Data Interchange (EDI)**

- 13% of urban businesses use EDI, versus 8% of rural businesses. The gap remains significant using National weightings (13% vs 9%).
- This difference cannot be ascribed to a modest time lag in adoption between urban and rural areas, since EDI is a mature technology that has been around for many years.

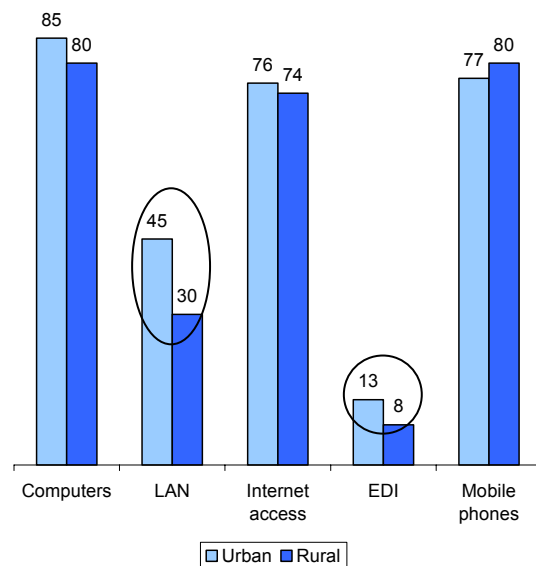
**But the most striking differences are in the use of Local Area Networks (LANs)...**

- Rural businesses don't appear to be connecting up their on-site computers as much as their urban counterparts. 45% of urban businesses use LANs, versus 30% of rural businesses.
- The difference remains significant when National weightings are applied (46% vs 34%).
- As with EDI, this difference cannot be ascribed to a modest time lag in adoption by rural businesses, since Local Area Networking is also a mature technology that has been around for many years.

**...and in the use of applications for sharing information *within the firm***

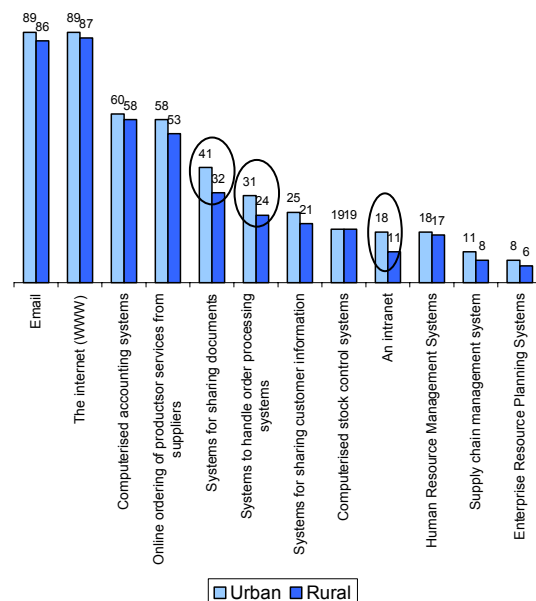
- Rural businesses make significantly lower use of document sharing, order processing and intranet applications

**Figure 3-2 Businesses using ICT equipment and facilities (%)**



Question: At this site does your firm use the following equipment or facilities?  
Base: All  
Weighting: Urban/rural weights

**Figure 3-3 Usage of ICT applications (%)**



Question: Which of the following information technology applications does your firm use?  
Base: All whose firm uses computers  
Weighting: Urban/rural weights

**Substantially fewer rural businesses have a website**

- 51% of urban businesses have a website, versus 38% of rural businesses.
- The gap narrows, but remains significant, when National weightings are applied: 51% vs 43%.

**Those rural businesses that do have a website are slightly less likely than their urban counterparts to allow online ordering...**

- 30% of urban businesses with a website allow online ordering, versus 26% of rural businesses
- However, this gap is small (and is not strictly significant at the 95% confidence level)

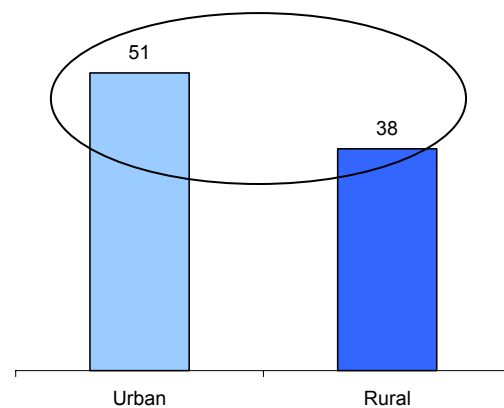
**...tend to monitor their website usage less...**

- 60% of urban businesses monitor their website usage (e.g. hits, page impressions, visitors), versus 51% of rural businesses.
- This difference narrowly misses being strictly significant at the 95% confidence level.

**...and tend to update their sites somewhat less frequently, on average**

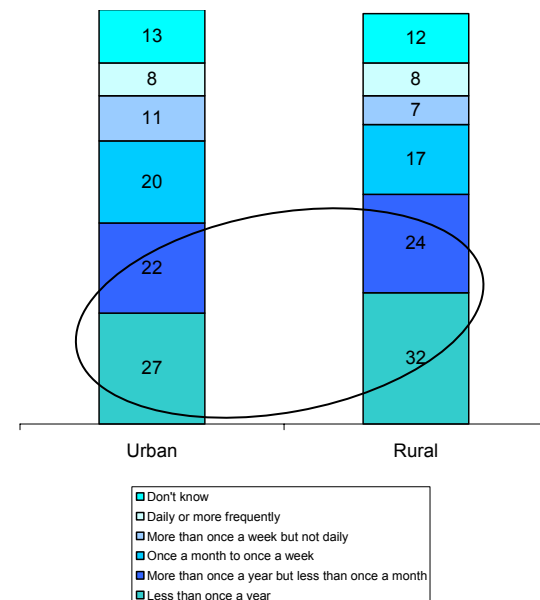
- 49% of urban businesses with a website update their site less than once per month, versus 56% of rural businesses.

Figure 3-4 Firms having a website (%)



Question: Does your firm have a website?  
Base: All  
Weighting: Urban/rural weights

Figure 3-5 Frequency of website updating (%)



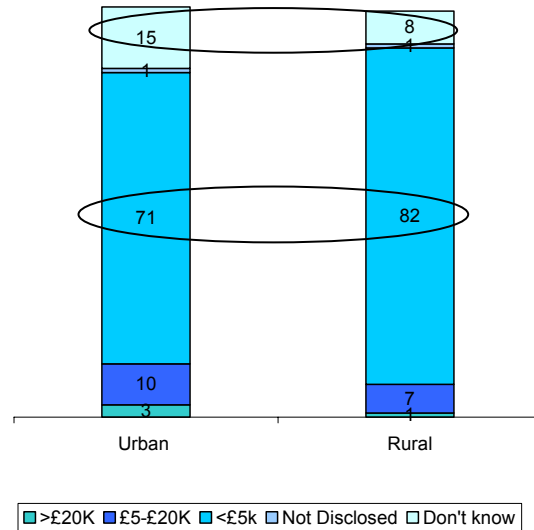
Question: How frequently is your website updated?  
Base: All who have a website  
Weighting: Urban/rural weights

**...and this lower level of adoption is reflected in lower ICT investment levels**

**Rural businesses spend less than urban businesses on ICT...**

- 71% of urban businesses say they spend less than £5,000 p.a. on ICT equipment, software, support and services, versus 82% of rural businesses.
- This gap remains significant when National weightings are applied (71% vs 79%).
- Whilst there are more urban than rural 'Don't Knows' on this ICT investment question, the majority of these (77%) are associated with larger sites (10-49 employment and above), and we would expect the actual spend for these respondents to emphasise rather than dilute the difference highlighted above.

**Figure 3-6 Expenditure on ICT equipment and related services in the last 12 months (%)**

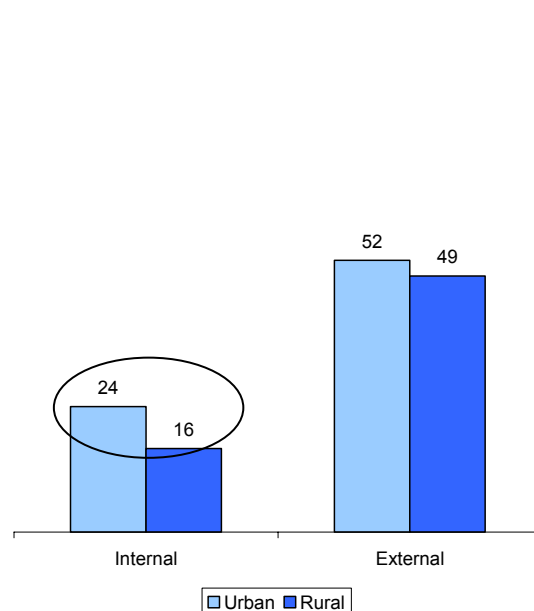


Question: Approximately how much has your firm spent on ICT equipment, software, support and services at this site over the last 12 months?  
Base: All  
Weighting: Urban/rural weights

**...and they are less likely to employ internal IT support staff**

- 24% of urban businesses use *internal* IT support, versus 16% of rural businesses.
- In contrast, the use of *external* IT support is relatively similar: used by 52% of urban businesses and 49% of rural businesses.

**Figure 3-7 Use of internal and external support (%)**



Question: Does your firm have any internal IT support staff? Does your firm use any external IT support?  
Base: All  
Weighting: Urban/rural weights

**But rural take-up of broadband is just about identical to urban take-up in areas where broadband has been available for a year or more...**

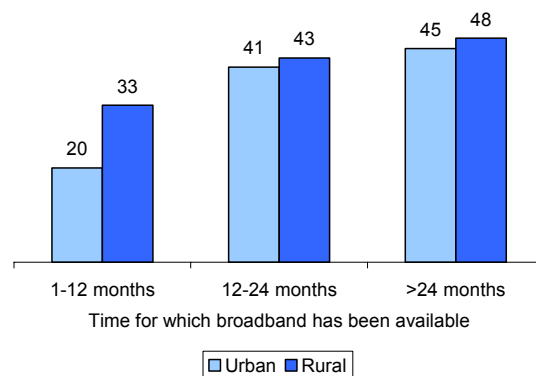
**Current overall broadband take-up is lower in rural than in urban areas...**

- Amongst businesses with internet access, 60% use broadband in urban areas, versus 41% in rural areas.

**...but this is simply due to broadband being made available later in rural areas**

- Penetration rates are very similar in areas which have had broadband for similar periods of time.
- For example, in areas where broadband has been available for more than two years, take-up is 45% of all urban businesses and 48% of all rural businesses.
- Lack of availability has been the key barrier to adoption for broadband in rural areas.

**Figure 3-8 Broadband takeup (%) by length of broadband availability**



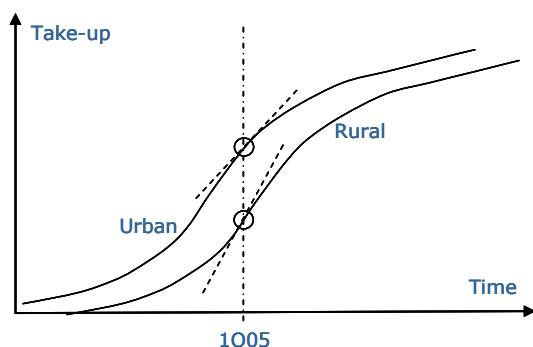
Base: All to whom broadband was available prior to start of fieldwork  
Note: Small base for Urban 1-12 months  
Weighting: Unweighted

**...and take-up is currently rising faster in rural areas than in urban areas...**

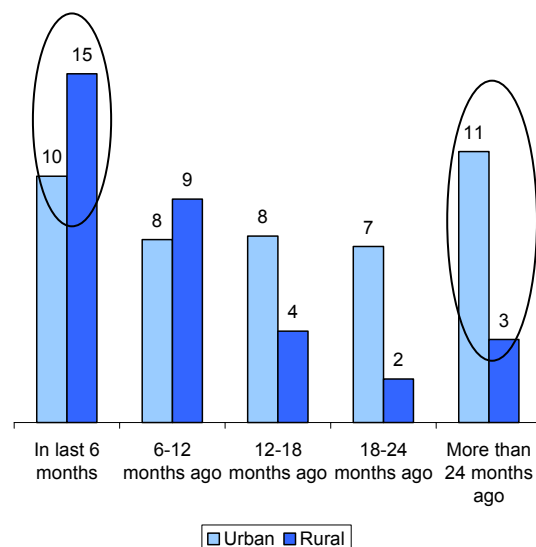
**Rural businesses are playing 'catch-up' now that broadband is available**

- The survey indicates a 'penetration added' in the previous 6 months of 15 percentage points (pp) in rural areas, versus 10 pp in urban areas.
- As illustrated below: urban business broadband penetration (at 60% of internet users) is probably beyond the inflection point, whereas rural business broadband penetration (at 41% of internet users) has yet to inflect.

**Figure 3-9 Schematic of urban and rural broadband take-up**



**Figure 3-10 Broadband penetration added (% of all respondents)**



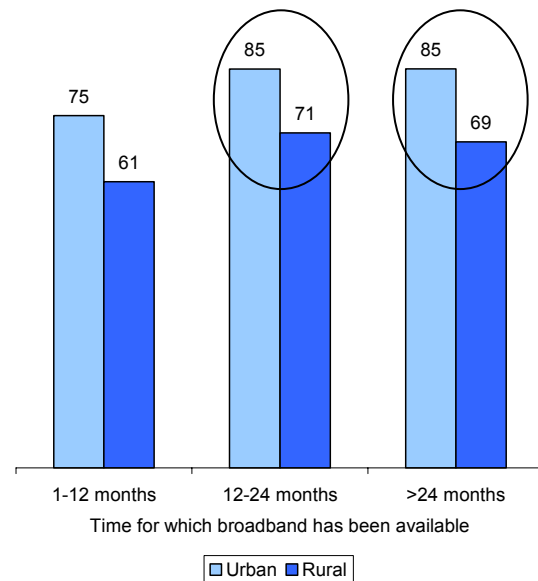
Base: All  
Weighting: Unweighted

**...even though awareness of broadband availability appears to be lower in rural areas**

**Perception of broadband availability appears to be seriously lagging the reality in rural areas**

- In locations where broadband has been available for more than 2 years (using ADSL coverage as a rough proxy for broadband coverage), 85% of urban non-users say that broadband is available, compared with just 69% of rural non-users.
- Rural exchange areas are larger than urban exchange areas, so a greater proportion of customers encounter 'reach' limitations. However, BT quotes an average ADSL coverage of 99.8% of lines within enabled exchange areas. Even in the most rural areas, we would expect actual ADSL availability to exceed 90% of lines in enabled areas.
- It is likely that some of these rural broadband non-users are not aware that the reach restrictions on ADSL technology were relaxed in September 2004: they may now be able to obtain broadband, having found previously that they were beyond the reach of ADSL.

**Figure 3-11 Proportion of broadband non-users believing that broadband is available (%)**



Question: Is broadband currently available in your area? – combined with analysis of BT data on broadband availability per postcode  
Base: All who do not use broadband  
Note: Small base for urban 1-12 months  
Weighting: Unweighted

**Broadband connectivity speeds are lower in rural areas than in urban areas**

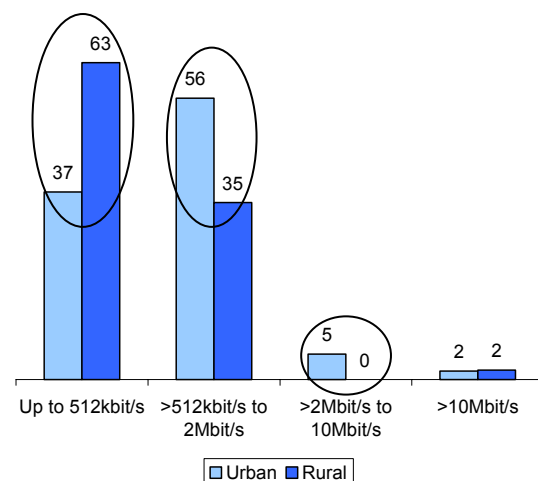
**Rural businesses are more likely to be using "basic" broadband services**

- The majority (63%) of urban business broadband users have connectivity faster than 512kbit/s, whereas this is the case for only a minority (37%) of rural businesses.
- This is likely to be due to the reach limitations on bandwidth associated with xDSL services, combined with the greater levels of competition and choice in urban areas (where there are cable modem and Unbundled Local Loop xDSL offerings, as well as services based on BT's xDSL wholesale services).

**Use of broadband services greater than 10Mbit/s is as yet very low**

- Services above 10Mbit/s account for c. 2% of broadband business connections in both urban and rural locations.

