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Factors Affecting Regional SMEs Progression to Digital Business Ecosystems

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ABSTRACT

SMEs are widely recognized as an important driving force of economic growth, yet, their uptake of ICT is still very low. To support SMEs ICT adoption and to foster regional development, in 2000, the Lisbon Strategy on the Information Society and Knowledge-based economy created a vision for 2010 towards the creation of the European Digital Business Ecosystems (DBE). This paper is positioned within that context and reports upon a project involving 6000 SMEs whose aim was to support ICT adoption and to encourage SME networks through the creation of a Regional Business Portal. The paper explores factors affecting the regional SMEs participating in the DBE. An in-depth longitudinal case study approach was adopted and multiple sources of evidence were used. Many factors affecting SMEs progression to DBE were identified: including people and organization, environmental, diffusion networks, technological, regional and time factors.

Keywords

Regional SMEs, digital business ecosystems, ICT adoption, longitudinal case study

1. INTRODUCTION

The relationship between ICT and economic growth has been studied by scholars and government bodies over many years and the impact that ICT has on the performance of the economy is well recognized. Throughout the UK and other European member states, statistical evidence points to two digital divides in the take up of ICTs in enterprises; the digital divide by enterprise size, and the digital divide by regional area. To foster regional growth and SMEs' ICT development, the European Digital Business Ecosystem (DBE) of 2010 was initiated (Dini et al., 2005; Nachira, 2002). The DBE vision was to encourage the role of dynamic business network as tools for boosting regional competitiveness and SME take-up of ICT.

The renewed interest of "business ecosystem" in recent years largely resulted from the work of James Moore. Moore (1993) points out that a firm is not just a member of a single industry, but part of a business ecosystem that encompasses a variety of industries. According to him, in a business ecosystem, companies' capabilities co-evolve around an innovation or a new idea, through which they work cooperatively and competitively to support new products, fulfill customer needs, and eventually incorporate the next round of innovations. He also claims that the emergence of ICT and global competition reduces the importance of geography. Corallo et al. (2007) point out that business networks are a business ecosystem and according to them, like biological ecosystems, business networks are "communities of agents with different characteristics and interests, bound together by different mutual relationships as a collective whole".

The concept of business clusters as tools for boosting regional competitiveness has been especially evident with the advent of Internet portal technology. According to the North West of England Objective 2 Programme, "Clustering is one of the most innovative aspects of current Structural Funds Programmes. It reinforces the idea that future SME support should not only deal with technology and business strategy but should also focus on benchmarking and helping SMEs to learn from each other, as well as exploiting the economies of scale derived from bringing SMEs together in networks."

The aim of this paper is to present an in-depth longitudinal case study of the take-up of ICTs among SMEs within the locality of Greater Manchester, England. The study is positioned within the context of a European Regional Development Fund (ERDF) ICT project where a joint government-university project was put in place and a purpose-built business portal developed. The portal aimed to bring all business services provided by the local Council into one convenient location and to provide a collaborative platform for the regional SMEs. The paper reports upon the key factors affecting adoption and use of the business portal among regional SMEs.

The paper is structured as follows: Section 2 presents the theoretical framework drawing from previous SMEs' ICT adoption studies; Section 3 outlines the research method; Section 4 gives an overview of the context of the study and presents the case data, Section 5 discusses key factors affecting the adoption and use; and Section 6 draws conclusions and limitations of the study.

2. THEORETICAL FRAMEWORK

The issue of slow take-up of ICT by SMEs when compared to their larger counterparts have been an on-going research topic for many IS scholars. Based on findings from previous ICT adoption studies in SMEs, Figure 1 illustrates an initial framework of factors affecting regional SMEs progression to DBE.

The people and organization factors include size of the firm (Sillince et al., 1998; Zhu et al., 2003), firm’s sector (Zhu et al, 2003; Quaddus & Hofmeyer, 2007), age of the firm (Caldeira & Ward, 2002), CEO or owner’s innovativeness (Bharati & Chaudhury, 2006; Gengatharan & Standing, 2005), owner or employees’ education and qualifications (Montazemi, 2006), lack of internal resources and ICT expertise (Molla et al, 2006; Vega et al., 2008), firm’s or owner’s prior use of technology (Mehrtens et al., 2001), and lack of technology awareness (Harindranath et al., 2008; Quaddus & Hofmeyer, 2007).

The technological factors include relative advantage (Chong & Pervan, 2007); system security (Silliance et al., 1998; Yueng et al., 2003), critical mass (Gengatharan & Standing, 2005; Quaddus & Hofmeyer, 2007), degree of innovation (Chan & Chao, 2008), and the technology continuity and sustainability of government-funded technology (Fisher & Craig, 2005; Gengatharan et al, 2005).

