Int. Journal of Business Science and Applied Management, Volume 2, Issue 1, 2007

eBusiness Maturity and Regional Development

Paul Beynon-Davies
eCommerce Innovation Centre, Cardiff Business School, Cardiff University
Aberconay Building, Colum Drive, Cardiff, CF10 3EU, United Kingdom
Tel: +44 (0)29 2087 6013
Fax: +44 (0)29 2087 4419
Email: beynon-daviesp@cardiff.ac.uk

Abstract

This paper describes the experience of a major research centre supporting knowledge transfer in the area of eCommerce to SMEs. It debates with issues surrounding the integration of academic research with practical support to the SME community. For this purpose the use of an eBusiness framework as a platform for eBusiness maturity assessment is proposed. These devices are seen as key to the work of research centres such as ours in addressing the future challenges for smeeBusiness.

Keywords: ebusiness, maturity assessment, regional development

Acknowledgements: We wish to acknowledge funding support for the work described in this paper from the European Regional Development Fund under the Opportunity Wales programme. Note the opinions expressed in the paper are those of the author and not the Opportunity Wales programme.

1 INTRODUCTION

The author is currently head of a research centre based within the Cardiff Business School. This research centre has built a substantial amount of experience in knowledge transfer work in the area of eCommerce with SMEs. As we come to the end of current project work in this area we have been evaluating our experience of this activity with the overall objective of formulating what we see to be the future of support in this area amongst the SME community in a regional context. This paper documents some of our initial thinking and has the following key aims:

- To discuss the relationship between eBusiness and regional development
- To consider some of the relationship between university Innovation and Engagement (third mission) work and the concept of eBusiness growth
- To highlight the importance of assessing the maturity of eBusiness amongst companies to the process of effective knowledge transfer
- To consider the meaning of maturity in the context of eBusiness
- To discuss whether eBusiness for SMEs is different from eBusiness generally
- To describe what we see to be the challenges for smeeBusiness over the next decade

2 REGIONAL DEVELOPMENT AND EBUSINESS

Over the last decade much European, national and regional funding has been used to promote the adoption of ICT amongst SMEs (ECb 2002; ECa 2005). The rationale for making investment in this way is normally portrayed in the following terms. Greater adoption of ICT is seen to lead to clear business benefit such as greater business competitiveness. For example, ICT adoption is seen to facilitate the location independence of business while also permitting small business to access global as well as local markets. In other words, ICT adoption allows small business to 'level the playing field' with large business in many areas. In turn, since SMEs form the vast majority of businesses and SMEs are typically also seen as the growth agents within economies, overall investment in improving rates of ICT adoption amongst the SME community is seen as a major catalyst for regional development in terms of measures such as increased GDP and increased levels of employment .

Small and medium-sized enterprises (SMEs), defined as firms employing fewer than 250 people (ECc 2005), play a central role in the economy and are an essential source of employment, innovation, entrepreneurship and growth. In the UK as a whole, SMEs make up 99.9% of all enterprises and account for more than half (58.5%) of the private sector workforce and over half (51.3%) of UK turnover (SBSa 2005). In Wales small businesses also represent more than 99% of all businesses and are both socially and economically vital, accounting for approximately 60% of all Welsh private sector employment and over 40% of business turnover (SBSb 2004).

Typically the notion of ICT adoption has been bundled over the last decade amongst many European regions in terms of electronic commerce (eCommerce). More recently discourse in this area has expanded the notion of ICT adoption to that of electronic business (eBusiness).

Business can either be considered as an entity or as the set of activities associated with a commercial organisation. Electronic business or e-Business might be defined as the utilisation of information and communication technologies to support all the activities of business. Commerce constitutes the exchange of products and services between businesses, groups and individuals. Commerce or trade can hence be seen as one of the essential activities of any business. E-Commerce focuses on the use of ICT to enable the external activities and relationships of the business with individuals, groups and other businesses. The distinction between these two concepts will be elaborated further below and will be critical to the argument we wish to promote in relation to the future of knowledge transfer work as far as ICT is concerned in the future.