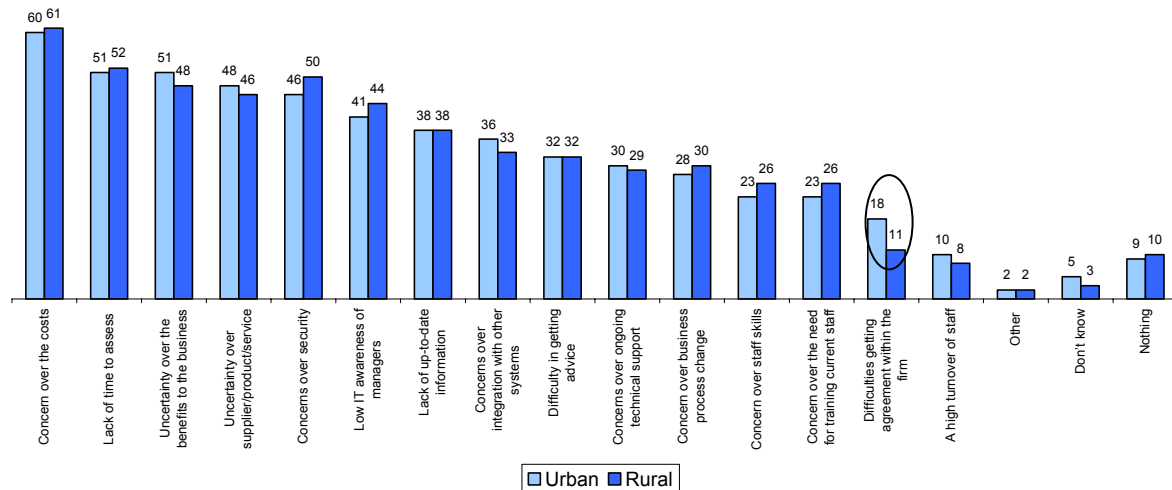
**Figure 3-12 Downstream speed of broadband connections (%)**



Question: At what speed does your internet connection allow you to download?  
Base: All who use broadband – excluding the Don't Know responses  
Weighting: Urban/rural weights

**Considering ICT in general (rather than broadband), the cited barriers to adoption are remarkably similar for rural and urban businesses**

Figure 3-13 Barriers to ICT investment (%)



Question: Which of the following tend to deter you from making investments in ICT, or delay your ICT investment decisions?  
Base: All  
Weighting: Urban/rural weights

**The barriers to adoption do not appear, in general, to be any higher for rural than for urban businesses**

- There is no evidence of rural businesses being particularly disadvantaged in terms of cost, time, access to up-to-date information, access to advice, and ongoing technical support.
- Of the 15 tested barriers to adoption, 7 were cited more frequently by rural businesses, 6 were cited more frequently by urban businesses, and 2 were cited equally by rural and urban.

**While rural businesses appear to be slightly more concerned than their urban counterparts about security and skills issues, the differences are small**

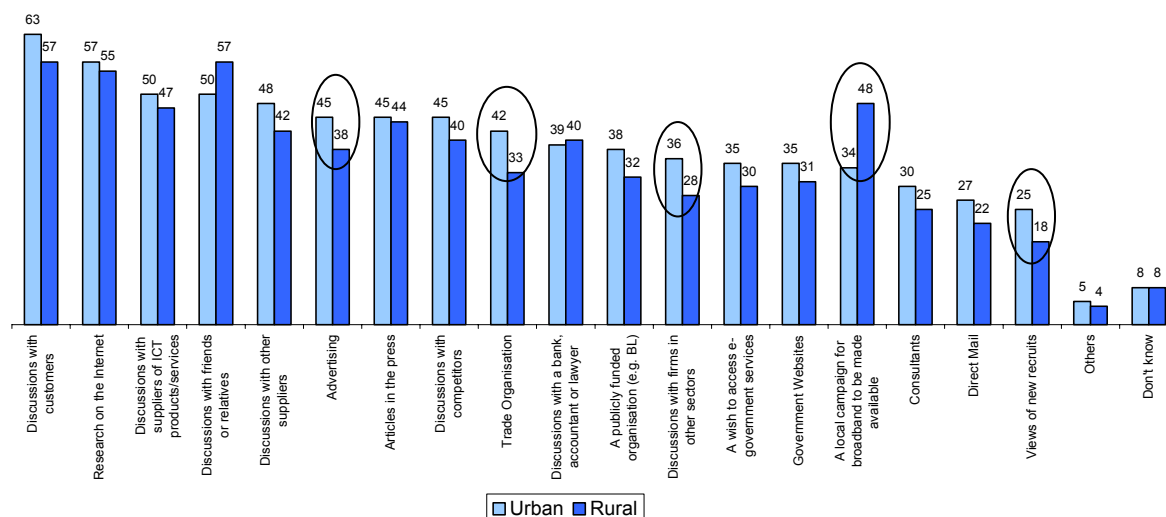
- Concerns over security: cited by 46% of urban vs 50% of rural businesses.
- Concerns over staff skills: cited by 23% of urban businesses vs 26% of rural businesses.
- Concerns over the need to train current staff: cited by 23% of urban businesses vs 26% of rural businesses.

**The only ‘barrier’ with a significant difference between rural and urban businesses was “getting agreement within the firm”**

- This is less of an issue for rural businesses (11%) than for urban businesses (18%).
- It could possibly be due to a greater prevalence of multi-site firms within urban areas and/or direct owner-manager control of firms being more common in rural areas.

**But rural businesses are, on average, subject to significantly fewer influences...**

Figure 3-14 Factors that influence ICT investment decisions (%)



Question: Which of the following tend to inform or influence your investment decisions on ICT ?  
Base: All  
Weighting: Urban/rural

**In contrast to the “barriers to adoption” results, there are several important differences between urban and rural businesses when we explore their adoption influences**

- 15 of the 18 influences tested were cited less frequently by rural businesses, of which 5 were significantly different for rural and urban firms.
- Public sector influences (i.e. government websites, e-government and publicly funded organisations such as Business Link) were significant – but were all cited less frequently by rural businesses than by urban businesses.

**Rural businesses are significantly less influenced by advertising**

- 45% of urban businesses cite advertising as an influencing factor on their ICT investment decisions, versus 38% of rural businesses.
- People living and/or working in rural areas will typically be exposed to many fewer advertising messages per day than those in urban areas – fewer outdoor posters, less exposure to advertising on public transport, fewer broadband-related radio adverts (due to lower competition intensities) etc..

**Rural businesses also benefit significantly less from discussions with their peers...**

- 42% of urban businesses are influenced by trade organisations in their ICT investment decisions, versus 33% of rural businesses.
- 36% of urban businesses are influenced by discussions with firms in other sectors, versus 28% of rural businesses
- This reflects the easier networking opportunities available to firms in urban areas.

**...resulting in a relatively high reliance on friends and family for advice**

- 50% of urban businesses are influenced by this factor, versus 57% of rural businesses

**Local broadband campaigns have had a marked impact on rural businesses’ adoption of ICT**

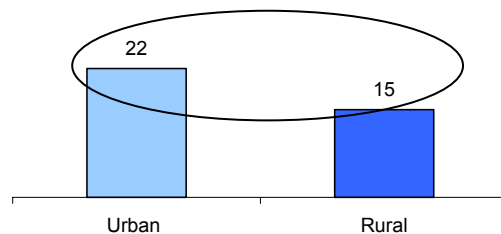
- 34% of urban businesses have been influenced by a local campaign for broadband to be made available, versus 48% of rural businesses.

*...are more likely to be single sites...*

**Fewer rural businesses are part of multi-site firms**

- 22% of urban businesses were multi-site, versus 15% of rural businesses.
- This difference is not solely due to the differences in site size and sector: the gap remains significant when National weightings are applied (22% vs 17%).
- The incidence of multi-site firms is likely to be higher than the above levels in both urban and rural areas, since our survey specifically asked to speak to the person responsible for ICT decisions: referrals to "HQ" at other locations were not followed up, as we were particularly concerned to talk to ICT decision makers located at rural sites and ICT decision makers located at urban sites.
- As will be seen later, multi-site businesses have significantly higher levels of ICT adoption than single-site businesses.

**Figure 3-15 Firms that have sites elsewhere (%)**



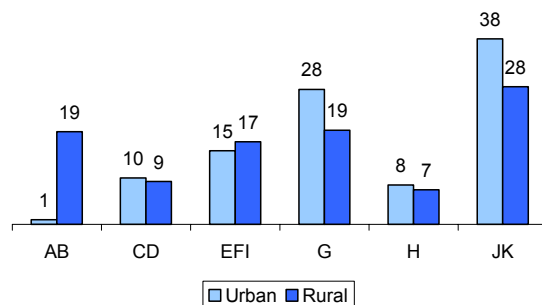
Question: Does your firm have any sites elsewhere ?  
Base: All  
Weighting: Urban/rural weights

*...are more likely to be in ICT-lite sectors...*

**Rural areas have a relatively high proportion of businesses in SIC sections A&B (Agriculture, hunting, forestry and fishing)...**

- Of the sectors sampled by this survey, 19% of enterprises are in sections A&B in rural areas, versus just 1% of those in urban areas.
- As will be seen later, this is the SIC grouping with the lowest levels of ICT adoption.

**Figure 3-16 Urban and rural distributions of enterprises by SIC92 section within the sampled sectors (%) [source: DEFRA]**



**...and relatively few businesses in SIC sections J&K (Financial intermediation, real estate, renting and business activities)**

- Of the sectors sampled by this survey, 28% of VAT-registered enterprises are in sections J&K in rural areas, versus 38% in urban areas.
- J&K is, by some margin, the SIC grouping with the highest levels of ICT adoption.
- Rural areas also have relatively few businesses in SIC section G (wholesale, retail, repair), which shows mid-range ICT adoption levels.

**...and have older decision makers**

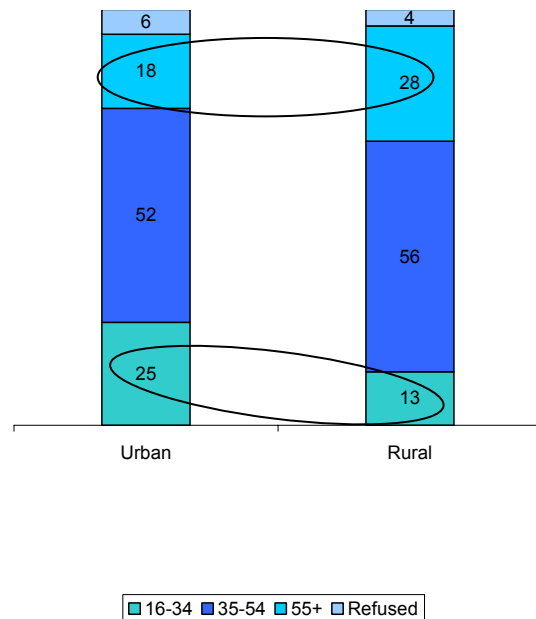
**Businesses in rural areas tend to have fewer 'young' ICT decision makers...**

- 25% of urban businesses have ICT decision makers under 35, versus just 13% of rural businesses.

**...and a relatively high proportion of 'mature' ICT decision makers**

- 28% of rural businesses have ICT decision makers aged 55 or over, versus just 18% of urban businesses.
- This is broadly in line with the Census 2001 data regarding the relative age profiles of managers living in rural and urban areas; the average age of managers living in rural areas (especially in sparse rural areas) is higher than that of managers living in urban areas.

Figure 3-17 Age profile of respondents (%)

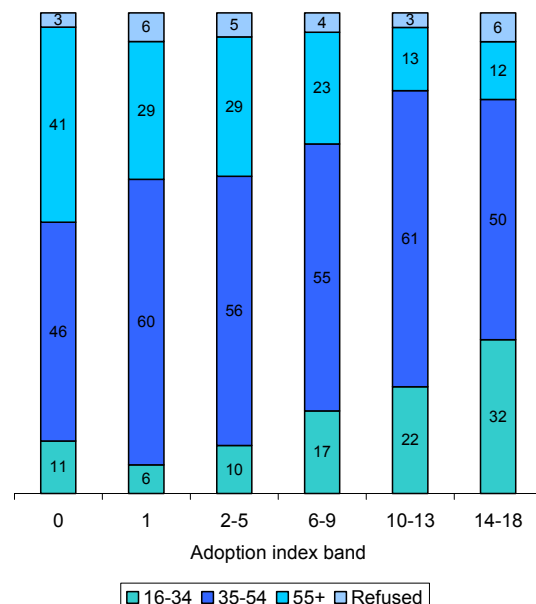


Question: Can I just ask your age ?  
Base: All  
Weighting: Urban/rural weights

**This matters, because ICT adoption levels are clearly associated to some extent with the age of the ICT decision maker**

- For “non user” rural businesses (with an adoption index of 0), 41% of decision makers are 55+ and 11% are under 35.
- For “power user” rural businesses (with an adoption index of 14 to 18), just 12% of decision makers are 55+, while 32% are under 35.
- When we applied weightings to normalise our urban and rural responses to a common age distribution, we found that the urban/rural differences narrowed somewhat – although there remained significant differences in ICT adoption influences, for example.

Figure 3-18 Age profile of rural respondents by adoption index band (%)



Question: Can I just ask your age ?  
Base: All rural firms  
Weighting: Unweighted

### Mobile phone coverage is an issue for a significant number of rural businesses

#### Rural businesses face a significant disadvantage in terms of mobile coverage

- 13% of urban firms that use mobile phones said that local mobile coverage was a problem to their business, versus 34% of rural firms.

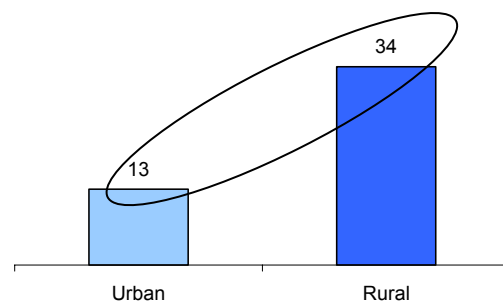
#### This is a particular issue in sparse rural areas...

- 39% of businesses using mobile phones in sparse rural areas said that mobile coverage was a problem, versus 30% of those in less sparse areas.
- This is to be expected, given that mobile coverage tends to be poorer in areas with low population densities.

#### ...and for hotels & restaurants

- 42% of rural firms in SIC grouping H said that mobile coverage was a problem, versus 26% in SIC grouping C&D (the sections for which mobile coverage was least of a problem).
- We suspect that this is largely a reflection of mobile coverage being a problem for the customers/guests of these firms, rather than for the operation of the business itself.

Figure 3-19 Firms for whom local mobile phone coverage has proved to be a problem (%)



Question: Is the quality of mobile phone coverage locally a problem to your business at this site?  
Base: All whose firm uses mobile phones  
Weighting: Urban/rural weights

## Analysis of ICT adoption – within rural areas

3.4 In analysing the responses of our rural interviewees, we have found that there are relatively few important differences in ICT adoption between different types of rurality. Industry sector and firm size are much more important factors. The key messages emerging from our analysis of ICT adoption by rural businesses are summarised below.

### **ICT adoption levels are somewhat lower in sparse rural areas**

#### **In general, ICT adoption levels are slightly lower in sparse than in less sparse rural areas**

- There is a mean adoption index of 7.5 in less sparse areas, versus 6.8 in sparse areas, which is a small but significant difference.

#### **PSA Districts do not exhibit particularly low adoption levels**

- Respondents in PSA Districts have a mean adoption index of 6.8 – equal to that for all sparse rural areas, which is to be expected, given that PSA Districts are generally in the more remote areas: 70% of our PSA District respondents were in sparse rural areas.

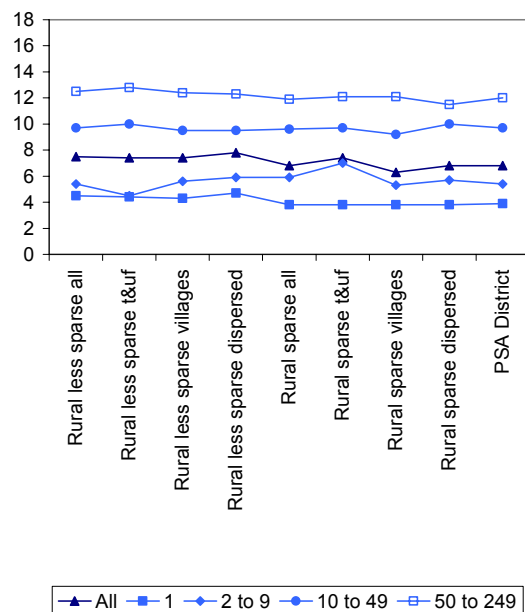
#### **Sole traders in sparse areas have significantly lower adoption levels than those in less sparse areas...**

- Firms in the “1” employment size band have a mean adoption index of 4.5 in less sparse areas, versus 3.8 in sparse areas.
- This could potentially be due to the ‘isolation’ effects of operating a business in a sparse area being more pronounced for sole traders.
- The difference does *not* appear to be due to an age factor: the distribution of ages of our sole traders is very similar in sparse and less sparse areas.