The environmental factors encompass competitive pressure (Chong & Perven 2007; Grandon & Pearson, 2004), customer pressure and need (Bharati & Chaudhury, 2006; Scupola, 2009), external ICT expertise and support (Harindranath et al., 2008; Scupola, 2009), location closeness (Bajwa et al., 2005; Sillince et al, 1998), and available telecommunication infrastructure (Molla et al., 2006).

The conceptual framework will be used for investigating factors affecting regional SMEs progression to DBE (i.e. local networks).

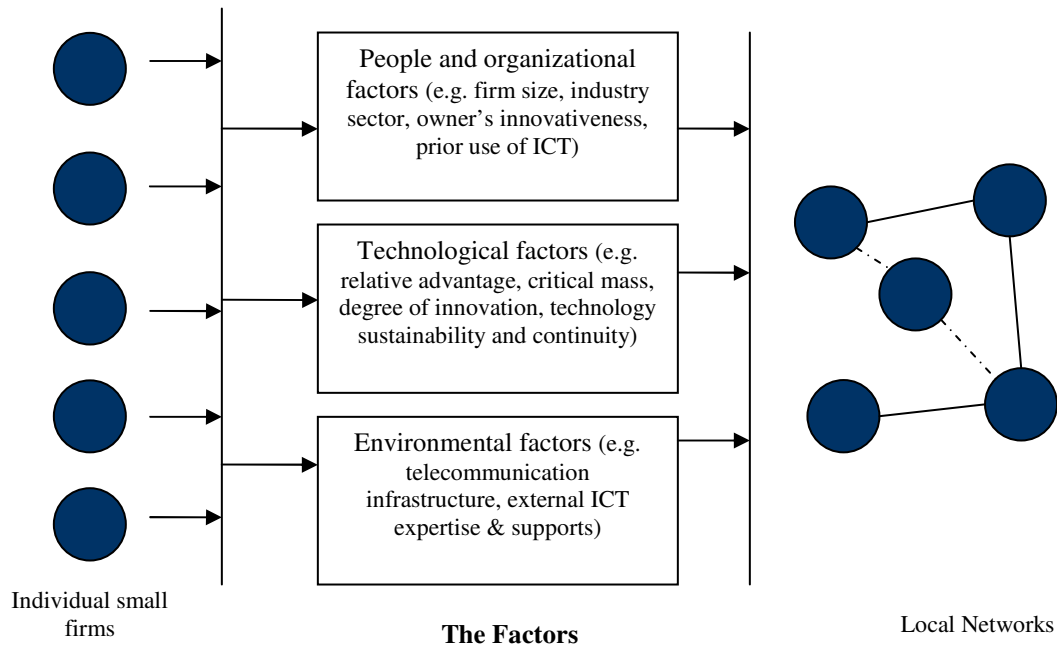


Figure 1: Initial framework for factors affecting regional SMEs progression to digital business ecosystems (local networks).

3. RESEARCH METHOD

An in-depth longitudinal case study approach (Dube & Pare, 2003; Yin, 2003) was adopted. An ERDF joint local government-university ICT project for 6,000 SMEs in Tameside, Greater Manchester, was used as the context for this study. The case was selected because of the association of the authors to the project.

Multiple sources of evidence were used. The data collection instruments included regional portal website data, documentation and archival records. The data collected included raw data gathered from the regional portal website over a three-year period in two phases; archive records such as interview transcripts and SME survey results from the local

government and census data from the Office for National Statistics (ONS); and documentary evidence such as minutes of meetings of the ICT project. The unit of analysis is the Tameside region.

