

Business Adoption of Broadband Internet in the South West of England

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This paper reports on two studies of business adoption and use of broadband internet in the South West of England, one relating to small non-agricultural businesses in poorer parts of Devonshire, and the second focussing specifically on farm businesses in the neighbouring county of Cornwall. What emerges from each study is a picture of the motivations of those adopting broadband internet; of the uses to which they put the technology; and of the value they thus derive. From this it transpires that it is the basic benefits of broadband that are valued most by adopters, and that are most tempting to potential users. The 'killer applications' prove to be email that is 'always-on' and can carry large file attachments; a phone line that is no longer dominated by dial-up internet use; the ability to find information on the Web rapidly; and the opportunity (not taken by all) to have a simple web presence of one's own.

Key words: farm; rural; adoption; microbusiness: SME

Context

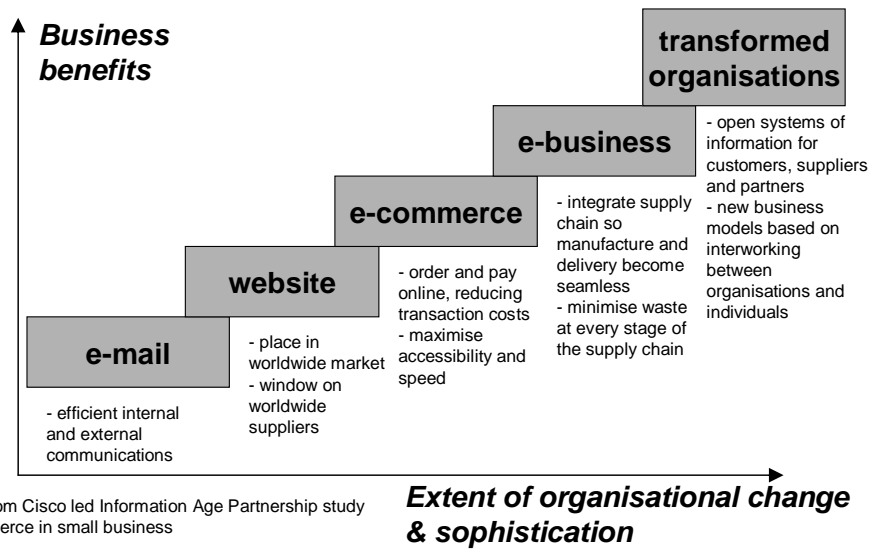
The sophistication of ICT use of a business or an industrial sector is frequently judged by reference to the concept of an 'e-adoption ladder' or 'e-ladder', suggesting a progressive series of actions which carry the business up to the Nirvana of 'advanced e-commerce'. The ladder concept comes in a variety of forms (Willis 2000?; E-business Club 2005), often (as in Figure 1) resembling a stairway more than a ladder, and differing somewhat in the labeling of the rungs (or stair-treads): Broadband4Devon (B4D), for instance, used an 'ICT adoption ladder', with 'rungs' representing first one PC; several PCs; peer-to-peer networking; server/local area network; wide-area network/remote working/virtual private network; and finally total integration of ICT systems (Broadband4Devon 2003 pp26-27).

The advent of broadband internet, now available to most potential users even in remote rural areas in the UK, has raised the stakes and heightened such activity (Warren 2002; 2004; Warren 2007). Yet while there is plenty of research on small and medium enterprises (SME) and their adoption of internet, very little relates to the microbusinesses (10 employees or less) that make up the bulk of the business population in rural England. This paper outlines key results from two surveys of small and micro-businesses participating in publicly-funded broadband adoption schemes in the South West of England, exploring the ways in which

those businesses made use of the new technology. The implications are considered for service providers and public agencies attempting to raise the adoption levels of broadband-enabled business practices in small rural businesses.



Model of e-Adoption Ladder



Adapted from Cisco led Information Age Partnership study on e-commerce in small business



Figure 1: an e-adoption 'ladder' (Willis 2000?)

The projects

Devon and Cornwall are the two counties forming the far South West peninsula of England, both predominantly rural in character. During the early 2000s, each developed its own scheme to assist businesses to exploit the potential of broadband internet, funded primarily by European structural funds, with match funding from private industry and public sources. Broadband4Devon (B4D) ceased activity in 2006 after three years, but Cornwall's *actnow* is still in operation (www.actnowcornwall.co.uk). B4D provided services to all industrial sectors except farming (due to limitations imposed by its funding source) while *actnow* has a broader remit, and the study reported here relates specifically to its programme for farm businesses.

Broadband4Devon

The aim of the B4D study was to determine whether the benefits of broadband access to small and micro businesses in the Broadband4Devon programme were significant and sustainable, and whether they outweighed the costs of broadband provision and of adapting business processes.