The problem with this association between ICT adoption, uptake of eCommerce or eBusiness, increased business competitiveness and better regional development is that it is difficult to measure linkage effects. Our experience tells us, for instance, that it is critically difficult to evaluate the impact of eCommerce at the regional level. A key problem is that companies (particularly SMEs) do not evaluate their ICT investments effectively. In other words, SMEs do not and frequently cannot systematically trace the impact that something like an investment in a customer web-site has for their business. To cite a more specific example, many small businesses within Wales cannot distinguish sales they have taken face-to-face, over the phone or through their web-site. It is therefore impossible for them to estimate something like their on-line revenue contribution (Beynon-Davies 2004). Without this it is difficult to estimate aggregate regional development impact, except in the sense of profiling

adopters against non-adopters as has been done under the *Opportunity Wales* programme which is discussed below.

3 INNOVATION AND ENGAGEMENT AND RESEARCH

Universities as organisations traditionally fulfil a number of different roles within the society, economy and polity of a country. At least as far as UK universities are concerned it is conventional to divide up the competences of a university in terms of three main areas of mission:

- The first mission of a UK university, particularly those within the top rank, is research which we might define very broadly as that activity devoted to the generation or production of new knowledge.
- Universities are traditionally seen as knowledge repositories, accrued through academic research but also through academic scholarship. The expectation is that universities must seek to transfer this knowledge in some way into the wider community. The normal route through which this occurs is through various forms of teaching to students. This is the second mission activity or competence of a university.
- The third mission of a university is now typically conceived in terms of innovation and engagement. There is a growing imperative both from government and industry for universities to be involved in both the transfer of knowledge to the wider world but also the engagement with this wider world in terms of 'leveraging' local economies, engaging with the broader society and helping to shape the actions of the polity.

However, there are difficult junctures between the 1st and 2nd missions of universities and 3rd mission work. For instance, because of the ways in which third mission work is both funded and operated it is particularly difficult to marry the demands of Innovation and Engagement work with good academic research. By good academic research we normally mean investigation which is both conducted and reported upon in a rigorous manner, the notion of rigour typically defined by the overarching academic discipline within which the research is conducted. In contrast, Innovation and Engagement work may be driven by alternative imperatives of timeliness and relevance.

A focus on eCommerce and eBusiness exacerbates some of these junctures. It is argued below that eBusiness is by its very nature a socio-technical phenomenon. By this we mean it exists at the interaction between technology and human activity. As such, it is by its nature inter-disciplinary. This frequently does not marry with the divisions of traditional academic structures. The area is also applied in the sense that it is interested in the practical application of technology. This leads to the problem of managing and disseminating the knowledge concerned with the application of a fast-changing technology. This means that what is relevant for business in terms of the application of ICT may have a relatively short time-frame (months) as compared to the typical time-frame of academic research (years).

4 ECOMMERCE INNOVATION CENTRE

The eCommerce Innovation Centre (eCIC) has been in existence for over 10 years as part of Cardiff University and more recently as part of the Cardiff Business School. The author has recently taken over as director of the centre. The expertise of the centre historically as its name suggests has been located primarily in the application of eCommerce amongst SMEs. With the new leadership this remit is expanding to include an interest in all matters concerned with organisational informatics (Beynon-Davies 2002). Organisational informatics is concerned particularly with the application of ICT to improve organisational performance. However, this does not mean that the focus of concern can and should stay merely within the organisational domain.

We would argue that by its very nature ICT is a systemic issue. In other words, ICT is embedded within modern society, economy and polity. Hence the issue of organisational performance is impacted upon by ICT developments in the wider environment. For example, concern has been continuously expressed over the issue of the digital divide. In broad terms this is the social phenomenon concerned with differential rates of awareness, interest, skills and access to ICT throughout society. This has and is likely to continue to have an effect on eBusiness. For instance, certain customer segments are more likely to be eLiterate and have the preference to shop for goods and services online than others. This is likely to help direct eBusiness strategy for many companies into the future. Also, aspects of the polity such as eGovernment, particularly in the area of eProcurement can be a significant lever for eBusiness (particularly amongst SMEs). With the drive for greater public sector efficiency many government

organisations will mandate online links with suppliers in the future for most of their procurement. This has particular implications for those SMEs which conduct a significant part of their trade with government.

eCIC is the site for three major projects currently:

- The *Broadband Wales Observatory* is an integral element of the five year, multi-million pound, Broadband Wales Programme. Launched in 2002, the programme is designed to improve the availability and take-up of broadband across Wales and, ultimately, to help underpin the achievement of economic development objectives. The aim of the Observatory is to track developments in the broadband marketplace and to identify best practice in relation to the roll-out and usage of high speed networks by individuals, businesses, industry sectors and public sector organisations.
- The *ePROC* project is a collaborative European project funded by INTERREG IIIB NWE with partners from Germany, Holland, Ireland and Wales. The aim of the project is to investigate the adoption of new procurement processes and tools by SMEs in more rural areas who might find themselves disadvantaged as a result of new eProcurement systems adopted by local authorities.
- eCIC acts as the centre of excellence for the *Opportunity Wales Programme* (OW). We particularly focus on describing some of the features of the OW programme because of its relevance to the themes of this paper.