#### **...but ‘town and urban fringe’ micro-businesses have higher adoption levels in sparse than in less sparse areas**

- ‘Town and urban fringe’ firms in the 2-9 employment size band have a mean adoption index of 4.5 in less sparse areas, versus 7.0 in sparse areas.

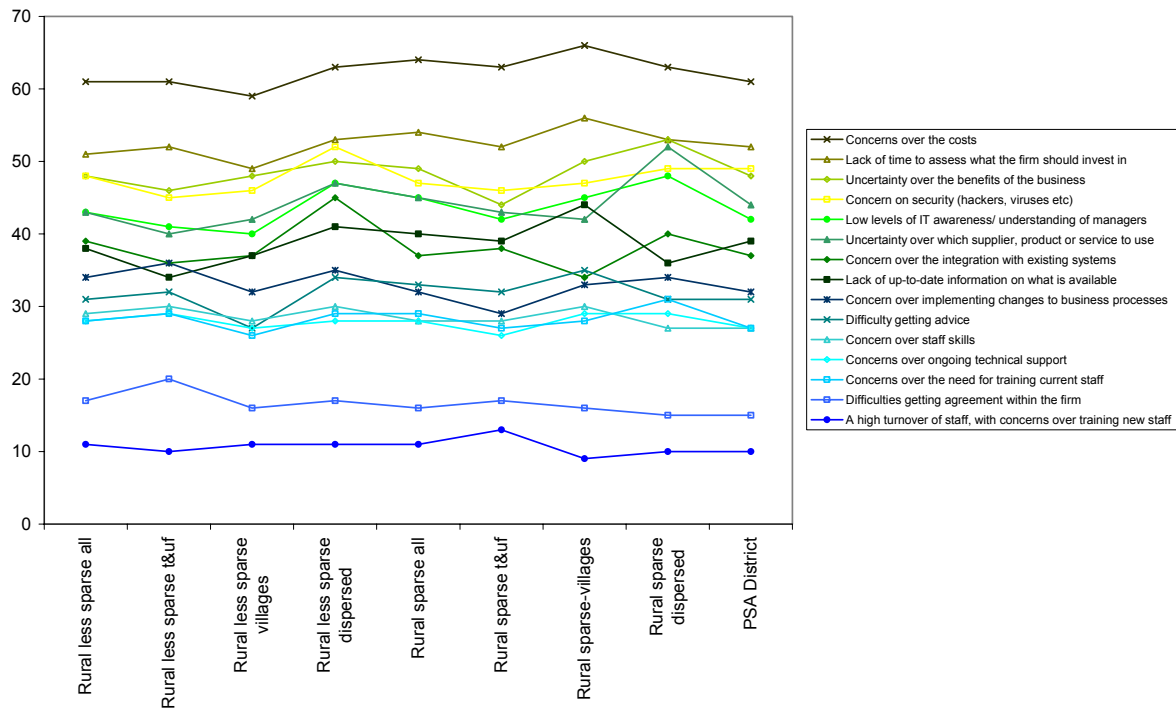
Figure 3-20 Mean adoption index by rurality and employment size band (maximum 18)



Base: All rural  
Note: Chart excludes the 250+ employment size band, due to the very small bases in each rurality type  
Weighting: Unweighted

**Cited barriers to adoption are broadly similar across the various rurality types...**

**Figure 3-21 Cited barriers to ICT adoption by type of rurality (%)**



Question: Which of the following tend to deter you from making investments in ICT, or delay your ICT investment decisions ?  
Base: All rural  
Weighting: Unweighted

**There is no evidence of barriers to adoption being substantially worse in sparse than in less sparse areas...**

- There are only two significant 'high points' in this data: 'uncertainty over which supplier, product or service to use' (for sparse-dispersed businesses), and 'concern over integration with existing systems' (for less sparse-dispersed businesses).

**'Concern over the costs' and 'lack of time to assess what the firm should invest in' are the most frequent barriers in all rurality types**

- 'Concern over the costs' was cited by 61% in less sparse areas, and 64% in sparse areas.
- 'Lack of time to assess...' was cited by 51% of firms in less sparse areas, and 54% of firms in sparse areas.

**...nor of businesses in PSA Districts facing particularly high barriers to adoption**

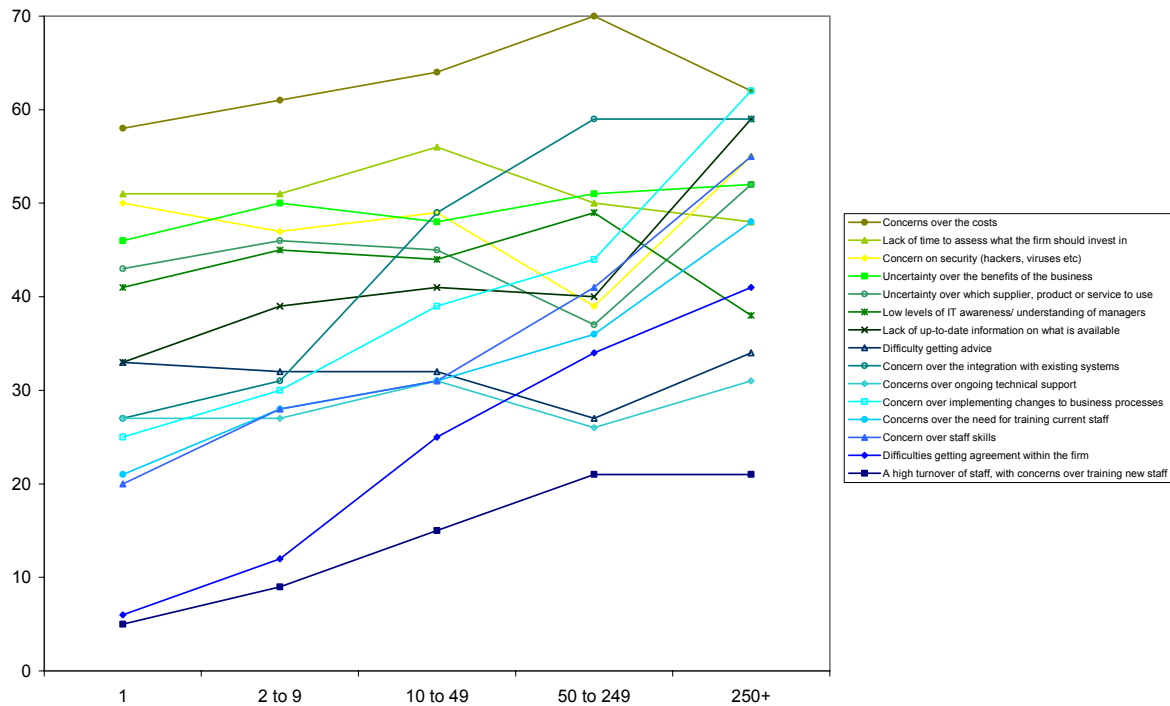
- There are no significant differences in the frequencies with which barriers to adoption were cited by firms in PSA Districts, versus their sparse and less sparse averages.

**Management IT awareness/understanding is more of a problem than the skills of staff**

- 'Low level of IT awareness/understanding of managers' was cited by 43% of firms in less sparse areas, and 45% of those in sparse areas; this represents substantially higher levels of concern than on the staff-related issues:
  - 'Concern over staff skills' (29%, 28%)
  - 'Concern over need for training existing staff' (28%, 29%), and
  - 'High turnover of staff, with concerns over training new staff' (11%, 11%).

**...but vary in their importance for different size of firm: there are more barriers to adoption as the businesses and decisions become more complex**

**Figure 3-22 Cited barriers to ICT adoption by employment size band (%)**



Question: Which of the following tend to deter you from making investments in ICT, or delay your ICT investment decisions ?  
Base: All rural  
Weighting: Unweighted

**Comparing firms in the '50-249' and '2-9' employment size bands<sup>5</sup>, 7 barriers to adoption are significantly higher for the larger businesses...**

- Concern over integration with existing systems (59% vs 31%) (+28 percentage points)
- Difficulties in getting agreement within the firm (34% vs 12%) (+22pp)
- Concern over implementing changes to business processes (44% vs 30%) (+14pp)
- Concern over staff skills (41% vs 28%) (+13pp)
- A high turnover of staff, with concerns over training new staff (21% vs 9%) (+12pp)
- Concern over the costs (70% vs 61%) (+9pp)
- Concern over the need for training current staff (36% vs 28%) (+8pp)

**...2 barriers are significantly lower for the larger firms...**

- Uncertainty over which supplier, product or service to use (37% vs 46%) (-9pp)
- Concern on security (39% vs 47%) (-8pp)

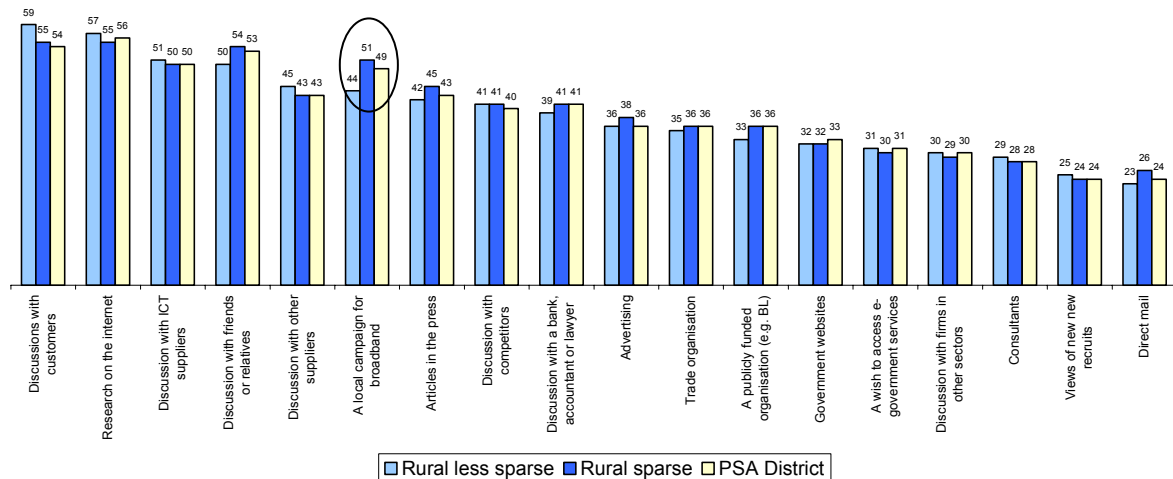
**...and 6 barriers are approximately the same**

- Uncertainty over the benefits to the business (51% vs 50%)
- Lack of time to assess what the firm should invest in (50% vs 51%)
- Low levels of IT awareness/understanding of managers (49% vs 45%)
- Lack of up-to-date information (40% vs 39%)
- Difficulty getting advice (27% vs 32%)
- Concern over ongoing technical support (26% vs 27%)

<sup>5</sup> We use these size bands for this comparison in order to avoid the special circumstances facing large firms and sole traders.

**ICT adoption influences are similar in sparse and less sparse areas**

Figure 3-23 ICT adoption influences by rurality (%)



Question: Which of the following tend to inform or influence your investment decisions on ICT ?  
Base: All rural  
Weighting: Unweighted

**Whereas there are substantial differences in the influences on rural and urban businesses, the influences are broadly similar when we look at businesses in different types of rurality**

- 8 influences are cited somewhat less frequently in sparse than in less sparse areas
- 8 influences are cited somewhat more frequently in sparse than in less sparse areas
- 2 influences are cited equally in sparse and less sparse areas

**The influences on businesses in PSA Districts are, in general, no different to those in other rural areas**

- The only significant difference being the effect of local broadband campaigns (49% in PSA Districts vs 44% in less sparse areas).

**The differences are small and not statistically significant...with the exception of local broadband campaigns**

- 51% of businesses in sparse areas said that a local campaign for broadband had influenced their ICT investment decisions, versus 44% of businesses in less sparse areas

**Important determinants of ICT adoption include the industry sector...**

**SIC grouping J&K (financial intermediation; real estate, renting, and business activities) shows the highest adoption levels, and A&B (agriculture, hunting and forestry; fishing) shows the lowest adoption levels**

- Firms in SIC sections J&K have a mean adoption index of 8.9, versus 5.2 for firms in SIC sections A&B.

**The disparity between the sectors is widest in the '2 to 9' employment size band**

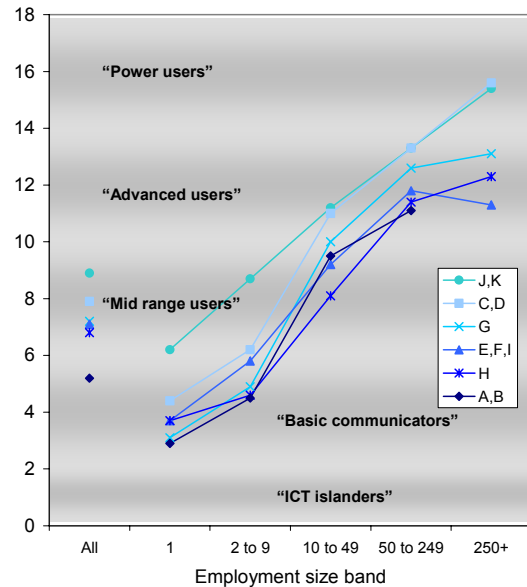
- For this size of business, the mean adoption index is 8.7 for J&K versus 4.5 for A&B.
- It is notable that firms in sections C&D (mining, quarrying; manufacturing) 'catch up' with their counterparts in sections J&K once firm size reaches '10 to 49' or above.
- There is also a particularly large increase in the adoption levels of firms in sections A&B, when we move from '2 to 9' to the '10 to 49' size band.

**...whether the firm is multi-site or single-site...**

**Business sites that are part of a multi-site enterprise have substantially higher adoption levels than single site firms**

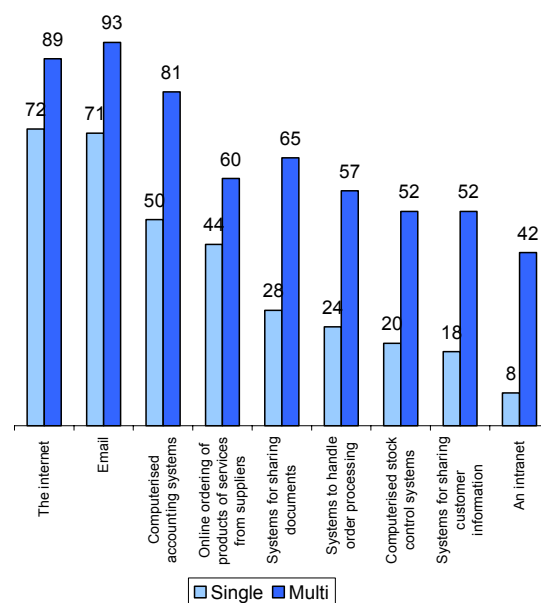
- As shown opposite, they exhibit significantly higher usage of all IT applications, and there are particularly large differences when it comes to applications associated with sharing information within the firm (e.g. systems for sharing documents, intranets)
- This is to be expected, given that multi-site respondents will be part of larger enterprises, and given that ICT plays a critical part in ensuring that a multi-site enterprise can operate as 'one firm'.

**Figure 3-24 Mean adoption index (maximum 18) by SIC grouping and employment size band**



Base: All rural  
Note: Small base for 250+ employment size band  
Weighting: Unweighted

**Figure 3-25 Single site and multi-site businesses using IT applications (%)**



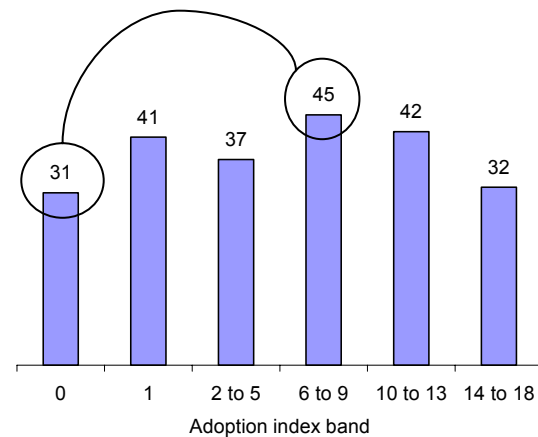
Question: Which of the following information technology applications does your firm use?  
Base: All rural  
Weighting: Unweighted

**...whether it was started by someone new to the area...**

**There is some evidence to suggest that firms started by people new to a rural area have higher adoption levels**

- The likelihood of the firm having been founded by someone new to the area is significantly higher for firms with an adoption index of 6-9 than for firms with an adoption index of 0 (45% vs 31%).
- This suggests that an influx of business talent into a rural area can potentially help diffuse 'better practice' in terms of ICT adoption.
- However, the small bases of firms with AI=1 and AI=14-18 make it difficult to determine an unambiguous trend in the chart opposite.