The methodology combined a broad online survey approach, to give statistical data from a sample of 1000 (around 30% of the population under study) at two points, 14 months apart (2005 and 2006), together with twelve highly focussed case studies; both set in the context of a literature review which provided comparative information as well as conceptual underpinning. The target population was the total of those signing up to the Broadband4Devon scheme by a particular date (February 2005): effective response rates to the surveys were 38% for the first and 16.5% for the second.

The responses were dominated by service industries, but demonstrated a reasonable match with the distribution of non-agricultural industry in Devon as a whole. 63% of the resulting respondents were male and over two thirds were aged between 40 and 60. Very few (just five businesses in total) employed more than 50 people (full-time equivalent (FTE)): 60% employed between 2 and 9 people (including the respondent), with 19% being one-person businesses. Put another way, 78% were microbusinesses, defining the latter as employing 10 FTE or less.

In the first survey, soon after the start of the B4D programme, all businesses had at least one personal computer (PC). Two-thirds had 3 or fewer computers, with 25% having just the one. All but 3% businesses were using the internet for business. 67% of respondents had websites, which was less than the DTI benchmark for all businesses but significantly greater than the benchmark for microbusinesses, which stood at 51% in 2004 (Department of Trade and Industry 2004). 43% possessed a local area network (LAN) and 31% a wireless LAN (there will be overlap between these two). Voice over internet, video-conferencing, EDI, etc, registered little as yet. 14% still did not have access to broadband at the time of the survey. Owners of the large majority of businesses considered that they had reaped tangible benefits from their adoption of broadband internet – freeing up the phone line, speeding up communications, making surfing the web a credible and time-effective method of researching for new products, markets, suppliers, etc. Most businesses promoted themselves through use of their own website, and many were now using online processes for ordering and paying for supplies, though few had progressed much further.

By the time of the second survey 14 months later, the advances made by these businesses in terms of acquisition of infrastructure and equipment, and of the way that they conduct their relationships with the rest of the commercial world, had been both rapid and transforming. Three-quarters now had their own website, and more than half had a wireless LAN. Provision of online information about products, pricing and other conditions was very common, and was growing. On the other hand, there was little evidence of movement beyond this over the 14 months between surveys. In particular, integration of systems with online processes remained the province of a tiny minority.

The adoption (or not) of internet technologies occurred in the context of other operations and strategic needs. Amongst many others, the most significant factors appeared to be competitive effects (where perceived threats or entrance to the market are seen to be

undercutting the competitiveness of the business, or where opportunities to compete are seen); regulation (by government and/or professional bodies); and the availability of ICT expertise and infrastructure, either in the business or from reliable external services. The case studies suggested that the vision and knowledge of key business personnel is a key factor in integrating the internet and broadband within other business priorities. (Warren, Childe et al. 2006)

***actnow* for farmers**

actnow is ‘a not-for-profit partnership project dedicated to accelerating economic growth and social inclusion in Cornwall through the use of broadband and ICT’ (*actnow* 2008). It offers advice and limited financial assistance to businesses and voluntary organisations, and generally acts as a change agent in the provision of infrastructure (helped by EU Objective 1 funding and partners such as British Telecom (BT)). In 2005 it launched an initiative specifically targeted at farm businesses, providing help on connecting to broadband and a rebate of at least £60 on the costs, plus free individually tailored advice from a dedicated agricultural advisor.

The aim of the research was to improve understanding of how ready, willing and able the Cornish farming community was to adopt broadband connectivity, and to make the most of it. Unlike the B4D study, this was designed as a survey of farmers in general, not just of those participating in a grant-aided scheme. A sample of 209 farmers in Cornwall was selected at random from a business database, within a quota for farm type, and surveyed by telephone during May 2007. The 209 represented an effective response rate of 26%. 63% of the respondents were male (most of the females being spouses), and median age was 50-60, with most being between 30 and 70. 10% of the businesses had diversified into farm-related enterprises (such as agricultural contracting) and 34% into non-agricultural businesses. The whole sample was comprised of micro-businesses – only 6 businesses (3%) employed more than 6 full-time employees, and the most typical was one full-timer in addition to the respondent.

The study found that 73% of the respondents used at least one computer in their businesses, and 61% used the internet for their business. This is lower than the B4D businesses, and than typical rates for SME in other industrial sectors (Department of Trade and Industry 2004). It was rather better than UK agricultural businesses in general, however: the 2006 ADAS Farmers Voice 2006 survey in England and Wales found that 61% farmers were using a computer in their business (A. Offer, personal communication). By the same token, we can note that even in an area which has had intensive EU-funded support to encourage internet, over a quarter of Cornwall’s farmers have yet to adopt the computer, let alone the internet, for their businesses. A key point is that the use of online technology was significantly higher in diversified businesses (74%) than in businesses dependent on traditional agricultural commodities at 58%, although the gap seemed to have narrowed proportionately on comparison with earlier surveys. This is reflected in measures of importance of internet

access to the business (Figure 2) and implies that farm diversification is a major driver, at least in Cornwall with its long-established farm tourism industry.