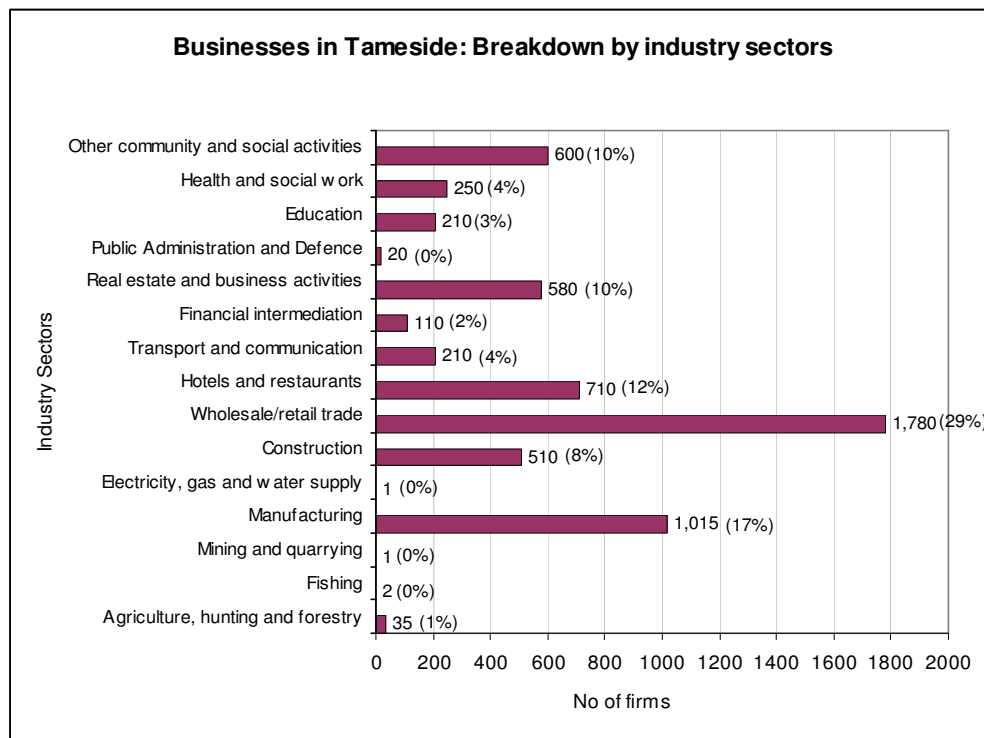
4. CASE DESCRIPTION AND CASE DATA

This section first gives an overview of the Tameside Borough Council and the 6,000 SMEs in the region in terms of industrial sectors and size of the firms. The Tameside Business Portal (TBP) and associated data are presented in section 4.2.

4.1 Tameside Metropolitan Borough Council (TMBC) and SMEs in Tameside

The TMBC is one of the ten metropolitan districts of Greater Manchester in North West of England. It consists of nine towns and had a population of 213,043 as recorded by the UK 2001 Census (ONS, 2001) and the recent population estimated for 2007 was 214,400 (ONS, 2008).

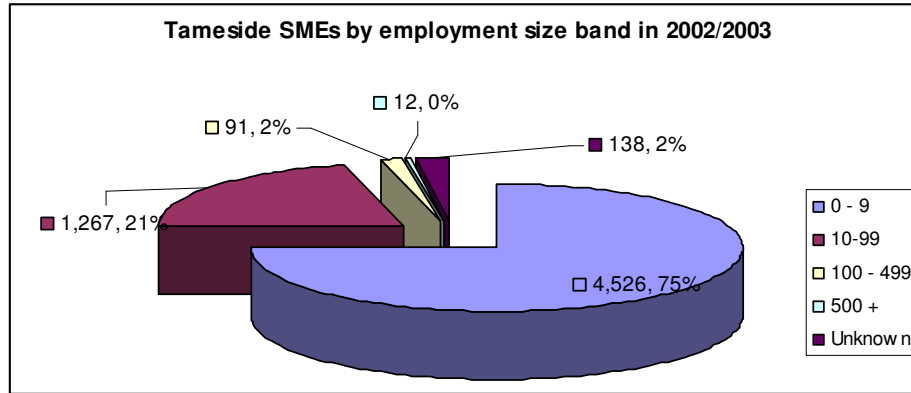
Tameside was ranked as 49th most deprived out of 354 local authorities in the UK in 2004 (Tameside Borough, 2005). Historically, it was dependent on manufacturing, however, many of the major manufacturing sectors of the past, in particular textiles, food, and engineering, have declined. This has left approximately 6,000 organisations in the region (Tameside Borough, 2005; Stein et al., 2006). Figure 2 illustrates the industrial sectors of the 6,000 SMEs in Tameside. The two largest sectors are “Wholesale & Retail Trade” and “Manufacturing”¹; with a total of 1,780 and 1,015 firms respectively. The two together accounted for some 45% of businesses in the locality. The size of firms in the region in terms of the number of persons employed in the company is depicted in Figure 3. The figures showed that 96% of enterprises in the region have fewer than 100 employees. Moreover, 75% of them are micro firms, employing fewer than 10 persons (Tan & Macaulay, 2007).



Source: Tameside Borough, 2003 (Adapted from Tan & Macaulay, 2007)

Figure 2. Industrial sectors of Tameside SMEs, showing “Wholesale & Retail” and “Manufacturing” as the two biggest sectors.

¹ The rate of manufacturing jobs in Tameside is still higher than North West Region and the UK national figures, nevertheless, it has fallen steadily from 27.7% in 2001 to 22.9% on 2004 * figures are not resident based (Tameside Borough, 2006)



Source: Tameside Borough, 2003 (Adapted from Tan & Macaulay, 2007)

Figure 3. Employment size band of Tameside SMEs, showing that the majority of them are micro businesses with fewer than 10 employees.

To ensure that local businesses did not fall on the wrong side of the digital divide, there have been on-going efforts from the local government to support and encourage increased uptake of ICT by SMEs in the region (Stein et al., 2006). The local government ICT initiatives started in 1996. A grant scheme to encourage local firms to buy a modem and start using email was initiated in late 1990s (Stein et al., 2006). To further support regional SMEs' ICT uptake, in particular website and e-business, the Single Regeneration Budget and ERDF were used between 2000 and 2006. This study thus positioned within the context of an ERDF funded joint local government-university ICT project. The ICT project was a three-year government funded project and started in 2002. The key players for the project were the regional SMEs, the local government and the University of Manchester.