**Figure 3-26 Proportion of firms founded by people new to the area (%) by adoption index band**



Question: Thinking about the person who started up this business, did he or she come from this area originally?

Base: All rural, trading for ≤10 years, for whom this is the HQ or only site

Note: Small bases for AI=1 and AI=14-18

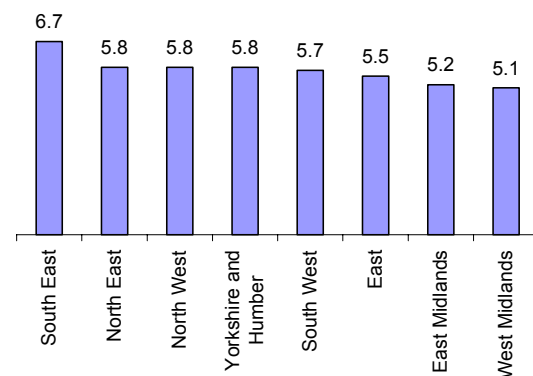
Weighting: Unweighted

**...and whether it is located in the South East**

**Rural firms in the South East of England have higher ICT adoption levels...**

- The South East's mean adoption index of 6.7 is significantly higher than the 5.2-5.7 adoption index found in the West Midlands, East Midlands, East and South West.
- This is not a 'multi-site' effect; in fact, firms in the South East were least likely to be multi-site.
- Nor is it due to different distributions of sector or firm size: the 'Urban/rural weightings' used in the chart opposite normalise all regions to the England average distribution for rural areas.

**Figure 3-27 Mean adoption index by region (maximum 18)**



Base: All rural

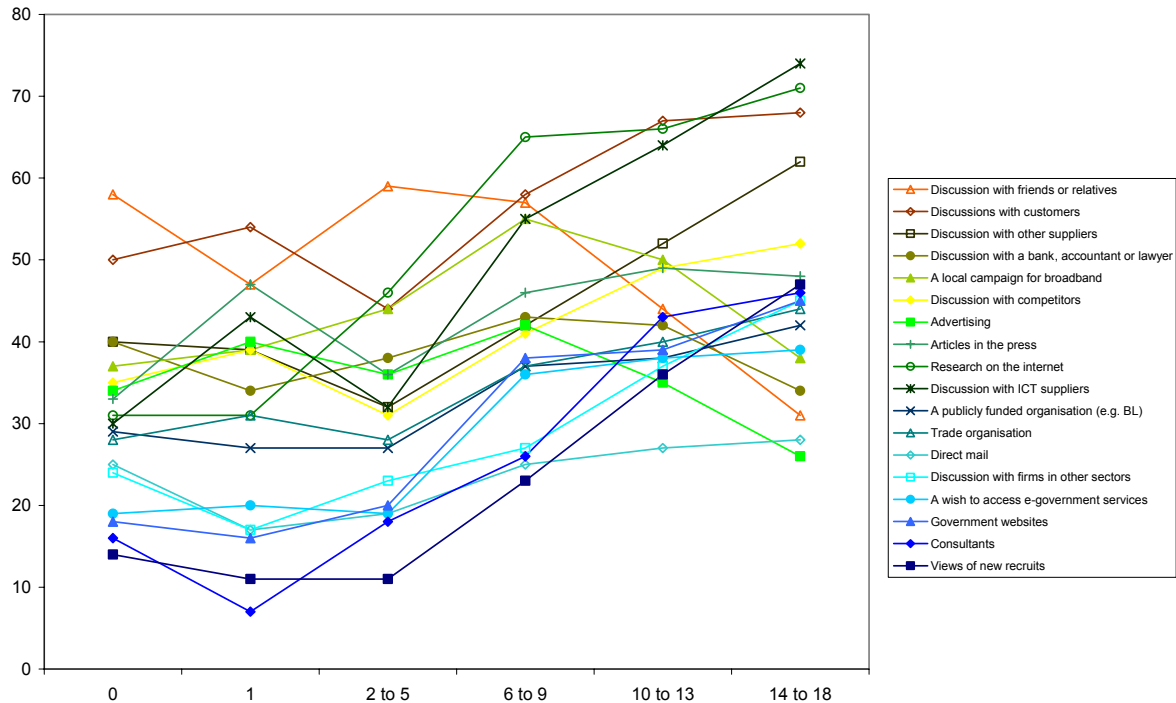
Weighting: Urban/rural weights

**...due to a number of contributory factors**

- Networking benefits from proximity to London.
- Younger firms (highest proportion of firms less than 4 years old, at 23%).
- Younger ICT decision makers (lowest proportion of 55+ decision makers, at 20%).
- Higher broadband take-up (at 59% of internet users, close to the urban average) enabling better use of IT applications.

**In general, the higher the adoption level, the more influences there are at work**

Figure 3-28 ICT adoption influences by adoption index band (%)



Question: Which of the following tend to inform or influence your investment decisions on ICT ?  
Base: All rural  
Weighting: Unweighted

**Comparing “advanced user” businesses (with an adoption index<sup>6</sup> of 10-13) against “basic communicators” (those with an adoption index of 2-5), the higher adopters are significantly more influenced by 14 of the 18 factors tested...**

The largest differences are in:

- Discussions with ICT suppliers (64% vs 32%) (+32 percentage points)
- Views of new recruits (36% vs 11%) (+25pp)
- Consultants (43% vs 18%) (+25pp)
- Discussions with customers (67% vs 44%) (+23pp)

**...and are significantly less influenced by just 1 factor: discussions with friends or relatives**

- Discussions with friends or relatives was cited as an influence by 44% of firms with an adoption index of 10-13, versus 59% of firms with an adoption index of 2-5 (-15pp)

<sup>6</sup> AI=2-5 and AI=10-13 are used for this comparison, in order to take adoption levels that could feasibly refer to a single given size of business (rather than comparing the extremes, e.g. AI=0 vs AI=14-18).

## 4 ICT impact

- 4.1 In this section we present the key research findings regarding the *importance and impact* of ICT for businesses, as perceived and assessed by the businesses themselves.
- 4.2 First we compare the perceived importance and benefits of ICT for rural and urban businesses. We then focus in on rural businesses, and explore the differences in ICT impact between different rurality types, business sizes, and sector.

### Analysis of impact – rural versus urban

***On average, rural businesses place somewhat less importance than their urban counterparts on ICT***

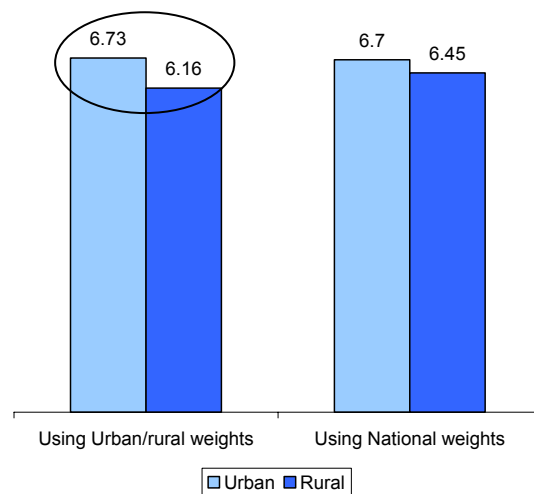
#### Rural businesses place significantly less importance on Information Technology

- The average importance score (out of 10) is 6.7 for urban businesses and 6.2 for rural businesses.

**However, much of this difference is due to the respective sector/size distributions in urban and rural areas**

- When National weightings are applied, the gap narrows to be insignificant: 6.7 versus 6.5.

Figure 4-1 Businesses' perceived importance of IT (mean score out of 10)

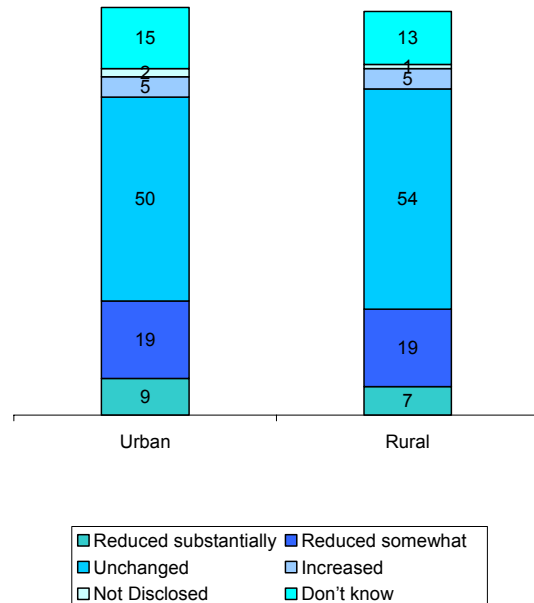


Question: Overall, how important do you consider Information Technology to be to your business, on a scale of 1 to 10 ?  
Base: All

**Urban businesses are slightly more convinced than rural businesses that their ICT investments have meaningful impacts on their revenues...**

- 28% of urban businesses said that halving last year's ICT expenditure would have reduced next year's revenues, versus 26% of rural businesses.

**Figure 4-2 Effect on next year's revenues of halving last year's ICT expenditure (%)**

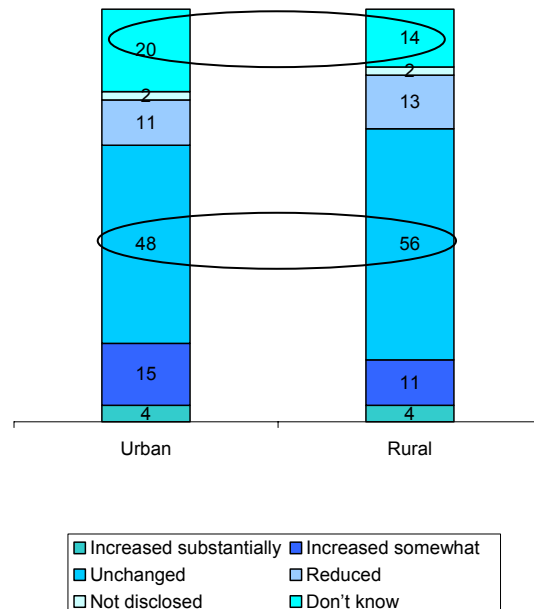


Question: What effect do you think halving last year's ICT budget would have had on your revenues over the next 12 months?  
Base: All  
Weighting: Urban/rural weights

**...and on their costs**

- 19% of urban businesses said that halving last year's ICT expenditure would have increased next year's operating costs, versus 15% of rural businesses.
- Both of these percentages are low relative to the proportions of businesses that believe that their revenues would suffer. This indicates that our respondents perceive the revenue impacts of ICT to be more material than the cost benefits.

**Figure 4-3 Effect on next year's operating costs of halving last year's ICT expenditure (%)**



Question: What effect do you think halving last year's ICT budget would have had on your operating costs (excluding ICT costs) over the next 12 months?  
Base: All  
Weighting: Urban/rural weights

**It is *not* the case that rural businesses value their broadband connectivity more than their urban counterparts**

- In fact, urban broadband users place significantly more value on broadband (7.8 versus 7.3, out of 10).
- However, as with perceptions of the importance of IT in general, this gap narrows to be insignificant when national weightings are applied: 7.7 vs 7.4.

**'Improving customer perception' is the most valued benefit of ICT investment for urban businesses...**

- This benefit scored +0.59 on average for urban businesses, in a range from -2 (strongly disagree) to +2 (strongly agree).

**...while 'helping to keep control of our finances' is the most valued benefit for rural businesses**

- This benefit scored +0.48 on average for rural businesses, on the -2 to +2 scale.

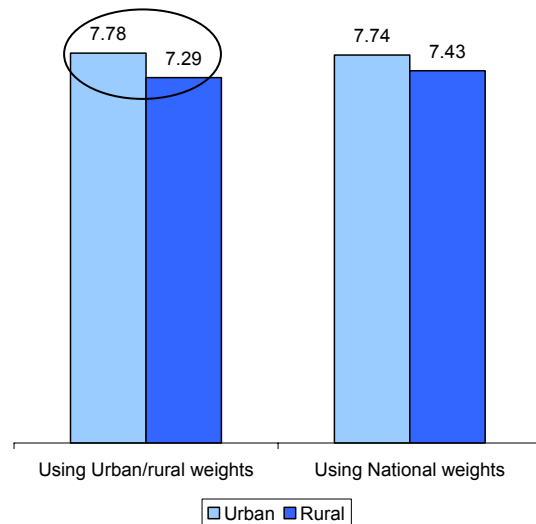
**There is a significant difference between urban and rural businesses in their assessment of the extent to which ICT is 'helping to make our staff more productive'**

- Urban businesses are much more positive here: giving an average score of 0.38 for this benefit, versus 0.15 from rural businesses.
- This would appear to be driven by the generally lower current adoption levels in rural areas: urban/rural firms at similar levels of adoption have a broadly similar response to this question (see Figure 4-13); and the difference remains significant (0.37 vs 0.18) when National weightings are applied, indicating that this is not a sector/size distribution effect.

**Neither urban nor rural businesses agree with the idea that ICT is helping them to downsize**

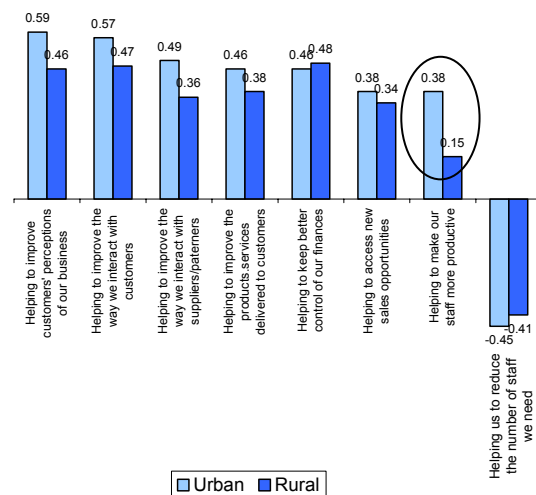
- This potential benefit scored -0.45 amongst urban businesses and -0.41 amongst rural businesses.

**Figure 4-4 Businesses' perception of the importance of broadband (mean score out of 10)**



Question: How important do you consider broadband to be to your business, on a scale of 1 to 10 ?  
Base: All who use broadband

**Figure 4-5 Businesses' perceptions of the specific benefits of ICT investment (mean score in a range: -2 to +2)**



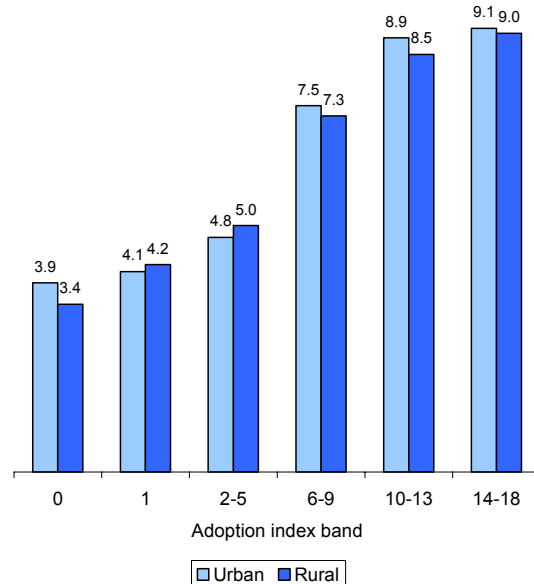
Question: Considering the benefits of your investment in ICT, to what extent do you agree with the following ?  
Base: All  
Weighting: Urban/rural weights

**But for businesses at similar levels of adoption, the perceived importance of ICT is very similar in rural and urban areas...**

**At any given level of adoption, rural businesses value ICT no more nor less than their urban peers**

- There are insignificant differences between the rural and urban 'importance scores' within each adoption index band.
- As would be expected, the importance attached to IT increases as the adoption level increases.

**Figure 4-6 Businesses' perceptions of the importance of ICT (mean score out of 10) per adoption index band**



Question: Overall, how important do you consider Information Technology to be to your business, on a scale of 1 to 10 ?