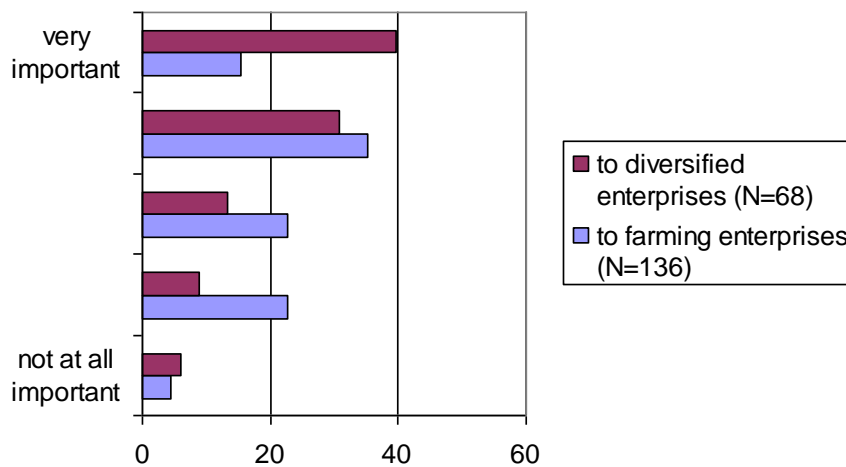


Figure 2: How important is having access to the internet?

Of the internet-enabled technologies, email and web-surfing for general information and/or to support decision-making were by far the most popular (Figure 3).

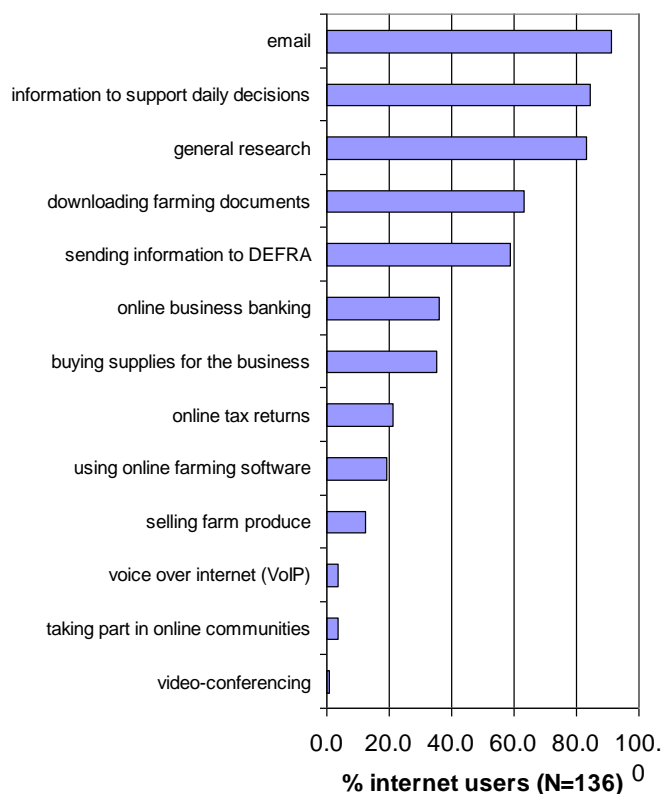


Figure 3: uses of internet for the farm business

35% internet users (21% all respondents) had their own websites: mostly for diversified enterprises such as farm guesthouses: only 13% of the non-diversified businesses had their

own sites. Most of the sites were concerned only with giving product and price information – only 19% of them allowed ordering and paying online, and 7% integrated ordering and paying with other systems in the business.

Three-quarters of the internet users (half of all respondents) were using broadband, virtually all via ADSL. 61% broadband users had experienced time savings as a result, 40% had saved costs, and 15% felt they had increased profits. 60% considered that it would increase opportunities for further diversification, and 36% had invested in new systems as a result of acquiring broadband access. This is a very positive result, reflecting the intensive effort that *actnow* and its partners have devoted to enabling broadband across this rural county, and might appear to herald the end of the rural-urban digital divide. This, though, would be to ignore what I have termed elsewhere (Warren 2007) the ‘mutating divide’. Any innovation is likely to be overtaken by a new innovation before its adoption has reached 100% (Katzman 1974: 43) - and in ICT innovation this process is frequent and rapid. In rural Britain, line lengths and other technical issues mean that most rural dwellers are able to obtain only the basic 0.5Mbps ADSL service, while most urban dwellers have no trouble in obtaining bandwidths of 8Mbps or higher. The high costs of infrastructure such as fibre-optics, and the lack of government commitment to its provision, make it inevitable that rural internet users will be increasingly disadvantaged, at least in relative terms, by not being able to make use of next-generation facilities requiring high bandwidth (The Register 2008; 2009).