5 THE OPPORTUNITY WALES PROGRAMME

The Opportunity Wales programme is funded under the European Regional Development fund and aims to provide SMEs with advice and support in achieving the benefits of eCommerce. This support programme has involved:

- the establishment of a process of knowledge transfer from eCIC through accredited eCommerce advisors to SMEs
- general awareness raising of eCommerce benefits to SMEs through intensive marketing campaigns
- the establishment of a contact centre to coordinate client relationship management, adviser activity and management information
- the development of a Web site to provide a 24/7 online resource on eCommerce knowledge and information
- advisor support to encourage SMEs to introduce and enhance the use of eCommerce and to assist them to implement solutions
- client aid for appropriate eCommerce products and services.

The OW programme is considered an exemplar regional support programme by the European Commission. This is particularly because it is structured as a public/sector partnership, has developed and uses a clear delivery methodology including quality assurance and uses benchmarking to continually evaluate performance.

As of April 2006 Opportunity Wales has supported over 10,000 businesses within the objective 1 and 2 areas of Wales. Benchmarking data has been collected from 5,899 clients showing substantial growth since April 2001 with 3,150 new jobs being created and an increase in turnover of £295m. There is also a nucleus of over 120 trained and University accredited advisors, capable of supporting SMEs in future eCommerce activities.

6 THE STATE OF ECOMMERCE IN WALES

As part of the OW programme eCIC has conducted a large annual survey of the state of eCommerce adoption amongst SMEs in Wales (ECIC 2006). This survey, conducted since 2002 with over 2000 plus companies annually has used a variant of the original DTI adoption ladder to categorise companies' experience of eCommerce. This model describes the process of eCommerce adoption in terms of 7 key steps or stages represented in table 1.

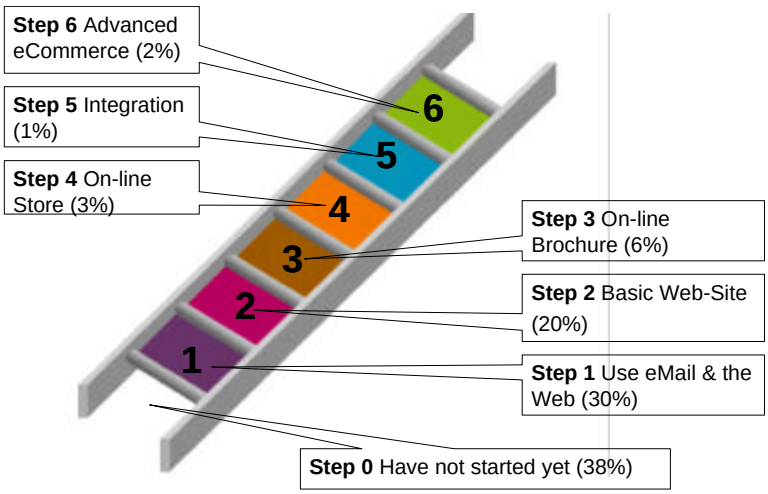
Table 1: Stages of the eCommerce Adoption Ladder

Stage	Title	Definition
0	Have not started yet	The business does not have Internet access
1	Use eMail and the Web	The business does not have a web-site but accesses information and services on the Web and uses eMail. This step can be further divided into businesses using eMail only but not surfing the Web.
2	Have a basic Web site	The business has its own web-site which only included very basic information about the business; for more information customers have to contact the business.
3	Have an on-line brochure	Customers can access more detailed information about products/services from the web-site but cannot buy or pay on-line.
4	Have an on-line store	Customers can buy and pay for products/services from the web-site, but the web-site is not linked to internal systems and orders are processed manually.
5	Have integrated systems	The on-line 'store' is integrated with other business systems, e.g., order processing, fulfilment, accounts and/or marketing.
6	Use advanced eCommerce	Internet technology drives the business internally and externally, and is used to manage all processes end-to-end more effectively and efficiently.