Base: All

Weighting: Urban/rural weights

**...and the specific perceived benefits are also broadly similar in rural and urban areas**

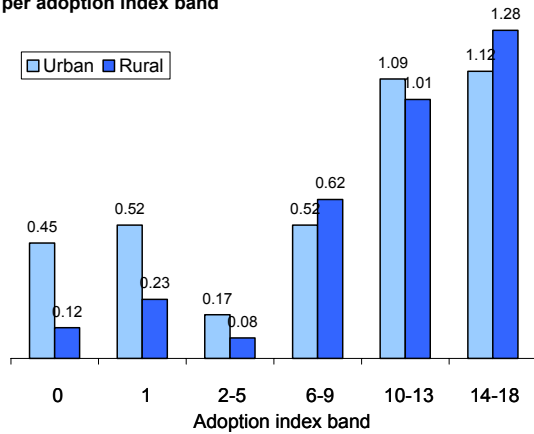
**Considering the specific benefits of ICT, there are only 2 significant differences between the urban and rural responses, at given adoption levels**

- Urban businesses at an adoption index of 10-13 are less positive than rural businesses at the same adoption level that ICT is 'helping to keep control of our finances' (+0.8 vs +1.1).
- Urban businesses at an adoption index of 0 are more positive than rural businesses at the same adoption level that ICT is 'helping to make our staff more productive' (+0.2 vs -0.2).
- However, in the following charts the AI=0 category needs to be treated with some caution. These interviewees are primarily thinking about telephony (fixed and mobile) when they are considering the benefits of ICT. The same may be true, to a lesser extent, for the AI=1 category (where a respondent may have telephony plus a computer without internet access).

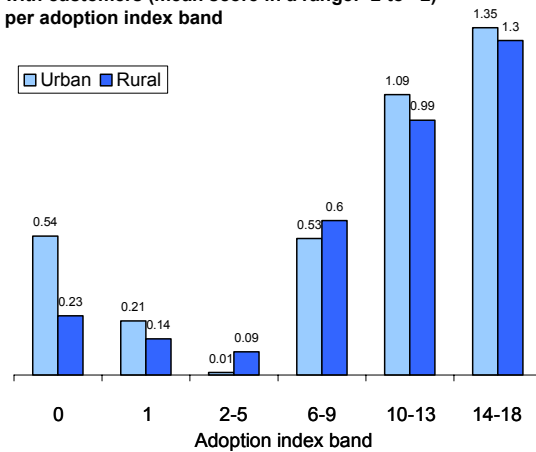
**The perception of ICT benefits is often neutral on average for respondents with some – but not much – ICT**

- The mean score of benefits for the AI=2-5 category is close to zero for 7 out of the 8 tested benefits, for both urban and rural firms.
- The mean perceived benefits tend only to go significantly positive for respondents with an adoption index of 6-9 or higher.

**Figure 4-7 ICT helping to improve customer perceptions (mean score in a range: -2 to +2) per adoption index band**

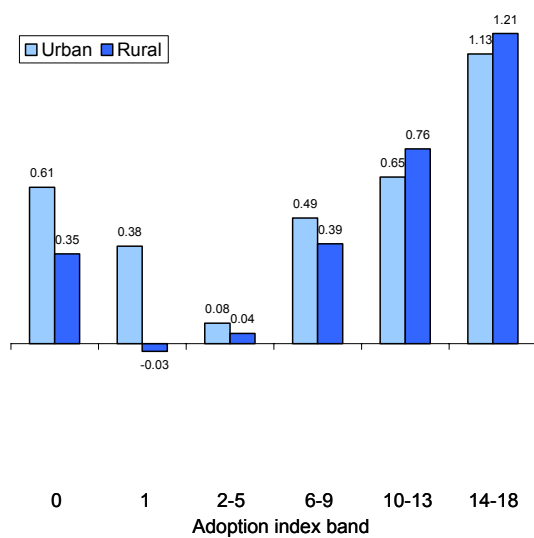


**Figure 4-8 ICT helping to improve interactions with customers (mean score in a range: -2 to +2) per adoption index band**



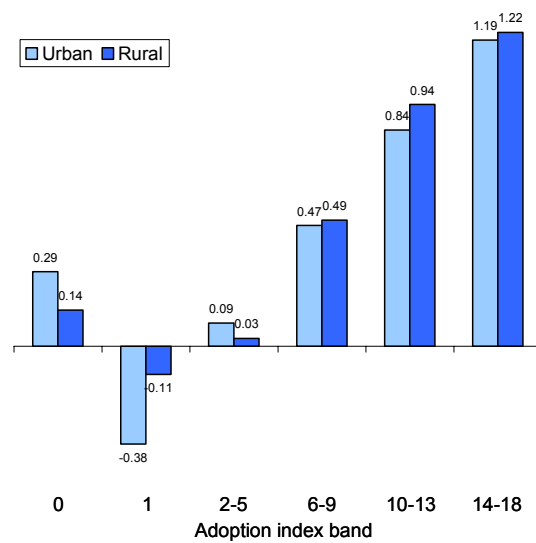
Question: Considering the benefits of your investment in ICT, to what extent do you agree with the following?  
Base: All  
Weighting: Urban/rural weights

**Figure 4-9 ICT helping to improve interactions with suppliers/partners (mean score in a range: -2 to +2) per adoption index band**



Question: Considering the benefits of your investment in ICT, to what extent do you agree with the following?  
Base: All  
Weighting: Urban/rural weights

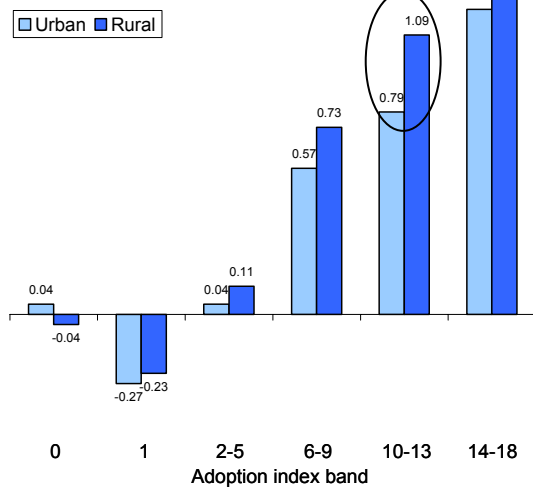
**Figure 4-10 ICT helping to improve products/services (mean score in a range: -2 to +2) per adoption index band**



Question: Considering the benefits of your investment in ICT, to what extent do you agree with the following?  
Base: All  
Weighting: Urban/rural weights

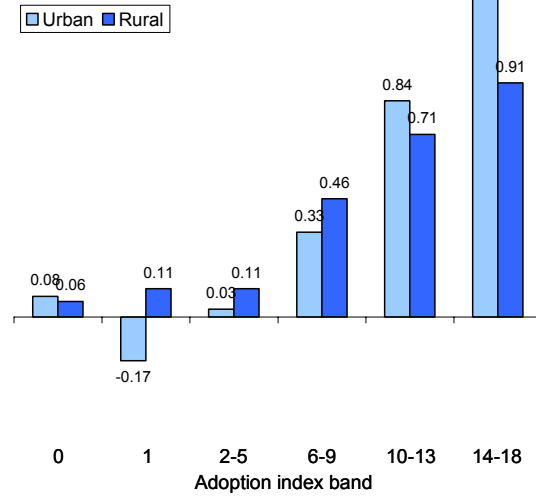
Question: Considering the benefits of your investment in ICT, to what extent do you agree with the following?  
Base: All  
Weighting: Urban/rural weights

Figure 4-11 ICT helping to keep control of finances (mean score in a range: -2 to +2) per adoption index band



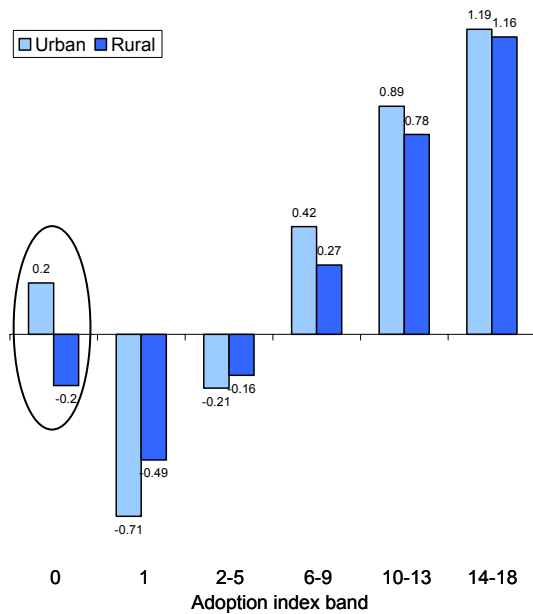
Question: Considering the benefits of your investment in ICT, to what extent do you agree with the following?  
Base: All  
Weighting: Urban/rural weights

Figure 4-12 ICT helping to access new sales opportunities (mean score in a range: -2 to +2) per adoption index band



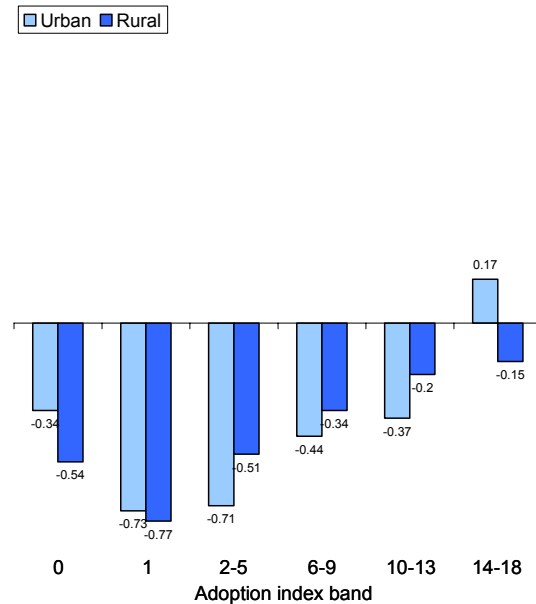
Question: Considering the benefits of your investment in ICT, to what extent do you agree with the following?  
Base: All  
Weighting: Urban/rural weights

Figure 4-13 ICT helping to make staff more productive (mean score in a range: -2 to +2) per adoption index band



Question: Considering the benefits of your investment in ICT, to what extent do you agree with the following?  
Base: All  
Weighting: Urban/rural weights

Figure 4-14 ICT helping to reduce the number of staff (mean score in a range: -2 to +2) per adoption index band



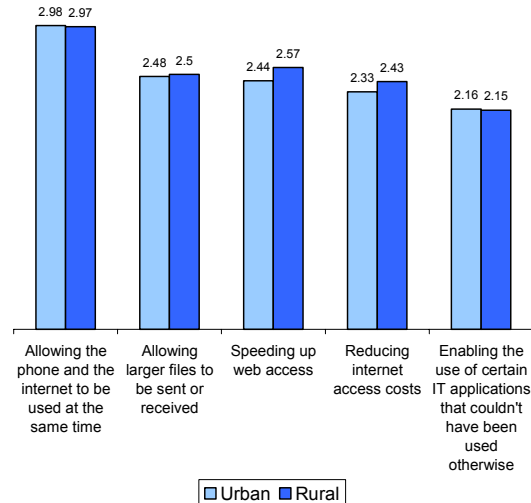
Question: Considering the benefits of your investment in ICT, to what extent do you agree with the following?  
Base: All  
Weighting: Urban/rural weights

**The advantages of broadband are also very similar for rural and urban businesses**

There are no significant differences between urban and rural businesses in the importance they put on individual broadband benefits

- ‘Allowing the phone and internet to be used at the same time’ is the most important benefit, on average for both urban and rural firms.

Figure 4-15 Businesses' perceptions of the importance of broadband benefits (mean score out of 4.0)



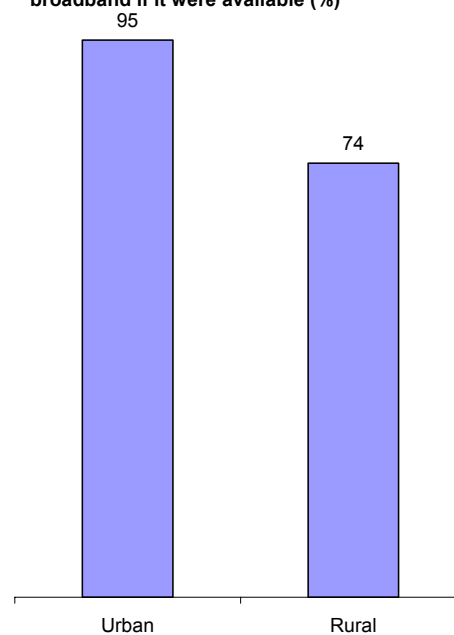
Question: How important is each of these broadband benefits for your business ?  
Base: All  
Weighting: Urban/rural weights

**Most businesses in areas without broadband would be using it, if it was available...**

There is pent-up demand for broadband in areas where it is not yet available

- 74% of rural businesses who believe that broadband is not available in their area would be using it, if the service was made available.
- Given our earlier finding re the perception of broadband availability lagging reality, it is likely that a proportion of these would-be adopters could actually obtain broadband services already.

Figure 4-16 Businesses in areas with no broadband coverage that would use broadband if it were available (%)



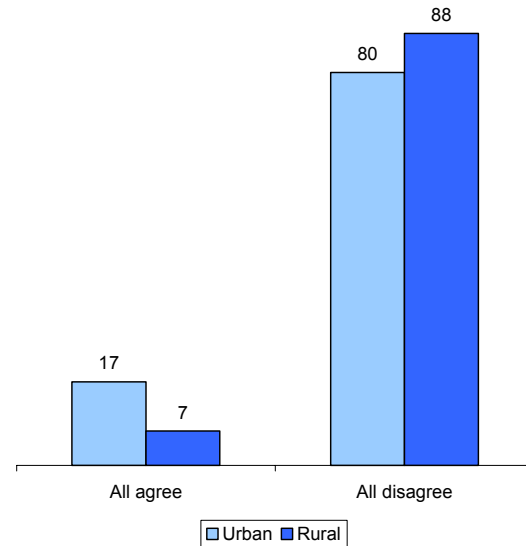
Question: If broadband was available in your area, would you be using it?  
Base: All who do not currently have broadband in the area  
Note: Small base for urban  
Weighting: Urban/rural weights

**...and a minority have considered re-location due to the lack of broadband**

**7% of rural businesses in areas without broadband have considered re-location**

- We suspect that this proportion may well have been higher if BT had not published a schedule of broadband roll-out to all but the smallest rural exchanges by July 2005.

**Figure 4-17** Businesses that have considered re-locating due to a lack of broadband availability (%)



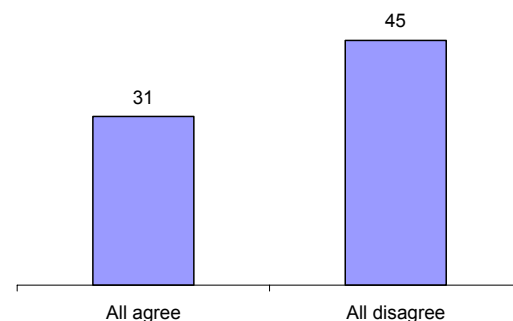
Question: To what extent do you agree with: "Lack of broadband availability in this area has made our firm consider re-locating elsewhere"?  
Base: All who would use broadband if it were available  
Note: Small base for urban  
Weighting: Urban/rural weights

**Some urban businesses may now consider operating from a rural location**

**31% of urban businesses may consider operating from a rural location, now that broadband is available**

- The response to this question was most positive amongst younger urban businesses: 59% of 2-year old urban firms agreed or strongly agreed with this statement, versus 27% of urban firms aged 4+ years.
- Urban firms in SIC grouping A&B (agriculture, hunting and forestry, and fishing) were most positive on this question (35% agreed or strongly agreed).
- Firms in SIC grouping J&K (financial intermediation, real estate, renting and business activities) were least positive – but with 22% of these firms agreeing that they may consider operating from a rural location now that broadband is available, this still represents an encouraging response, from the perspective of rural economies.

**Figure 4-18** Urban businesses that may consider operating from a rural location, now that broadband is available (%)



Question: To what extent do you agree with: "Now that broadband is available in rural areas, our business may consider operating from a rural location"?  
Base: All urban  
Weighting: Urban/rural weights

## Analysis of impact – within rural areas

### The perceived impact of ICT is broadly similar across the various rurality types

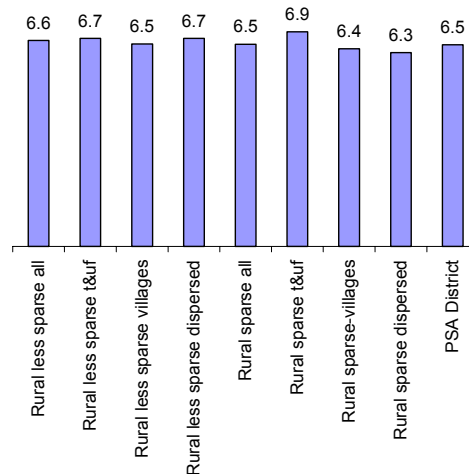
There is no significant difference, on average, in the importance placed on IT in sparse and less sparse areas, and in PSA Districts

- On average, the importance of IT was rated at 6.6 (out of 10) in less sparse areas, versus 6.5 in sparse areas and 6.5 in PSA Districts.