Discussion and conclusions

The surveys give us an overview of the perceptions and actions of two groups of businesses in response to the availability of high-speed internet services. The groups differed by virtue of location (though they were in neighbouring counties); industrial activity (one group was comprised entirely of farmers, the other excluded them entirely); and commitment to online processes (one drew on both users and non-users of internet, the other only the former). However there are sufficient similarities to justify drawing some tentative conclusions about internet use in rural businesses; particularly the fact that almost all the businesses surveyed were microbusinesses – an under-represented group in ICT literature.

It is clear, in data from both projects, that most users of broadband consider that it has brought tangible benefits to their businesses. It is equally clear that the big benefits are the basic ones – freeing up the phone line, speeding up communications, making surfing the web a credible and time-effective method of researching for new products, markets, suppliers, etc. Using the ‘ladder’ metaphor (Figure 1), most non-agricultural businesses, and many of the agricultural ones, have moved from the bottom steps towards use of their own website, and many are now using online processes for ordering and paying for supplies. However few have progressed much further, and there is not a great deal of evidence of movement in this. In particular, integration of systems proves to be the province of a tiny minority.

In some senses this is a disappointment both to the technocentric evangelist and to the researcher seeking insights into changes in business processes brought about by broadband

adoption. One explanation could be that radical change is not appropriate to these businesses per se, by virtue of type of business (especially, perhaps, the agricultural businesses) and/or the opportunities for adding value through use of the internet. It is equally possible, though, that the ascent up the ladder has merely been delayed, and the point at which the business begins to redesign itself around online systems will be further down the line. In a small, owner-managed business, the potential for rapid change is limited by resources (especially time and finance), and by constraints operating on the principals directly. The need for hassle- and stress-management; the desire to avoid upsetting employees who are also work-mates and possibly friends; a concern about ignorance and losing face and risk-aversion, are all considerations that may well affect the pace of change, if not the degree.

On the other hand, to think in this rather negative way is to miss the very real developments which have taken place in these businesses despite their limitations of size and nature. Basic they may be, but the advances made by these businesses in terms of acquisition of infrastructure and equipment, and of the way that they conduct their relationships with the rest of the commercial world, have been both rapid and transforming. Over 70% of B4D businesses were making payments and orders online, and used online banking facilities, thus saving time and trouble and in many cases, no doubt, reducing interest and bank charges in the process. The *actnow* farm businesses were less active in these respects (less than 40%), but were catching up in the use of email to make contact with government departments and public-sector organizations (B4D nearly 70%; *actnow* nearly 60%). More than half of the B4D respondents had taken advantage of the possibilities for flexible working created by broadband (although there was much less interest in creating the same opportunities for their staff), with the prospect of environmental benefits as well as those of time and money as a result of lower distances travelled.

This paper relates to just two projects in a particular region of Europe, thus limiting the degree to which outputs can be generalised. One recommendation that can be made, however, is that providers of business support during the broadband adoption processes remember that the ‘killer applications’ for very small, owner-managed businesses are likely to be the basic ones: e mail, web-surfing, and basic website creation and maintenance, rather than sophisticated applications which are unlikely to motivate, and may in fact de-motivate.

This principle extends to provision of training and knowledge transfer, given that the most common skills needs identified by the respondents for their staff related to efficient and prompt answering of e-mails, internet search techniques, and basic IT skills. Where sophistication *can* be of huge value is in working out of sight to combine high value-added with simplicity of use, such as the template-based services (MS Office Live, Freewebs, etc) that allow websites to be built with no prior web development skill. Although these conclusions apply equally to both rural and small-town businesses, they have a particular import for the former, given their geographical dispersion and the high cost, in terms of time, money and carbon, in obtaining training and support services.

Finally, we should perhaps consider carefully before relying on conventional benchmarks for measuring 'progress'. The 'ladder' and similar linear models may be a useful way of identifying milestones, but our case studies have shown us that businesses acting quite rationally can have a convoluted path between those points, and may justifiably never aspire to more than one or two of them. But progress they have certainly made, with the help of a truly transforming technology.

Acknowledgements

I gratefully acknowledge the work of Steve Childe, University of Exeter and Tom Rogers, Research Assistant, University of Plymouth in the B4D project; Melanie Strickland, Socio-Economic Research and Intelligence Observatory, University of Plymouth in the *actnow* project; and the assistance of the project management of both B4D and *actnow*.

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