As part of the annual survey we have plotted eCommerce adoption within Wales against this ladder. The latest data we have for 2005/2006 (see figure 1) indicates that across Wales eCommerce adoption has particularly focused on the basic utilisation of eCommerce such as the use of web-sites for marketing purposes. The majority of SMEs in Wales are in steps 1 and 2 of the ladder. Some SMEs are beginning to build web-sites that offer ordering and fewer are offering on-line payment as an option. Fewer still businesses are moving into advanced forms of eCommerce technologies such as CRM and fewer still are exploiting the integration and innovation opportunities of ICT. Worryingly, a substantial amount of SMEs in Wales are on step 0; they do not yet have an internet connection.

This sets us the vision for the next level of challenge in Wales and we suspect most regions within the UK. We can demonstrate in comparing the profile of OW clients against the general population that some impact has been made with this support programme. The profile of OW clients is generally much better. In other words, they tend to be further up the ladder with the majority at steps 3 and 4. However, the challenge for the next level of Innovation and Engagement in this area is to marry the still relevant needs of the 'mass market' with the need to further progress companies that have started the process of innovation with ICT.

Figure 1: The OW eCommerce Adoption Ladder and Adoption in Wales for 2005/2006



7 WHAT DO WE MEAN BY EBUSINESS MATURITY?

The eCommerce adoption ladder described in the previous section can be considered a very basic attempt to encapsulate the issue of eCommerce maturity. However, the ladder was developed as an Innovation and Engagement instrument, particularly for use as an explanatory tool with SMEs and as a tool for promoting the benefits of eCommerce to these companies. It was never intended as a research instrument and not surprisingly there are key problems with the ladder as an instrument in this sense.

First, the adoption ladder focuses on eCommerce and particularly B2C eCommerce to the detriment of other forms of eBusiness such as internal, B2B, C2C and P2P eBusiness (see below). Second, the definitions of the steps of the ladder are somewhat vague, particularly for steps 5 and 6. In practice, for instance, it is unclear what is meant by the definition used for step 6 - *the use of Internet technology to better manage end-to-end processes*. Third, in our SOTN survey companies have been asked in the past to place themselves against this framework. This introduces potential mis-measurement as respondents may over-rank themselves against the ladder.

Hence, we have been re-working our ideas both in terms of Innovation and Engagement and research work around a more sophisticated and hopefully more useful instrument. This instrument is grounded in an assessment of eBusiness maturity and specifically linked to a vision of how we envisage SME support in the future. In other words, we are attempting to delineate the major shape of what we might call smeeBusiness for the next five years or so.

8 VISION FOR SMEEBUSINESS

As a centre, we see the vision for smeeBusiness as expressed in a series of succinct statements that form the essence of the message we feel needs to be promoted in the next generation of Innovation and Engagement work in this area.

Move from eCommerce to eBusiness

eCommerce was the banner around which support work was built in the past. It must be acknowledged that eBusiness is now the more accepted term and is generally used as more encompassing term to include eCommerce within its domain. The term eBusiness emphasises both an external and internal focus. It also emphasises the use of technology both for competition and collaboration (Beynon-Davies 2004).

Next level of leverage will come from promoting eBusiness across the value-chain

The value-chain concept has been much promoted and has come under some criticism from certain quarters. Nevertheless the value-chain idea is useful to emphasise that ICT is applicable across all business value-adding activities (supply-chain, internal value-chain, customer-chain and what we like to call the community chain). It will also become increasingly significant across partnership networks. Hence, the key assumption is that the next level of competitive advantage will come from integrating ICT systems across the value-network (see below).

Process innovation through application of a new range of technologies across the value-chain

We would argue that the focus on organisational processes is the key to transition in the SME sector. The first generation of adoption of ICT has generally been to support existing processes (particularly through efficiency gain) or replace processes through automation. The second generation adoption of ICT will be to innovate new ways of doing things (new processes). For instance, a new range of technologies (such as CRM systems) allow the SME to process innovate in ways previously only available to the large company.

These three levers suggest a more encompassing model of ICT adoption amongst SMEs, an issue which will be elaborated upon in the next sections. In so doing, the paper will attempt to highlight some of the likely 'developments' in the area of smeeBusiness.