However, “town and urban fringe” businesses in sparse areas place somewhat more importance on IT than other businesses in sparse areas

- On average, the importance of IT scored 6.9 for ‘sparse-town & urban fringe’ businesses, versus 6.5 for all sparse rural businesses.
- This was the only significant variation in these ‘importance’ ratings.

Figure 4-19 Rural businesses' perceptions of the importance of ICT (mean score out of 10) by rurality type



Question: Overall, how important do you consider Information Technology to be to your business, on a scale of 1 to 10 ?

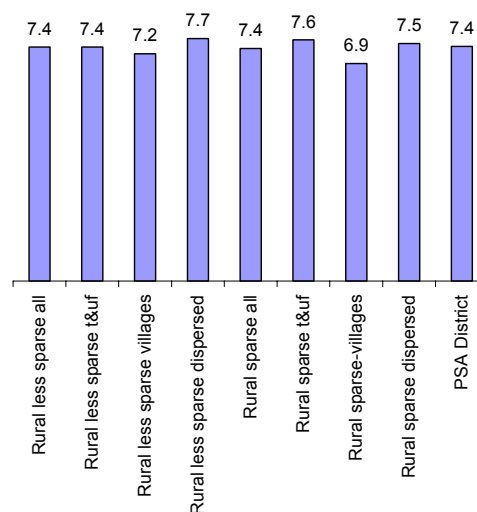
Base: All rural

Weighting: Unweighted

Broadband users place a similar value on the service, whether they are in sparse or less sparse areas

- The importance of broadband scored 7.4 (out of 10), on average, in sparse areas, less sparse areas and PSA Districts.

Figure 4-20 Rural businesses' perceptions of the importance of broadband (mean score out of 10) by rurality type



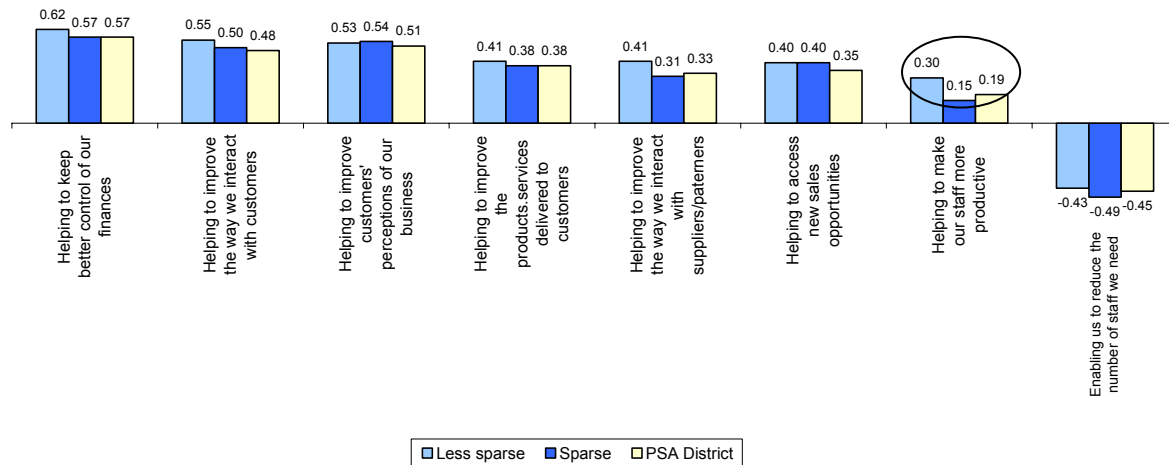
Question: How important do you consider broadband to be to your business, on a scale of 1 to 10 ?

Base: All rural who use broadband

Weighting: Unweighted

**The specific perceived benefits of ICT are also similar in sparse and less sparse areas**

**Figure 4-21 Rural businesses' perceptions of ICT benefits (mean score in a range: -2 to +2) by rurality type**



Question: Considering the benefits of your investment in ICT, to what extent do you agree with the following ?  
Base: All rural  
Weighting: Unweighted

**When asked about specific ICT benefits, businesses in sparse areas perceive slightly lower levels of benefit**

- Mean benefit scores were slightly lower in sparse areas for 6 out of the 8 tested benefits.
- This aligns with there being slightly lower ICT adoption levels in sparse areas.

**The only significant difference is in the assessment of whether ICT is “helping to make our staff more productive”**

- Businesses in less sparse areas were significantly more positive on this benefit, scoring +0.30 (in a range from -2 to +2), versus +0.15 for businesses in sparse areas and +0.19 for businesses in PSA Districts.
- The difference remains significant when respondents in SIC grouping A&B are excluded.

**The more important factors affecting ICT's perceived impact are employment...**

**The perceived importance of IT increases strongly with business size**

- The importance of IT scored 9.0 (out of 10) for businesses in the 250+ employment size band, versus 5.7 for sole traders.

**However, it is notable that rural micro-businesses do not place significantly more importance than sole traders on IT**

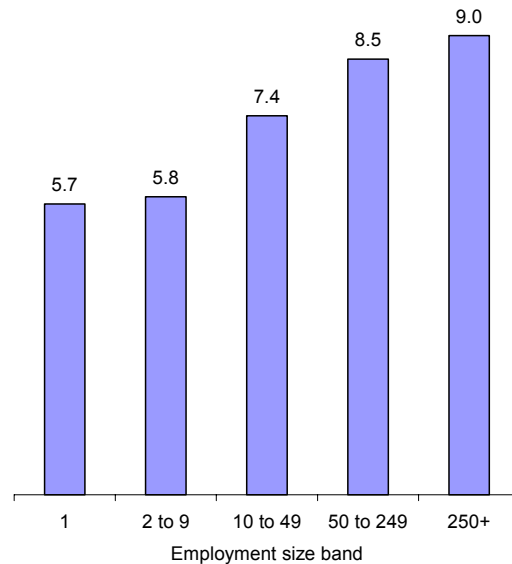
- The importance of IT scored 5.8 for rural businesses in the 2-9 employment size band, versus 5.7 for sole traders.
- Given the increased complexity of information flows when a business goes from employing one person to employing more than one person, we would expect the perceived importance of IT to increase significantly. Indeed, there is a significant difference for the equivalent firms in urban areas: 6.6 vs 5.5.
- This reflects our earlier finding that rural firms in the 2-9 employment band are significantly lower adopters than their peers in urban areas.

**...and industry sector**

**In terms of industry sector, the perceived importance of IT reflects the respective adoption levels**

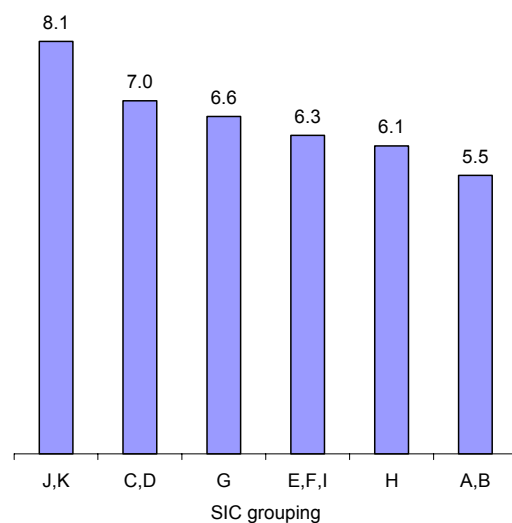
- The J&K (financial intermediation; real estate, renting and business activities) SIC grouping places a particularly high importance on IT (8.1 out of 10), whereas the A&B (agriculture, hunting and forestry; fishing) SIC grouping places a particularly low importance on IT (5.5).

**Figure 4-22 Rural businesses' perceptions of the importance of IT (mean score out of 10) per employment size band**



Question: Overall, how important do you consider Information Technology to be to your business, on a scale of 1 to 10?  
Base: All rural  
Weighting: Unweighted

**Figure 4-23 Rural businesses' perceptions of the importance of IT (mean score out of 10) by SIC grouping**



Question: Overall, how important do you consider Information Technology to be to your business, on a scale of 1 to 10?  
Base: All rural  
Weighting: Unweighted

**Rural businesses with higher ICT adoption levels tend to have higher productivity...**

The chart opposite needs to be treated with caution

- There are small bases at the AI=1 and AI=14-8 categories. The 'peaks' at AI=1 cannot, therefore, be taken to be meaningful.
- Turnover per employee is a crude proxy for productivity; it was not feasible to obtain meaningful figures for Value Added within our telephone survey.
- The mean turnover per employee has been calculated by dividing the mid-point of each respondent's turnover band by the total employment at that site.

However, it does indicate some positive association between ICT adoption and productivity

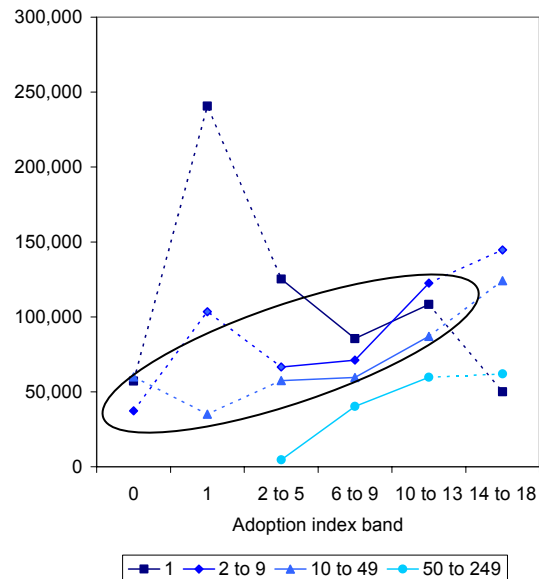
- For businesses in the 2-9 employment band, mean turnover per employee is significantly higher at AI=10-13 than at AI=0, AI=2-5 and AI=6-9.
- For businesses in the 10-49 employment band, mean turnover per employee is significantly higher at AI=10-13 than at AI=6-9.
- Note that the above are the *only* statistically significant differences (at the 95% confidence level) in these data series. For example, our sample has not confirmed any significant differences (at the 95% confidence level) between the turnovers per employee of sole traders at different levels of adoption.

... higher growth expectations...

Businesses with higher ICT adoption levels are significantly more likely to be growth-oriented

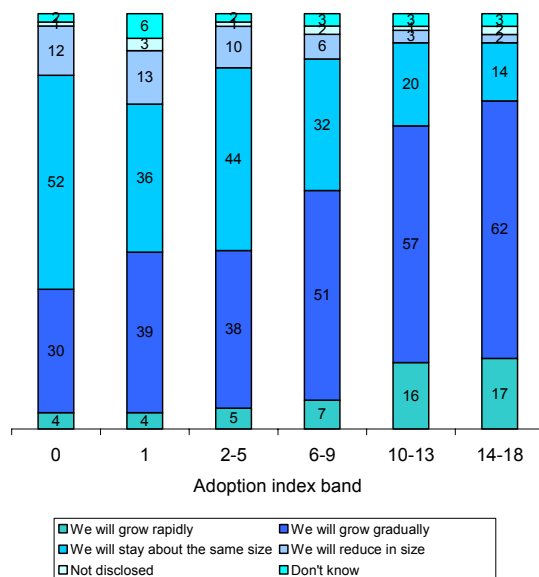
- 79% of businesses with an adoption index of 14-18 expected turnover to grow over the next 2 years, compared with just 34% of businesses with an adoption index of 0.
- Causality may well be in both directions, here: with investments in ICT opening up new growth opportunities/capabilities, and with ambitious companies actively investing in ICT in order to support their growth.

Figure 4-24 Mean turnover per employee (£) by adoption index band and employment band (single site rural firms with turnover < £10m)



Base: All rural single site businesses with turnover up to £10 million  
Note: Small bases at AI=1 and AI=14-18 (indicated by dashed lines)  
Weighting: Unweighted

Figure 4-25 Rural businesses' growth expectations by adoption index band (%)



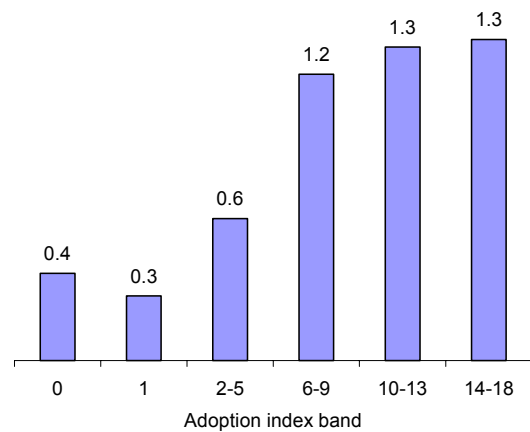
Question: Which of the following would best describe your views of the firm's turnover growth prospects over the next two years?  
Base: All rural  
Weighting: Unweighted

**...and have found that ICT developments have made it easier to operate from a rural location**

**Developments in ICT are working to the advantage of rural areas**

- Businesses with an adoption index of 6-9 or above (“mid range users”, “advanced users” and “power users”) were particularly positive that it had become easier to operate from a rural location, as a result of developments in ICT over the last few years.
- Encouragingly, this result was most positive for relatively young firms: 44% of rural businesses under 4 years old agreed with this statement, versus 36% of firms aged 4 years or more.

**Figure 4-26 Perceptions as to whether ICT developments have made it easier to operate from a rural location (mean score in a range: -2 to +2)**



Question: To what extent do you agree with: “Developments in ICT over the last few years have made it easier for our business to operate from a rural area” ?  
Base: All rural  
Weighting: Unweighted

## 5 Conclusions & implications for rural ICT policy

### Summary of conclusions

5.1 In the light of the above analysis, we conclude that:

- **In general, rural businesses adopt ICT significantly more slowly than their urban peers.**
  - Rural businesses report lower ICT adoption levels than their urban counterparts at all employment bands. [Figure 3-1]
  - Firms in the SIC grouping A&B (agriculture, hunting and forestry; and fishing) have the lowest overall ICT adoption levels (and place least importance on IT) by some margin. [Figure 3-24, Figure 4-23]
  - As expected, ICT adoption increases as firms get larger. [Figure 3-1]
- **This slower adoption is primarily attributable to a more limited range and intensity of ‘influences’ promoting the use of ICT, rather than ‘barriers to adoption’.**
  - With the exception of broadband (see below), the cited ‘barriers to adoption’ are similar for urban and rural businesses. [Figure 3-13]
  - Rural businesses are, in general, exposed to fewer influencing factors than urban businesses. In particular, there are important differences with regard to their relative exposure to advertising, discussions with peers, and the influence of new recruits. [Figure 3-14]
  - ICT decision makers tend to be older in rural businesses, and this appears to be closely associated with lower ICT adoption levels. [Figure 3-17, Figure 3-18]
- **Micro-businesses are particularly disadvantaged.**
  - The ‘ICT adoption gap’ between rural and urban businesses is most pronounced in the 2-9 employment band, and this is also where there is most disparity in the adoption levels of firms in different industry sectors. [Figure 3-1, Figure 3-24]
  - The importance placed on IT by rural firms in this employment band is surprisingly low – it is assigned little more importance by 2-9 employment firms than by our sole traders. [Figure 4-22]
- **There are few important differences across the various types of rurality.**

- ICT adoption levels are slightly lower in sparse rural areas than in less sparse areas.[Figure 3-20]
- However, cited barriers to adoption, influences and the importance placed on ICT are very similar across the various types of rurality – including PSA Districts. [Figure 3-21]
- **Rural businesses are playing ‘catch up’ with broadband, now that it is (generally) available.**
  - Business penetration of broadband is currently rising faster in rural areas than in urban areas. In the last six months, ‘business penetration added’ was 15 percentage points in rural areas, versus 10 percentage points in urban areas. [Figure 3-10]
  - In areas where broadband has been available for a year or more, rural and urban levels of business broadband take-up are very similar (at over 40%). [Figure 3-8]
  - Overall ICT adoption levels of rural businesses are highest in the region where broadband has been available for the longest period of time (the South East). [Figure 3-27]
- **Our research supports the argument that ICT developments are having a positive impact on rural economies.**
  - Higher levels of ICT adoption are associated with higher turnover per employee and higher growth expectations in rural businesses. [Figure 4-24. Figure 4-25]
  - The more advanced ICT users consider that recent developments in ICT have made it easier to operate from a rural location. [Figure 4-26]
  - 31% of urban businesses say that they may consider operating from a rural location now that broadband is available. [Figure 4-18]
- **The most important productivity advantages of ICT only start to be realised when businesses go beyond ‘basic’ adoption levels – beyond having email and access to the worldwide web.**
  - Rural businesses who are “basic communicators” (e.g. having computers and internet access, and using email and the web but none of the other applications that we tested) are broadly neutral about the perceived benefits of ICT. It is only when businesses reach higher adoption levels that the average perception of ICT’s benefits goes significantly positive. [Figures 4-7 to 4-13]
  - Our analysis of mean turnover per employee suggests that there may be substantial productivity advantages once a business progresses to being an “advanced user” (having an adoption index of 10-13 or above). [Figure 4-24]

## Implications for rural ICT policy

5.2 It is beyond the scope of this study to design or recommend specific policies or interventions. However, we consider that our research suggests the following key messages for rural ICT policy development:

- **There is a case for intervention, to address an information-related demand-side market failure.**
  - Our research – combined with other literature – suggests that small and micro businesses are frequently not in a position to make economically rational decisions regarding investment in ICT.
  - There is an information-related demand-side market failure, which is particularly marked in rural areas: rural businesses are exposed to fewer ICT adoption influences (information sources) than urban businesses are, and as a result they are slower to adopt ICT.
  - As a specific example, businesses' perception of broadband availability appears to be significantly lagging the reality in rural areas. [Figure 3-11]
  - Given the substantial productivity benefits associated with ICT<sup>7</sup>, and given the policy objective of enhancing the prosperity of rural areas, there is therefore a case for intervention on the grounds of improving market efficiency.
  - Such intervention should seek to address the information-related market failure rationale, rather than simply to subsidise ICT for rural firms (“concern over cost” is no more of a barrier for rural firms than it is for urban firms).
- **There is an argument for focusing such interventions on micro-businesses.**
  - Our research indicates that rural firms in the 2-9 employment band have the most to gain from policy action.
  - There does not appear to be a case for intervention to focus solely on - or exclude - any particular industry sectors, regions, or types of rurality.
  - While rural firms in the South East and/or in SIC grouping J&K (financial intermediation, real estate, renting, business activities) are on average more advanced than others in their ICT adoption levels, there will undoubtedly be scope for improvements in individual firms in this region and this industry group.