The primary roles of the University were to implement the pilot portal solution; to provide technical support to SMEs and local government e-business team, and to provide all the necessary technology infrastructure for the portal development. The roles of the local government were to interact with the SMEs in the locality to identify ICT needs of the SMEs; to provide the University with the high-level user requirements; to recruit SMEs participating in the development of the project; and to facilitate the adopting and use of the portal. As for the regional SMEs, their roles were to participate in the development of the project; to utilize and provide content to the portal; to take the lead in forming local business networks.

4.2 Tameside Business Portal (TBP)

The TBP was developed from late 2002 onwards and launched on September 2004. It has basic portal functions such as a searchable Business Directory and Bulletin Boards, and mini-websites where firms can create their own set of dynamic pages from a choice of pre-defined templates e.g. "Products", "Services", "News", and "Contact us" with full content management system and features of adding images, and advanced feature - the collaborative platform and tools for SME networks (here referred as Collaborative Information Systems – CIS). The collaborative platform was implemented by customizing and extending popular open source web-based asynchronous discussion forum software "Snitz Forums 2000". The aims of the collaborative tools, was to enable firms in the locality to come together to achieve common goals. For example, to fulfill joint orders, to organize joint events, or to discuss matters of general interest; and to create and share a "private" space on the web for documents or information/knowledge sharing.

In relation to the SME e-adoption ladder as described in Nachira (2002), the portal allows individual firms to create their own multi-page dynamic web presence where information about their services or products they offer could be advertised i.e. the "website" publish state. The advanced features - CIS -allow regional SMEs to form loose, dynamic and project-based SME networks in response to changing market conditions according to their flexibility and ability. i.e. local network or local DBE – the adapt dynamic state.

4.2.1 Promotion and Adoption Process

The promotion of the TBP includes pre-launch and post-launch activities.

Pre-launch: Multiple approaches were used to promoting the Tameside ICT initiative and for engaging business during the development process. These include the telephone questionnaires survey and consultation exercises conducted by the local

government e-business team. A seminar of face-to-face discussion with local SMEs was also arranged in April 2003, and engaging SMEs in the development of the project i.e. participating in steering group and focus group meetings.

Post-launch: The methods used to promote the TBP to both local businesses and residents after it was launched included adverts in local newspapers and radio stations, leaflets in libraries; newsletters sent to businesses; and electronic signboards. Promotion to SMEs shortly after the portal was launched included email shots, flyers, an editorial in the Tameside Citizen and Business Briefing, two seminars, one drop-in day and various presentations to interested groups.

The adoption and use of the portal was mainly facilitated by two ICT advisors from the local government. A web-based administration system was used. A number of seminars, drop-in days, pre-booked sessions and individual visits were organized, including two launch events in October 2004 and twelve registration days between November 2004 and September 2006. Registration stands in local libraries and shopping centers were also arranged on three occasions during the first eighteen-month period of the launch. Two seminars focusing on the collaborative tool were also organized. In addition, two business networking events focusing on the regional portal adopters were also held in July and September 2006.

4.2.2 Results

Adoption over time: Rate of adoption / Number of adopters

“Rate of adoption”, as defined by Rogers (2003), is “the relative speed in which an innovation is adopted by members of a social system”. The rate of adoption is usually measured by “the length of time required for a certain percentage of the members of a system to adopt an innovation” (Rogers, 2003). The initial goal was to get 10% of the regional SMEs to adopt the portal at the end of the three-year funded project, which was not realized. The finding is consistent with Fisher & Craig (2005), Gengatharan & Standing (2005), and Tatnall (2007). These studies showed that several government-funded regional e-marketplaces for regional SMEs in Australia have either not been successful or failed. Nevertheless, as illustrated in Figure 4, the number of adopters has risen steadily, despite the local government-university joined project finished at the end of 2005, with no further development on the portal features or functionality. Nonetheless, the University still providing the hosting and maintenance of the server with no costs, the local government were still providing the registration and training from time to time. The results showed that the number of adopters reached to 688 at the end of the phase 2 data analysis. Further data analysis showed that the number of adopters reached to over 800 in mid 2008 and approximately 1,000 at the end of 2009.