9 THE CONCEPT OF EBUSINESS

To produce an effective eBusiness maturity assessment we need a clear conception of eBusiness - an eBusiness framework. Within our research centre we are in the process of developing such a framework based upon a distinct conception of eBusiness first elaborated in my textbook (Beynon-Davies 2004). This acts as what you might call an ideal-type of the eBusiness based around the platform of the value-chain concept.

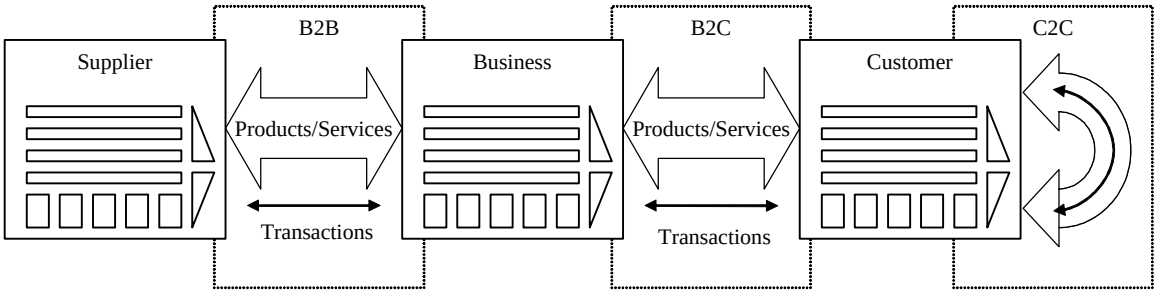
The framework is based in the conception of a business as a value-creating system based within a value-network. The original Porter value-chain model (Porter 1985) has proven useful as a generic

'business model' for understanding the place of ICT in the business. More recently the value-chain idea has progressed into the idea of the value-network (Kalakota and Robinson 1999). The value-network concept is useful as a means particularly of distinguishing between eCommerce and eBusiness. It also allows us to place some of the newer application areas for eBusiness in relation to some of the more established areas of eBusiness.

The traditional view of eCommerce mapped onto the value-network is expressed in figure 2. Here, eCommerce is conceived of as the use of ICT to support the external activities/relationships of business – 'trade' – with two major stakeholder groups: suppliers and customers.

Business to consumer e-Commerce is sometimes called sell-side e-Commerce and concerns the enablement of the customer chain with ICT. Customers or consumers will typically be individuals, sometimes other organisations. Business to business e-Commerce is sometimes called buy-side e-Commerce and involves supporting the supply chain with ICT. B2B commerce is clearly between organisational actors - public and/or private sector organisations.

Figure 2: Forms of eCommerce



C2C or Consumer to Consumer eCommerce also has a place within this model. C2C eCommerce is a developing form of eCommerce particularly and recently linked to 'new media' services. We would argue that this is potentially the most radical form of eCommerce since it overlaps with non-commercial activity in the area of community. C2C eCommerce therefore exists in the 'community' chain and a new range of business opportunities emerge within virtual networking as a phenomenon driving new levels of content and services.

However, the traditional interest in eCommerce has tended to devalue the importance of ICT to internal operations. We would argue that the notion of eBusiness resurrects this internal focus in that eBusiness is as much about internal operations as it is about external relationships. The model in figure 2 is also useful because it emphasises integration between the internal and external focus across the value-chain.