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<sup>7</sup> Our study includes some indication of a productivity effect, but more robust evidence is provided by growth accounting and econometric analyses for the UK (and other countries) in the recent economic literature.

- **Existing mainstream public sector initiatives are positive – but unlikely to close the rural-urban gap on their own.**
  - Rural businesses' ICT investment decisions are influenced by publicly funded organisations such as local authorities and Business Link (cited by 32% of businesses), government websites (31%), and a wish to access e-government services (30%). [Figure 3-14]
  - However, all three of these are cited less frequently by rural businesses than by urban businesses. [Figure 3-14]
  - E-government will play a part in encouraging businesses to get online, but it is difficult to envisage it having a material effect in taking firms to the higher levels of ICT adoption, where the productivity benefits appear to be greatest.
  - We note that it is particularly costly to provide face-to-face advice (e.g. via Business Link) to the segment most in need (rural businesses in the 2-9 employment size band).
  
- **Intervention should seek to exploit the web as an information channel, and should take advantage of the window of opportunity presented by the current boom in rural broadband take-up.**
  - Internet penetration is now high, and 'research on the internet' is one of the most frequently cited ICT adoption influences (cited as frequently by rural as by urban businesses). Given that there are factors associated with operating in a rural location that make it inherently more difficult for businesses to network frequently with customers, suppliers, competitors and other peers, we suggest that the web has the potential to become an ever more important means by which rural businesses compensate for these disadvantages.
  - The unit costs of delivering information via the web are, of course, substantially less than those associated with providing face-to-face or telephone-based advice. However, scale is critical: there are substantial benefits of scale associated with the delivery of web-based ICT information – both in ensuring that the content's quality, breadth and ease of use makes it genuinely helpful to businesses, and in ensuring a high brand recognition for the relevant URL(s) in the target audience.
  - The growth in take-up of broadband is currently particularly strong in rural areas. There is therefore a window of opportunity (of, we estimate, c. 18 months,) for interventions to stimulate substantial numbers of rural businesses into exploring their wider ICT needs and opportunities, by using the broadband investment decision as a trigger for action.

- **There is a prospect of a new digital divide emerging between rural and urban areas, with the advent of next generation broadband and 3G services. Policy-makers will need to consider their responses to this challenge.**
  - Already, 34% of rural firms say that the quality of local mobile coverage is a problem for their business [Figure 3-19]. As 3G services become more popular and mature over the next few years, there is a possibility that a lack of 3G coverage may become an increasing concern for rural businesses.
  - Urban businesses have faster broadband connections, on average, than their rural counterparts [Figure 3-12], and next generation broadband networks will inevitably be rolled out first in urban areas, where demand densities are highest. With urban businesses increasingly able to buy, say, 8Mbit/s services at a price close to that paid by rural businesses for 2Mbit/s, the lack of 'broaderband' services may well become an important issue in rural areas. The marginal benefits to a business of having a broaderband service are probably not as great as the difference in headline bandwidth would suggest: the *perceived* disadvantage may well be greater than the *actual* disadvantage. We would suggest that consideration should be given to the feasibility of (and case for) requiring operators to quote average achieved transmission rates, as well as the peak bandwidths.

## Annex A: Profile of survey respondents

Table A-1 Summary breakdown of urban and rural respondents by SIC grouping

	A,B	C,D	E,F,I	G	H	J,K	Total
Urban total	100	126	124	126	92	112	680
Rural total	297	298	267	300	301	293	1756
<i>Less sparse – town and urban fringe</i>	27	52	55	68	32	57	291
<i>Less sparse – villages</i>	69	71	56	41	68	52	357
<i>Less sparse – dispersed</i>	68	48	37	54	49	53	309
<i>Sparse – town and urban fringe</i>	9	39	38	69	44	67	266
<i>Sparse – villages</i>	48	54	40	42	68	34	286
<i>Sparse – dispersed</i>	76	34	41	26	40	30	247
<b>Total</b>	<b>397</b>	<b>424</b>	<b>391</b>	<b>426</b>	<b>393</b>	<b>405</b>	<b>2436</b>

Table A-2 Summary breakdown of respondents by employment size band and SIC grouping

	A,B	C,D	E,F,I	G	H	J,K	Total
1	146	119	81	115	38	138	637
2-9	152	127	130	107	131	108	755
10-49	72	110	108	111	152	103	656
50-249	27	58	58	76	63	42	324
250+	0	10	14	17	9	14	64
<b>Total</b>	<b>397</b>	<b>424</b>	<b>391</b>	<b>426</b>	<b>393</b>	<b>405</b>	<b>2436</b>

Table A-3 Breakdown of urban respondents by employment size band and SIC grouping

	A,B	C,D	E,F,I	G	H	J,K	Total
1	44	24	23	36	5	28	160
2-9	28	42	34	23	22	29	178
10-49	20	37	26	27	33	33	176
50-249	8	18	31	33	26	15	131
250+	0	5	10	7	6	7	35
<b>Total</b>	<b>100</b>	<b>126</b>	<b>124</b>	<b>126</b>	<b>92</b>	<b>112</b>	<b>680</b>

Table A-4 Breakdown of 'less sparse – town & urban fringe' rural respondents by employment size band and SIC grouping

	A,B	C,D	E,F,I	G	H	J,K	Total
1	13	16	12	17	4	21	83
2-9	9	11	16	16	16	12	80
10-49	3	15	19	19	7	17	80
50-249	2	9	7	12	5	6	41
250+	0	1	1	4	0	1	7
<b>Total</b>	<b>27</b>	<b>52</b>	<b>55</b>	<b>68</b>	<b>32</b>	<b>57</b>	<b>291</b>

Table A-5 Breakdown of 'less sparse – villages' rural respondents by employment size band and SIC grouping

	A,B	C,D	E,F,I	G	H	J,K	Total
1	14	19	8	11	6	25	83
2-9	34	30	23	11	22	12	132
10-49	15	14	14	5	27	6	81
50-249	6	7	9	12	12	5	51
250+	0	1	2	2	1	4	10
<b>Total</b>	<b>69</b>	<b>71</b>	<b>56</b>	<b>41</b>	<b>68</b>	<b>52</b>	<b>357</b>

Table A-6 Breakdown of 'less sparse – dispersed' rural respondents by employment size band and SIC grouping

	A,B	C,D	E,F,I	G	H	J,K	Total
1	19	15	6	13	7	21	81
2-9	24	9	11	18	17	11	90
10-49	17	14	15	13	14	8	81
50-249	8	9	4	7	10	11	49
250+	0	1	1	3	1	2	8
<b>Total</b>	<b>68</b>	<b>48</b>	<b>37</b>	<b>54</b>	<b>49</b>	<b>53</b>	<b>309</b>

Table A-7 Breakdown of 'sparse – town & urban fringe' rural respondents by employment size band and SIC grouping

	A,B	C,D	E,F,I	G	H	J,K	Total
1	4	15	13	18	7	19	76
2-9	3	10	13	22	14	22	84
10-49	1	5	11	20	20	22	79
50-249	1	8	1	8	3	4	25
250+	0	1	0	1	0	0	2
<b>Total</b>	<b>9</b>	<b>39</b>	<b>38</b>	<b>69</b>	<b>44</b>	<b>67</b>	<b>266</b>

Table A-8 Breakdown of 'sparse – villages' rural respondents by employment size band and SIC grouping

	A,B	C,D	E,F,I	G	H	J,K	Total
1	20	19	11	11	5	12	78
2-9	21	19	16	15	27	15	113
10-49	5	12	11	14	31	6	79
50-249	2	4	2	2	4	1	15
250+	0	0	0	0	1	0	1
<b>Total</b>	<b>48</b>	<b>54</b>	<b>40</b>	<b>42</b>	<b>68</b>	<b>34</b>	<b>286</b>

Table A-9 Breakdown of 'sparse – dispersed' rural respondents by employment size band and SIC grouping

	A,B	C,D	E,F,I	G	H	J,K	Total
1	32	11	8	9	4	12	76
2-9	33	6	17	2	13	7	78
10-49	11	13	12	13	20	11	80
50-249	0	3	4	2	3	0	12
250+	0	1	0	0	0	0	1
<b>Total</b>	<b>76</b>	<b>34</b>	<b>41</b>	<b>26</b>	<b>40</b>	<b>30</b>	<b>247</b>

Table A-10 Total respondents by region

East	296
East Midlands	226
London	102
North East	133
North West	330
South East	322
South West	522
West Midlands	228
Yorkshire And The Humber	277
<b>Total</b>	<b>2436</b>

## Annex B: Survey weightings

- Weightings were applied, where appropriate, to reflect the actual distribution of business units in terms of their SIC grouping and employment size band, as shown in the tables below:

Table B-1 SIC weightings applied to survey results

	<b>AB</b>	<b>CD</b>	<b>EFI</b>	<b>G</b>	<b>H</b>	<b>JK</b>	<b>Total</b>
Urban	0.9%	9.6%	15.2%	27.9%	8.1%	38.3%	<b>100%</b>
Rural	19.1%	8.8%	17.0%	19.5%	7.1%	28.4%	<b>100%</b>
National	5.5%	9.4%	15.7%	25.7%	7.9%	35.8%	<b>100%</b>

Table B-2 Employment size band weightings applied to survey results

	<b>1</b>	<b>2-9</b>	<b>10-49</b>	<b>50-249</b>	<b>250+</b>	<b>Total</b>
Urban	36.86%	50.09%	10.75%	1.86%	0.45%	<b>100%</b>
Rural	37.38%	54.79%	7.14%	0.65%	0.04%	<b>100%</b>
National	37.00%	51.35%	9.78%	1.53%	0.34%	<b>100%</b>

- The 'Urban' and 'Rural' weightings by SIC grouping and employment size band were used in Volumes 1a and 4 of the data tabulations, in order to reflect the respective actual distributions of business units in urban areas and in rural areas.
- The 'National' weightings by SIC grouping and employment size band were used in Volume 1b of the data tabulations, in order to test or 'correct' for effects due solely to the different distributions of business unit sizes/sectors in rural and urban areas.

## Annex C: Survey questionnaire

### INTERVIEWEE DETAILS FROM SAMPLE

Firm name \_\_\_\_\_  
Telephone number \_\_\_\_\_  
Postcode \_\_\_\_\_  
Type of locality \_\_\_\_\_  
SIC Code \_\_\_\_\_  
Employee size \_\_\_\_\_

**[Square brackets] indicate text to be read out only if further explanation of a question is required**

### INTRODUCTION

Good morning/afternoon. My name is ..... from NOP Research. We are carrying out a survey for DEFRA, the department of government responsible for environment, food and rural affairs, looking at businesses' use of Information Technology and telecommunications, such as computers, the internet, mobile phones and fixed landlines. Is it possible to speak to the person responsible for making decisions about Information Technology and telecommunications [for example the managing director or the IT director] ?

**If already speaking to the correct person add:** The interview should take about 15 minutes.

**If someone different is to be interviewed, repeat the intro but leave out the last sentence and replace it with:** The interview should take about 15 minutes.

**If necessary add:** DEFRA will use this information to assess the differences between rural and urban businesses in their use of Information and Communications Technologies, and to determine if government action is needed to help some businesses in this area.

## SECTION 1: CURRENT ICT USAGE

At this site, does your firm use the following equipment or facilities?

	Yes	No	Don't know
Q1 Computers	1	2	3
Q2 A Local Area Network [linking up computers at this site]	1	2	3
Q3 Internet access	1	2	3
Q4 EDI (Electronic Data Interchange) [a way of exchanging data between different companies' computer systems in a standard format, typically used for automating purchase orders and invoices between customers and suppliers]	1	2	3
Q5 Mobile phones	1	2	3

**If Code 1 at Q3, then ask Q6**

Q6 How do you connect to the internet from this site ? **(read out, allow multicode)**

Dial-up modem	1
ISDN	2
Broadband	3
Don't know	4

**If Code 3 at Q6 then ask Q7-Q9**

Q7 How is your broadband connection provided ? **(prompt only if necessary)**

ADSL [a broadband service provided over a phone line, with higher downstream than upstream speeds]	1
SDSL [a broadband service provided over a phone line, with equal upstream and downstream speeds]	2
Cable modem [a broadband service provided by a cable TV operator such as Telewest or NTL]	3
Leased line	4
Wireless	5
Satellite	6
Other	7
Don't know	8

Q8 Approximately how long have you had a broadband connection at this site ? **(prompt only if necessary)**

6 months or less	1
More than 6 months up to 12 months	2
More than 12 months up to 18 months	3
More than 18 months up to 24 months	4
More than 24 months	5
Don't know	6

Q9 At what speed does your internet connection allow you to download ? **(prompt only if necessary, code the nearest answer - e.g. code 512k for a response of 500 kilobits per second)**

Less than 256 kilobits per second	1
256k [kilobits per second]	2
384k [kilobits per second]	3
512k [kilobits per second]	4
768k [kilobits per second]	5
1 megabit per second	6
More than 1 Meg but less than 2 Meg [megabits per second]	7
2 Meg [megabits per second]	8
More than 2 Meg but less than 10 Meg [megabits per second]	9
10 Meg [megabits per second]	10
Over 10 Meg [megabits per second]	11
Don't know	12

**If Code 1 at Q5 then ask Q10**

Q10	Is the quality of mobile phone coverage locally a problem to your business at all [at this site] ?	Yes 1	No 2	Don't know 3
-----	--	----------	---------	-----------------

**If Code 1 at Q10 then ask Q11**

Q11	Has the quality of mobile phone coverage made your business consider re-locating elsewhere ?	Yes 1	No 2	Don't know 3
-----	--	----------	---------	-----------------

Q12	Does your firm have a website ?	Yes 1	No 2	Don't know 3
-----	---------------------------------	----------	---------	-----------------

**If Code 1 at Q12 then ask Q13 – Q16**

Q13	Does your website allow customers to order your products/services online ?	Yes 1	No 2	Don't know 3
-----	--	----------	---------	-----------------

**If Code 1 at Q13 then ask Q14. Otherwise skip to Q15.**

Q14	Does your website allow customers to pay for your products/services online ? (for example, by submitting credit/debit card details)	Yes 1	No 2	Don't know 3
-----	---	----------	---------	-----------------

		Less than once a year	More than once a year, but less than once a month	Once a month to once a week	More than once a week, but not daily	Daily or more frequently	Don't know
Q15	How frequently is your firm's website updated ? ( <b>do not read responses, probe to code</b> )	1	2	3	4	5	6

Q16	Does your firm monitor the usage of its website ? (for example the number of hits, page impressions, visitors, sales)	Yes 1	No 2	Don't know 3
-----	---	----------	---------	-----------------

**If Code 1 at Q1, then ask Q17-Q28**

Which of the following information technology applications does your firm use ?