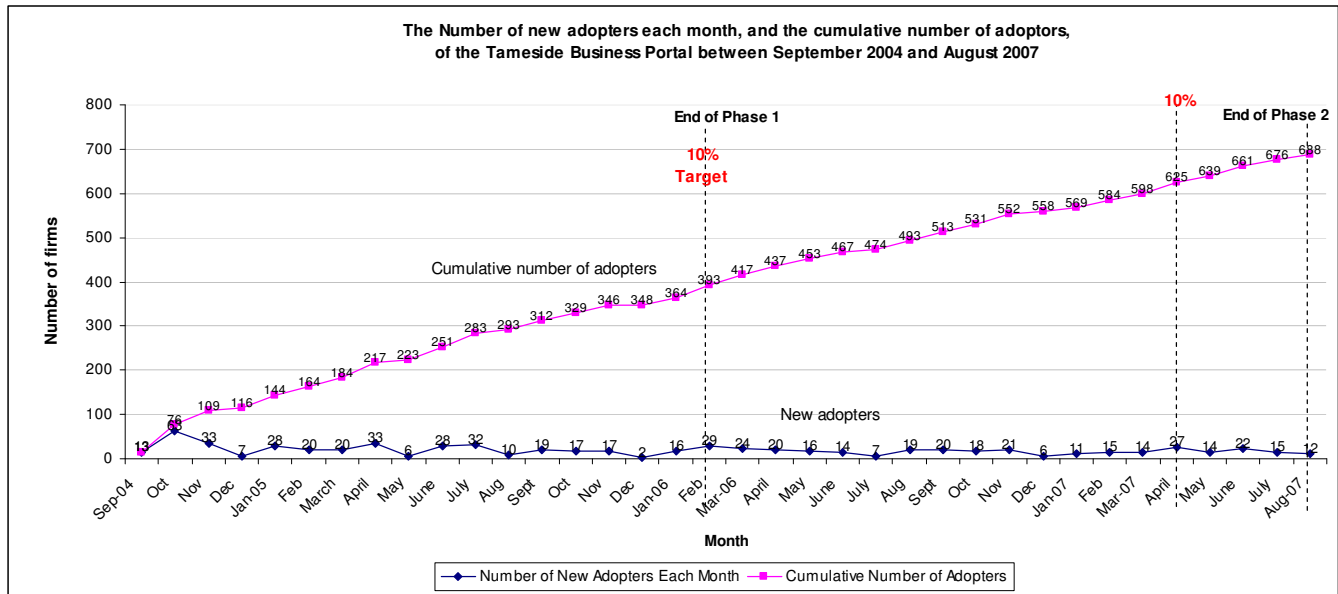


Figure 4.The number of new adopters each month and cumulative number of adopters, of TBP, between September 2004 and August 2007, showing steady growth in the number of adopters.

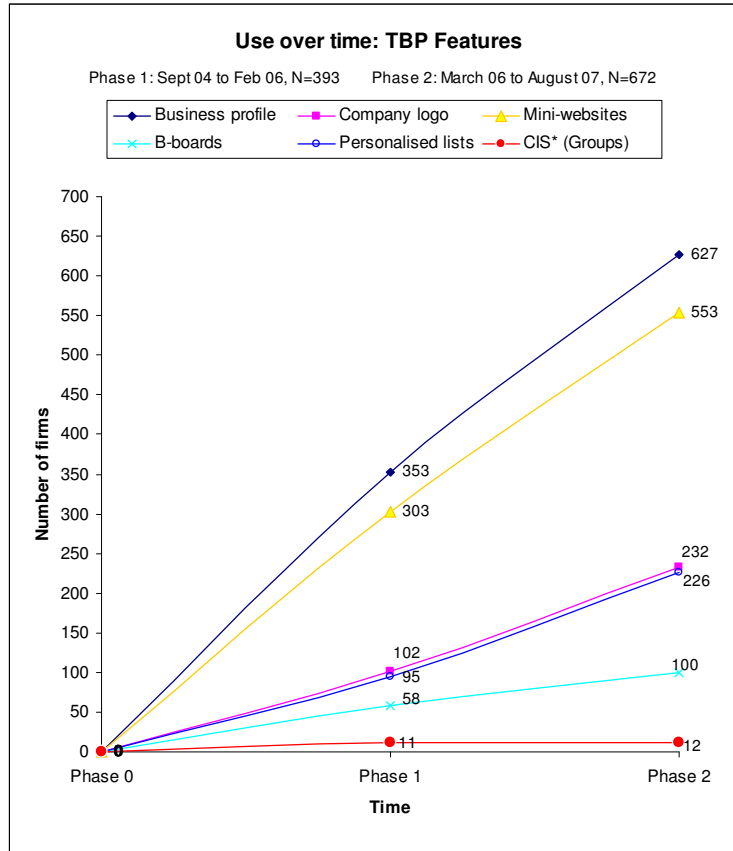


Figure 5: Use over time: TBP features

Use over time: TBP features

Figure 5 illustrates the use over time of the various TBP features. On a whole, there was a clear different between the various features used by the regional SMEs over time. The results revealed “Mini-websites” have been proved quite popular among the adopters, nonetheless, there was inertia in the use of the collaborative platform for online interactions (measured by groups) among businesses in Tameside, which was one of the main purposes of the ICT project initiative – to get regional SMEs participating in the local business ecosystems. Out of the 672 adopters (SMEs), the finding revealed that fewer than 10 SMEs in the region have actively participated in the online discussions using the tools provided. The next section discusses the key factors affecting the regional SMEs progression to the Digital business ecosystem.