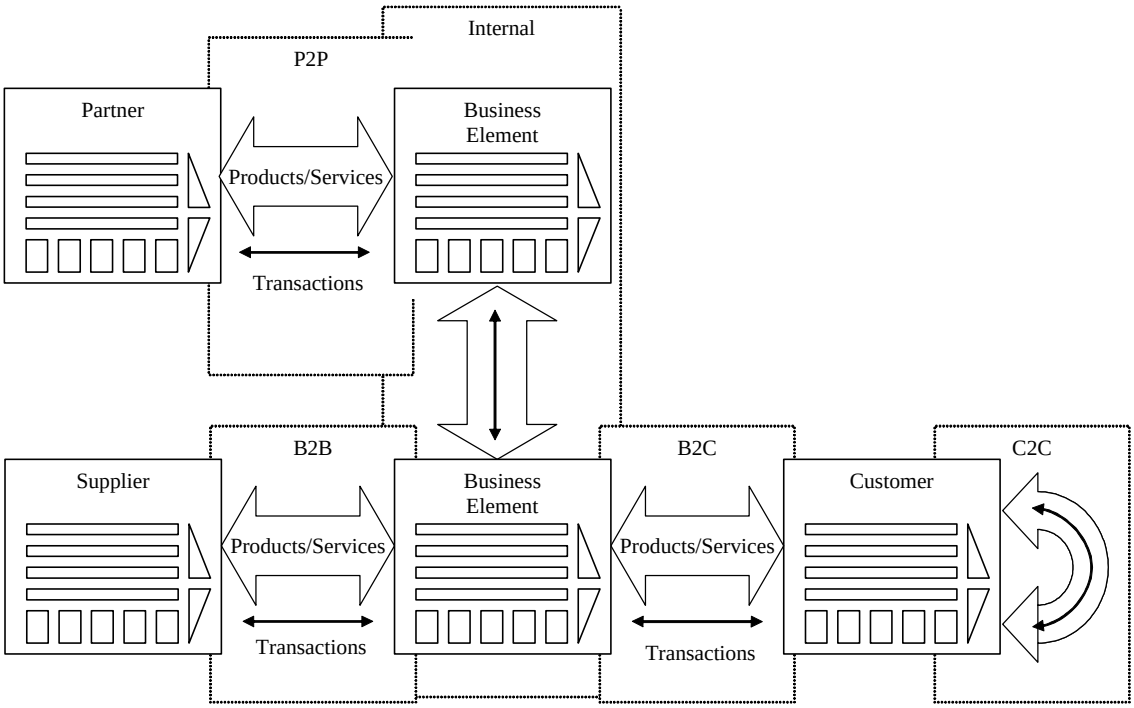
Figure 3 represents a more encompassing model of eBusiness which includes two areas of critical development (see figure 3).

First, any contemporary model of eBusiness must address the range of critical issues associated with infrastructure issues in multi-part businesses spread geographically across the globe. The modern eBusiness is likely to be made up of numerous dispersed business elements some physically located, some mobile. A modern ICT infrastructure acts as a backbone to form the organisation.

Second any eBusiness framework must extend the notion of business cooperation and collaboration beyond that of the supply chain. Contemporary eBusiness is likely to be framed in a network of business partnerships of varying complexity. Hence, eBusiness involves cooperation as well as competition. Another business may actually fulfil a number of different roles in the business network at the same time – such as both a partner and a competitor. Some have referred to this phenomenon as cooptition.

At the level of technical infrastructure the idea of networks of business partners appears to have much in common with traditional notions of inter-organisational information systems (Barrette and Konsynski 1982). Facilitating partnership activity and information flow through common information systems or more generally through mutually enhancing electronic channels is critical to this phenomenon. However, it also seems to relate to the idea of building elements of a common informatics infrastructure for facilitating the value network.

Figure 3: Modern eBusiness



10 HOW DO WE OPERATIONALISE EBUSINESS MATURITY?

The eCommerce adoption ladder described in section 5 could be seen as a very simplistic stages of growth model for SME eCommerce.

In terms of the expressed deficiencies of this approach we want a model which embraces all the elements of eBusiness discussed in section 8. We also want to be able to assess a company's maturity in terms of such a model and believe that this constitutes a more sophisticated notion than traditional stages of growth ideas for ICT adoption.

Ideas of plotting stages of growth in relation to ICT adoption date back to at least the early paper of (Nolan 1990). A number of limitations are evident in such stages of growth models. First, they assume that companies adopt ICT and progress such adoption in a linear manner. Second, the assumption is that adoption is a uniform phenomenon; that one size of adoption fits all. In our experience both these assumptions are suspect in that they cannot deal with the complexity of the modern eBusiness.

However, we do believe in the benefits of maturity assessment. Maturity assessment is a well-used idea in other areas such as software process improvement. It is useful as a means of benchmarking individual companies against the general profile of adoption. It is also useful as a means of highlighting areas to input into strategy development.

We are aware of some but limited evidence of adoption of this idea, particularly within the Innovation and Engagement context. One of the most important examples include an early attempt to develop an eBusiness index at the DTI (DTI 2004). However, we have found little evidence of work which assesses the utilisation of this as a means both of managing research and for supporting/guiding Innovation and Engagement work.

11 WHAT DO WE MEAN BY AN EBUSINESS FRAMEWORK?

We see eBusiness maturity assessment as being formulated upon the platform of an eBusiness framework. By an eBusiness framework we mean an organised collection of key topics which help frame the eBusiness phenomenon. Our wish is to construct the framework in terms of what might be called knowledge packages – elements of ICT with a clear relevance to process innovation and linked to the idea of a value network. We expect the framework to be an active entity in the sense that we expect continuous revision of the framework to be required in order to reflect developments in technologies and processes.