	Yes	No	Don't know
Q17 Email	1	2	3
Q18 The internet [the worldwide web]	1	2	3
Q19 Online ordering of products or services from suppliers	1	2	3
Q20 An intranet [internal websites for firm's own use]	1	2	3
Q21 Computerised accounting systems [systems for recording and monitoring your firm's finances]	1	2	3
Q22 Systems for sharing documents [for example, on a shared drive or on an intranet]	1	2	3
Q23 Systems for sharing customer information [for example customer relationship management or contact management systems]	1	2	3
Q24 Systems to handle order processing [systems for recording and monitoring customer orders]	1	2	3
Q25 Computerised stock control systems [systems for recording and monitoring stock levels]	1	2	3
Q26 Supply chain management system [systems controlling the flow of products, information and finances between you and your suppliers or between you and your customers]	1	2	3
Q27 Human resource management systems [including in-house payroll systems]	1	2	3
Q28 Enterprise Resource Planning systems [integrated software packages with various modules for managing activities such as customer service, stock control, supply chain management etc.]	1	2	3
	Yes	No	Don't know
Q29 Does your firm use video conferencing ?	1	2	3

**If Code 2 at Q1 then ask Q30**

Q30 How likely is your firm to start to use computers at this site in the next 18 months ?

Very likely	1
Likely	2
Unlikely	3
Very unlikely	4
Don't know	5

**If Code 3 or 4 at Q30 then ask Q31**

Q31 Why are you unlikely to use computers ? (*do not prompt, code all that apply*)

Not needed for the business	1
Too expensive	1
Lack of time (management or staff)	1
Lack of skills (management or staff)	1
Reluctance to change (management or staff)	1
Security concerns (viruses, hackers etc.)	1
Other	1

**If Code 1 at Q1 and Code 2 at Q3 then ask Q32**

Q32 How likely is your firm to get internet access at this site in the next 18 months ?

Very likely	1
Likely	2
Unlikely	3
Very unlikely	4
Don't know	5

**If Code 3 or 4 at Q32 then ask Q33**

Q33 Why are you unlikely to get internet access ? *(do not prompt, code all that apply)*

Not needed for the business	1
Too expensive	1
Lack of time (management or staff)	1
Lack of skills (management or staff)	1
Reluctance to change (management or staff)	1
Security concerns (viruses, hackers etc.)	1
Other	1

**If Code 2 at Q12 then ask Q34**

Q34 How likely is your firm to develop a website in the next 18 months ?

Very likely	1
Likely	2
Unlikely	3
Very unlikely	4
Don't know	5

**If Code 3 or 4 at Q34 then ask Q35**

Q35 Why are you unlikely to develop a website ? *(do not prompt, code all that apply)*

Not needed for the business	1
Too expensive	1
Lack of time (management or staff)	1
Lack of skills (management or staff)	1
Reluctance to change (management or staff)	1
Security concerns (viruses, hackers etc.)	1
Other	1

**If Code 1 at Q1 then ask Q36-Q37**

	Yes	No	Don't know
Q36 Does your firm have any internal IT support staff ?	1	2	3

	Yes	No	Don't know
Q37 Does your firm use any external IT support ?	1	2	3

## SECTION 2: ICT INVESTMENT AND IMPACT

The next few questions are about the costs and benefits of ICT for your firm.

By "ICT" we mean Information and Communications Technologies including computers, software, IT support, internet access connectivity (including broadband), websites and fixed and mobile telephony.

Q38 Approximately how much has your firm spent on ICT equipment, software, support and services at this site over the last 12 months ? (*prompt only if necessary*)

£0 - £5,000	1
£5,001 - £10,000	2
£10,001 - £20,000	3
£20,001 - £30,000	4
£30,001 - £40,000	5
£40,001 - £50,000	6
£50,001 - £75,000	7
£75,001 - £100,000	8
£100,001 - £150,000	9
£150,001 - £200,000	10
£200,001 or more	11
Not disclosed	12
Don't know	13

	Next year's expenditure will be greater	Next year's expenditure will be about the same	Next year's expenditure will be less	Don't know
Q39 Do you expect your ICT expenditure over the next 12 months to be greater or less than the expenditure over the last 12 months ?	1	2	3	4

Considering the benefits of your investment in ICT, to what extent do you agree with the following ?

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Don't know
Q40 It is helping us to access new sales opportunities	1	2	3	4	5	6
Q41 It is helping us to improve the way we interact with customers	1	2	3	4	5	6
Q42 It is helping to improve customers' perceptions of our business	1	2	3	4	5	6
Q43 It is helping us to improve the products/services delivered to customers	1	2	3	4	5	6
Q44 It is helping us to improve the way we interact with suppliers/partners	1	2	3	4	5	6
Q45 It is helping to make our staff more productive	1	2	3	4	5	6
Q46 It is enabling us to reduce the number of staff we need	1	2	3	4	5	6
Q47 It is helping us to keep better control of our finances	1	2	3	4	5	6

**If Code 3 at Q6 then ask Q48-Q53**

The following are some of the benefits that people say broadband connectivity provides. How important is each of these for your business ? (*separate screen for intro*)

		Essential	Very important	Important	Not important	Not at all important	Don't know
Q48	Speeding up web access	1	2	3	4	5	6
Q49	Allowing larger files to be sent or received	1	2	3	4	5	6
Q50	Enabling the use of certain IT applications that couldn't have been used otherwise	1	2	3	4	5	6
Q51	Reducing internet access costs	1	2	3	4	5	6
Q52	Allowing the phone and the internet to be used at the same time	1	2	3	4	5	6
Q53	How important do you consider broadband to be to your business, on a scale of 1 to 10 (where 1 is not at all important, and 10 is critically important) ?						_____

**If postcode locality is urban then ask Q54**

To what extent do you agree with the following statement ?

		Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Don't know
Q54	Now that broadband is available in rural areas, our business may consider operating from a rural location	1	2	3	4	5	6

Q55 If you had had to *halve* your ICT budget, what areas of expenditure would you have cut back on over the last 12 months ? (*read out, code all that apply*)

New IT hardware	1
New software	1
Software licence renewals	1
Technical support costs (including staff)	1
Connectivity (e.g. for internet access, including broadband)	1
Website (including site design and maintenance)	1
Telephony (including mobiles)	1
Don't know	1
Other (please specify)	_____
Nothing	

Q56 What effect do you think halving last year's ICT budget would have had on your *revenues* over the *next* 12 months ?

Next year's revenues would be reduced substantially	1
Next year's revenues would be reduced somewhat	2
Next year's revenues would be unchanged	3
Next year's revenues would be increased	4
Not disclosed	5
Don't know	6

Q57 What effect would halving last year's ICT budget have had on your *operating costs* (excluding ICT costs) over the *next 12 months* ?

- |  |   |
|--|---|
| Next year's operating costs would be increased substantially | 1 |
| Next year's operating costs would be increased somewhat      | 2 |
| Next year's operating costs would be unchanged               | 3 |
| Next year's operating costs would be reduced                 | 4 |
| Not disclosed  | 5 |
| Don't know   | 6 |

Q58 Overall, how important do you consider Information Technology to be to your business, on a scale of 1 to 10 (where 1 is not at all important, and 10 is critically important) ? \_\_\_\_\_

***If postcode locality is rural then ask Q59***

To what extent do you agree with the following statement ?

		Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Don't know
Q59	Developments in Information and Communications Technologies over the last few years have made it easier for our business to operate from a rural location	1	2	3	4	5	6

### SECTION 3: FACTORS THAT INFLUENCE ICT DECISIONS

Q60 Which of the following tend to inform or influence your investment decisions on ICT ? Just to remind you: "ICT" includes computers, software, IT support, internet access connectivity (including broadband), websites and fixed and mobile telephony. **(read out, code all that apply)**

Advertising [TV/radio/posters/press adverts etc.]	1
Direct mail	1
Articles in the press	1
Views of new recruits	1
Consultants	1
Discussions with customers	1
Discussions with competitors	1
Discussions with suppliers of ICT products and services	1
Discussions with other suppliers	1
Discussions with a bank, accountant or lawyer	1
Discussions with firms in other sectors	1
Discussions with friends or relatives	1
A local campaign for broadband to be made available in your area	1
A trade organisation	1
A publicly funded organisation (such as a Business Link or local authority/council)	1
A wish to access e-government services (e.g. filing tax returns online)	1
Government websites	1
Research on the internet	1
Other	1
Don't know	1

**If Code 3 at Q6 then ask Q61**

Q61 Thinking specifically about your decision to invest in broadband connectivity, which factors that we've just mentioned influenced your decision most ? **(display only those mentioned at Q60; do not prompt, code all that apply)**

Advertising [TV/radio/posters/press adverts etc.]	1
Direct mail	1
Articles in the press	1
Views of new recruits	1
Consultants	1
Discussions with customers	1
Discussions with competitors	1
Discussions with suppliers of ICT products and services	1
Discussions with other suppliers	1
Discussions with a bank, accountant or lawyer	1
Discussions with firms in other sectors	1
Discussions with friends or relatives	1
A local campaign for broadband to be made available in your area	1
A trade organisation	1
A publicly funded organisation (such as a Business Link or local authority/council)	1
A wish to access e-government services (e.g. filing tax returns online)	1
Government websites	1
Research on the internet	1
Other	1
Don't know	1

Q62 Which of the following tend to deter you from making investments in ICT, or delay your ICT investment decisions ? (**read out, code all that apply**)

Lack of up-to-date information on what is available	1
Low levels of IT awareness/understanding of managers	1
Lack of time to assess what the firm should invest in	1
Difficulty getting advice	1
Uncertainty over the benefits to the business	1
Uncertainty over which supplier, product or service to use	1
Difficulties getting agreement within the firm	1
Concern over the costs	1
Concerns on security (hackers, viruses etc.)	1
Concern over the integration with existing systems	1
Concern over implementing changes to business processes	1
Concern over staff skills	1
Concerns over the need for training current staff	1
A high turnover of staff, with concerns over training new staff	1
Concerns over ongoing technical support	1
Nothing	1
Don't know	1
Other (please specify)	_____

**If Code 3 at Q6 then ask Q63**

Q63 Thinking specifically about your decision to use broadband, what, if anything, delayed your firm getting broadband connectivity ? (**do not prompt, code all that apply**)

Wasn't available in our area	1
We were not initially aware that it was available	1
Didn't need broadband previously	
Lack of up-to-date information on what is available	1
Low levels of IT awareness/understanding of managers	1
Lack of time to assess what the firm should invest in	1
Difficulty getting advice	1
Uncertainty over the benefits to the business	1
Uncertainty over which supplier, product or service to use	1
Difficulties getting agreement within the firm	1
Concern over the costs	1
Concerns on security (hackers, viruses etc.)	1
Concern over the integration with existing systems	1
Concern over implementing changes to business processes	1
Concern over staff skills	1
Concerns over the need for training current staff	1
A high turnover of staff, with concerns over training new staff	1
Concerns over ongoing technical support	1
Nothing	1
Don't know	1
Other (please specify)	_____

**If no Code 3 at Q6, ask Q64**

	Yes	No	Don't know
Q64 Is broadband currently available in your area ?	1	2	3

**If Code 2 at Q64 then ask Q65**

	Yes	No	Don't know
Q65 If broadband was available in your area, would you be using it ?	1	2	3

**If Code 1 at Q64 or Code 2 at Q65 then ask Q66**

Q66 What are your reasons for not using broadband connectivity ? **(do not prompt, code all that apply)**

Wasn't available until recently	1
Not needed for the business	1
Too expensive	1
Lack of time (management or staff)	1
Lack of skills (management or staff)	1
Uncertainty over which supplier or service to use	1
Concern over the integration with existing systems	1
Reluctance to change (management or staff)	1
Security concerns (viruses, hackers etc.)	1
Other	1

**If Code 1 at Q65 then ask Q67**

To what extent do you agree with the following statement ?

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Don't know
Q67 Lack of broadband availability in this area has made our firm consider re-locating elsewhere	1	2	3	4	5	6

**SECTION 4: CLASSIFICATION**

The last few questions are to enable us to classify the data from the survey.

Q68	How many people work for your firm at this site ?	_____		
		Yes	No	Don't know
Q69	Does your firm have any sites elsewhere ?	1	2	3

**If Code 1 at Q69 then ask Q70**

		Yes	No	Don't know
Q70	Is this site the headquarters for the firm ?	1	2	3

Q71	Approximately how many years has the firm been trading ?	_____		
-----	--	-------	--	--

**If Code 2 at Q69 or Code 1 at Q70, and if answer to Q71 is 10 years or less, then ask Q72**

		Yes	No	Don't know
Q72	Thinking about the person who started up this business, did he or she come from this area originally ? [i.e. were they brought up within a few miles of the firm's current site/HQ ?] <b>(if more than one founder, ask "Did any of the founders come from this area originally?")</b>	1	2	3

Q73	What was your firm's approximate turnover in the last financial year ? <b>(prompt only if necessary)</b>			
-----	--	--	--	--

£0 to £50,000	1
£50,001 to £100,000	2
£100,001 to £200,000	3
£200,001 to £400,000	4
£400,001 to £600,000	5
£600,001 to £800,000	6
£800,001 to £1 million	7
£1,000,001 to £2 million	8
£2,000,001 to £3 million	9
£3,000,001 to £4 million	10
£4,000,001 to £5 million	11
£5,000,001 to £6 million	12
£6,000,001 to £7 million	13
£7,000,001 to £8 million	14
£8,000,001 to £9 million	15
£9,000,001 to £10 million	16
Over £10 million	17
Not disclosed	18
Don't know	19

Q74	Which of the following would best describe your views of the firm's turnover growth prospects over the next two years ?			
-----	---	--	--	--

We will grow rapidly	1
We will grow gradually	2
We will stay about the same size	3
We will reduce in size	4
Not disclosed	5
Don't know	6

And finally...

Q75	Can I just ask your age ?	_____		
-----	---------------------------	-------	--	--

THANK AND CLOSE

## **Annex D: Questions used to calculate the ICT adoption index**

At this site, does your firm use the following equipment or facilities?

- Q1 Computers
- Q2 A Local Area Network [linking up computers at this site]
- Q3 Internet access
- Q4 EDI (Electronic Data Interchange) [a way of exchanging data between different companies' computer systems in a standard format, typically used for automating purchase orders and invoices between customers and suppliers]

Q12 Does your firm have a website ?

Which of the following information technology applications does your firm use ?

- Q17 Email
- Q18 The internet [the worldwide web]
- Q19 Online ordering of products or services from suppliers
- Q20 An intranet [internal websites for firm's own use]
- Q21 Computerised accounting systems [systems for recording and monitoring your firm's finances]
- Q22 Systems for sharing documents [for example, on a shared drive or on an intranet]
- Q23 Systems for sharing customer information [for example customer relationship management or contact management systems]
- Q24 Systems to handle order processing [systems for recording and monitoring customer orders]
- Q25 Computerised stock control systems [systems for recording and monitoring stock levels]
- Q26 Supply chain management system [systems controlling the flow of products, information and finances between you and your suppliers or between you and your customers]
- Q27 Human resource management systems [including in-house payroll systems]
- Q28 Enterprise Resource Planning systems [integrated software packages with various modules for managing activities such as customer service, stock control, supply chain management etc.]
- Q29 Does your firm use video conferencing ?

## **Annex E: Glossary**

3G	Third generation mobile communications – capable of supporting data transmission at high speeds to and from mobile devices.
ADSL	Asymmetric Digital Subscriber Line – a technology used to deliver broadband services over end users' telephone lines (typically over BT's phone lines, in the UK). The term 'asymmetric' refers to the fact that downstream speeds (i.e. towards the end user) are faster than upstream speeds.
Cable modem	A technology for delivering broadband services over the networks operated by Cable TV companies, such as NTL and Telewest (typically limited to urban areas, currently).
EDI	Electronic Data Interchange – a technology used for exchanging data between different companies' computer systems in a standard format, typically used for automating purchase orders and invoices between customers and suppliers.
ERP	Enterprise Resource Planning systems - integrated software packages with various modules for managing activities such as customer service, stock control, supply chain management etc.
LAN	Local Area Network – a means of connecting up computers at a single physical site, so that they can communicate directly with each other (rather than via the internet) and share information etc.
Unbundled local loop	A means by which alternative operators can provide services to end users over BT's telephone lines; operators can connect their own equipment to 'unbundled' lines, in order to offer services such as ADSL-based broadband.
xDSL	The generic term used to refer to broadband services based on Digital Subscriber Line technology – e.g. Asymmetric Digital Subscriber Line (ADSL) or Symmetric Digital Subscriber Line (SDSL).