5. DISCUSSION: FACTORS AFFECTING REGIONAL SMEs PROGRESSION TO DIGITAL BUSINESS ECOSYSTEMS

This section discusses the key factors affecting regional SMEs progression to DBE drawing on the factors identified in the initial framework as presented in section 2 i.e. “People and organizational”, “Technological”, and “Environmental” factors, and extending the initial framework to include additional factors identified in this study i.e. “Regional”, “Promotion and diffusion network” and “Time” factors.

5.1 People and Organizational Factors

Firm’s or owner’s prior use of ICT

The study has found that the majority of TBP adopters already had use of email (93%) and a website (65%). The development of mini-websites was originally intended for firms with no web presence and it had been anticipated that those with their own website would not put additional pages up. However, it was surprising to find that some 65% of the mini-website users already had their own website. It was also observed that firms who had prior use of a website tended to make

better use of the mini-websites than did those that had not (e.g. more pages, more content, use of pictures). This finding confirms MacGregor (2004), that small firms who have prior use of Internet technology for the same activity are more likely to adopt a similar activity again. Arguably, the low usage of CIS could be that adopters have little previous experience in the online discussion or network environment (i.e. messaging systems, discussion forums).

Business networking

Porter (2001) suggests that firms should work both cooperatively and competitively to achieve economies of scale. This study has found that there was skepticism by firms in the region regarding the idea of web-rings and working with competitors.

“It is foreseeable that some people will say ‘My competitor will be on the portal...I don’t want to network with them’ “... At a marketing master class, the seminar presenter pushed the idea of web-rings. You should link with your competitors. There was a lot of skepticism from SMEs” (local government ICT adviser, Tameside project meetings, 2002).

It was also found that many of them were new to networking.

“I thought it was an excellent event. Extremely well organised and casual! Great to see so many other businesses totally new to networking - and all from the Tameside or Glossop areas!” SDP Associates - TBP adopters, (The TriBuNe² newsletter, May 2, 2009).

The absence of business networking amongst firms in the region is likely to have a strong impact on the creation of online business networks.

5.2 Technological Factors

Degree of innovation

The Internet portal provides a one-stop convenience and as described by Bagchi and Tulsiek (2000) would achieve dynamic aggregation of information, products or services offered by different businesses. It would also make the firm visible to a larger market, able to promote complementary services or products to customers, and to develop deep relationships with communities via networks with other firms. However, at the same time their competitors will also have the same marketability and visibility as they do. The renewed concepts of “business ecosystems” and “business clusters”, although persuasive, are likely to conflict with the beliefs of many small firms, who usually operate in this competitive world and with little control over the environment.

“Why did businesses with only two pages, “contact us” and “opening hours”, receive the same yellow highlighting as businesses with four or more pages?” – A question raised by an owner of an IT consultancy firm (Tameside project focus group meeting, October 2005).

As a result, the portal software solution, although it has advantages, also has pitfalls e.g. lack of a unique identity for individual firms. In addition, the degree of innovation of collaborative platforms is regarded as higher than other e-business models such as the website, e-commerce, and e-mall (Vézina et al., 2003). The findings of this study are consistent with those findings by Bajwa et al. (2005); they found that web-based collaborative tools and electronic meeting systems were not widely used by businesses in the US, Australia, and Hong Kong.

“Critical mass” and “diffusion”

Markus (1987) suggests that an individual when deciding to adopt an available interactive technology is very likely to choose not to use it, unless a sizeable number of his or her trading partners are already using it. There is evidence for this in this study:

“... the firm would not use an online facility/network as many of the existing contacts do not use email/Internet...” (TBP Consultation SME#2, July 1, 2003).

Rogers (2003) stated that individuals when deciding whether or not to use an interactive innovation, to some extent depend on their expectation of others’ future adoption. The effect turns out to be that everybody in the group is watching while at the

² The TriBuNe is a monthly newsletter by “Tameside Business Network” (www.tamesidebusinessnetwork.com). The network was initiated by a number of businesses in the region in early 2009. The majority of the initiators and members are also TBP adopters.

same time being watched. As a result, just as critical mass can affect the rate of adoption of an interactive innovation, it may also speed up the rate of discontinuance.

Although there are many possible reasons for the low activity amongst the Tameside groups, given that fewer than 1% of the TBP adopters had used the collaborative tool for group activities, for example, the Tameside Business Forum set up by the local government, a negative critical mass effect may have resulted in the inactivity of these groups among the adopters.

Technology sustainability and continuity

Questions regarding what will happen to TBP after the funding period has ended were raised on a number of occasions.

“(the owner) is concerned about the life of the project. He feels that business, in order to be “sold” the idea, needs to know that come December 2005 there will be continuance” (TBP Consultation SME#2, July 1, 2003).

The uncertainty of the project after the three-year funding period ends is likely to have a strong impact on the adoption and use of the portal, as businesses are not willing to spend time and resources (e.g. writing and populating content for mini-websites) for something which might not be continued a couple of years later.

5.3 Environmental Factors

Telecommunication infrastructure

The telecommunication infrastructure, including cost, availability, and quality of Internet connectivity in the region, country, or property, could also have a high impact on the adoption and use of Internet technology by firms.

“(the owner) currently switching to ADSL Broadband ... hasn’t used IT much before ... but will be using technology more in a few weeks when the above improvements (broadband connectivity) have been made ...”. (TBP Consultation SME#4, July 4, 2003).

The Tameside questionnaire survey of 2002/2003 also showed that over 80% of the firms did not have broadband Internet connectivity (Stein et al., 2006).

5.4 Regional Factors

Rogers (2003) points out that structure exists in every system, and that the social and communication structure of a system could hinder or facilitate the diffusion of a technology within a social system. Hence, the same technology or idea might have received very different outcomes in different regions.

Lack of pre-existing business clusters

As presented in section 4.2.1, the promotional efforts included pre-launch and post-launch activities. The pre-launch activities included recruiting potential leading businesses to take the lead in the development of online networks. Sellito and Burgess (2005) found that working with existing clusters or well-defined groups in a region helped when trying to create online networks. In the case of Tameside, the business clusters did not pre-exist,

“... bringing together clusters of business to collaborate together is crucial to this project ... the need to consult the businesses in order to identify such clusters of business ...” (Notes of Tameside Project Meeting, October 9, 2002).

and there was also difficulty in recruiting SMEs to take the lead in forming SME networks:

“... would take part (to organize a joint local / national event) if someone else led” (TBP Consultation SME#5, July 4, 2003).

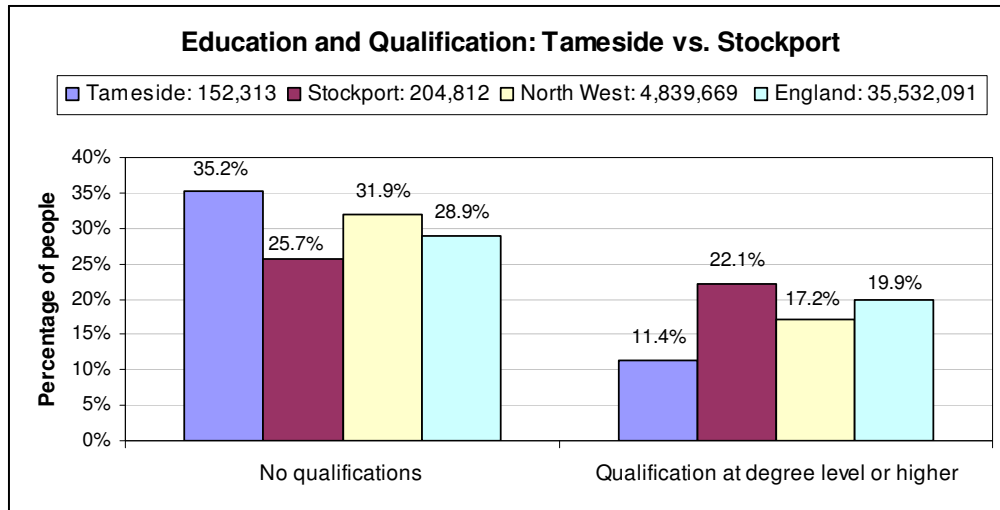
The lack of pre-existing offline business clusters in the region thus made it difficult to create online networks, as evidenced by the low usage of the CIS and low number of groups created by businesses.

Education and Qualifications

Education affects one’s ability for information acquisition and technology understanding and its use. Azari and Pick (2005), indicating that a highly educated region or community can make better use of technology. This study has found that the education level in Tameside was generally low. It is reasonable to assume that this includes owners and employees situated in the locality. The 2001 census data shows that only 11.4% of people aged 16-74 in Tameside had qualifications at degree level

or higher; the figure was significantly below the UK average of 19.9%. In addition, the percentage of people in Tameside with no qualifications was also higher than the overall average for England, 35.2%, versus 29.1%.

Better outcomes were observed in the “Stockport Business Crime and Disorder” group than in the “Tameside Business Crime and Disorder” group, both led by Greater Manchester Chamber of Commerce. It was found that 22.1% of people aged 16-74 in Stockport had qualifications at degree level or higher in 2001, compared to only 11.4% in Tameside. As illustrated in Figure 6, the education profile in Stockport at degree level was also higher than the average for England and for the Northwest region. Likewise, the percentage of people with no qualifications in Stockport, 25.7%, was considerably lower than for Tameside and for England as a whole. These findings suggest that owners or employees in a highly educated region are more likely to use ICT for online networks than those in a less educated region.



Source: KS13, Census 2001, Office for National Statistics

Figure 6. Education and qualifications: Tameside versus Stockport

Socio-economic profile

This study has found that only some 5% of firms in the region are in the “Professional, scientific and technical activities” sector. In addition, the percentage of people working as “professional” was significant lower than the national average, at 6.9% versus 11.2%. The study also found that the proportion of people working in “professional” occupations in Stockport was twice as high as those in Tameside, at 13%. The paucity of people employed in “professional” sectors is likely to have an impact on advanced ICT adoption and use. According to Azari and Pick (2005), the “professional, scientific, and technical services” sector in a region has a significant influence on advanced ICT innovation and use. In addition, Dewan and Riggins (2005) underline the fact that firms operating in certain locations where individuals are more technically sophisticated will be more likely to be advanced in their usage of advanced ICT.

Residential profiles

The residential profiles of towns in Tameside revealed that family income, residents’ interest in current affairs and education were generally low. The interpretation of the neighbourhood profile of upmystreet.co.uk also suggested that residents in Tameside are less likely to use Internet services for practical purposes such as information search and Internet shopping when compared to more favoured regions.

Hsieh et al. (2008) suggest that socio-economically disadvantaged groups are less likely to use technology for utilitarian purposes than socio-economically advantaged groups. Beckinsale and Levy (2004) found that customer pressure was driving ICT adoption in SMEs in the West Midlands of England; Scupola (2009) also found consumer pressure driving e-commerce adoption by SMEs in Denmark and Australia.

The local residents’ inattention to current issues might also lead to their unawareness of the benefits that ICT could bring to the region and community as a whole. A recent study by Harindranath et al. (2008) revealed that besides external ICT

consultants, friends and family of a firm's owner or manager are the second most important source of ICT advice and support for SMEs in South West London and the Thames Valley region of England.

5.5 Promotion and Diffusion Networks

Promotion of TBP

A number of studies (Fisher & Craig, 2005; Gengatharan & Standing, 2005; Quaddus & Hofmeyer, 2007) have suggested that lack of promotion has led to the failure of a number of e-marketplaces for regional SMEs in Australia. Nonetheless, this study was not able to relate this factor to the Tameside case. As presented in section 4.2.1, the launch of the portal was announced to both firms and residents through both mass media communication and interpersonal communication methods. A steady growth in the number of adopters over time was also observed.

Diffusion networks

The initiative and diffusion networks were seen as "top-down" originating from the local government and the local University. According to Rogers (2003), if the person who facilitates the flow of an innovation is an employee of a government agency or some other establishment institution, a certain cynicism may exist between the participants. This is also evidence in this study:

"... (the owner) very pessimistic about the portal ... won't sign any action plan until can see what the portal looks like..." (TBP Consultation SME#6, July 7, 2003).

Rathbone (2007) suggests that the presence of business role models within a community would facilitate a regional digital ecosystem as these business role models may act as leaders and persuade others to join. Nonetheless, it was found that only a handful of businesses were present in the diffusion networks. Difficulty in recruiting SMEs to take part in the online networks was also found in this study.

5.6 Time Factors

This study has found that "time" is another important dimension in the adoption and use of TBP.

TBP's rate of adoption by Tameside SMEs

A slower rate of TBP adoption by Tameside SMEs was found in this study. As stated, the target 10% take-up of TBP by Tameside SMEs was not achieved by February 2006. Nonetheless, a steady growth in the number of adopters over time was observed. The accumulated number of adopters had reached 10% of the Tameside business population by April 2007.

Regional innovativeness (early/late)

This study has found that some groups were quick to adopt the CIS for online discussions but some were slower, despite being led by the same people and having the same forum and group structure. The results showed that 16 business members actively participated in the Stockport Business Crime and Disorder group discussions, compared to only 3 business members in the Tameside group. This finding suggests that Stockport businesses were relatively earlier in adopting the online discussions using CIS than businesses in Tameside, and is consistent with Roger's (2003) conclusion that different speeds of adoption occur for the same technology in different social systems.

6. CONCLUSION

The study has explored the key factors affecting regional SMEs progression to the European DBE. By focusing on post-adoption usage stages and by applying a longitudinal case study approach, this research provides interesting insights into adoption and use of TBP by regional SMEs; the findings show both growth and inertia in the use of the TBP.

Through analyzing the relationship between the findings from the various data sources, this study has confirmed a number of factors affecting adoption and use reported in the literature, and has also provided new factors affecting regional SMEs progression to DBE; one new factor (i.e. business networking) has been identified within "people and organizational", none in "technological", and none in "environmental". Three new categories of factors have also been identified: "regional", "promotion and diffusion networks", and "time" factors. This case finding revealed that even this progression to local networks is beyond the Tameside SMEs. The factors identified are internal and specific to individual SMEs situated in a locality in the formation of local networks.

Despite of this, the study has its limitation, it was conducted in the context of a joint local university-government ICT project for 6,000 SMEs situated within a regional area in Greater Manchester, England, therefore, the findings may not be generalizable to businesses in other regions within the UK or in countries with very differing institutional, socio-economic and demographic contexts. Further research is needed to complete our understanding on this subject in other similar or different settings.

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