As a research centre in eBusiness we want to use such an eBusiness framework as a tool for multiple purposes:

- As a mechanism for guiding and controlling the ongoing research of our research centre, particularly for suggesting research areas we need to develop
- To replace the eCommerce route map with eBusiness maturity assessment
- As a way of directing our knowledge transfer work in the sense of defining eBusiness knowledge of relevance to SMEs

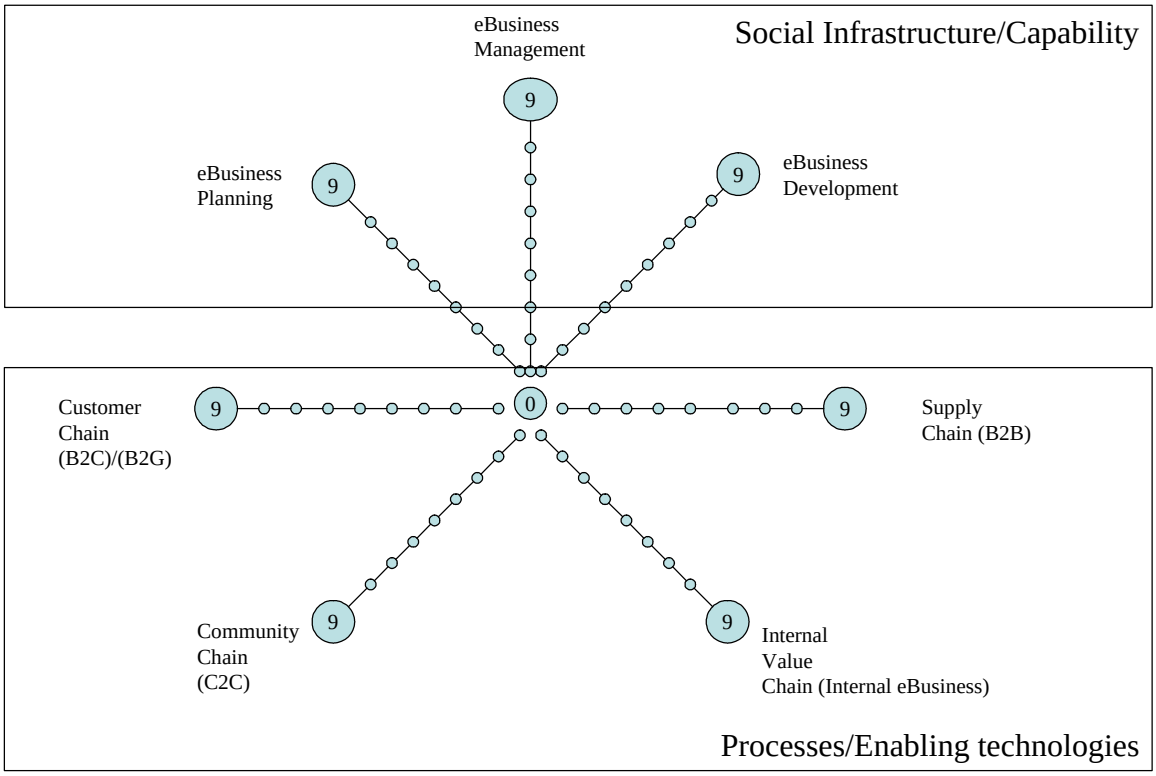
We are in the early stages of constructing such a framework. Some of our preliminary thinking is described here.

Since eBusiness is a socio-technical phenomenon any framework must cover both the social and technical. We intend use of a value-chain approach for key processes and technologies (the technical). However, it is also important to include aspects of social infrastructure (capability/the social). We are particularly interested in the capacity of a company to engage in strategic eBusiness thinking and innovate processes.

Clearly any effective framework needs to provide answers to questions such as: what is eBusiness? What is it composed of? What elements of eBusiness relate to what other elements?

We are of the opinion that at a high-level we need some hierarchical and possibly graphical representation of topics/knowledge packages. We have begun experimenting with the idea of using a hierarchical set of kiviat diagrams as a means of graphically representing the knowledge packages and their relationships. Figure 4 represents a top-level view of the prototype elements from the current eBusiness framework.

Figure 4: A 'prototype' of the top-level elements of the eBusiness Framework

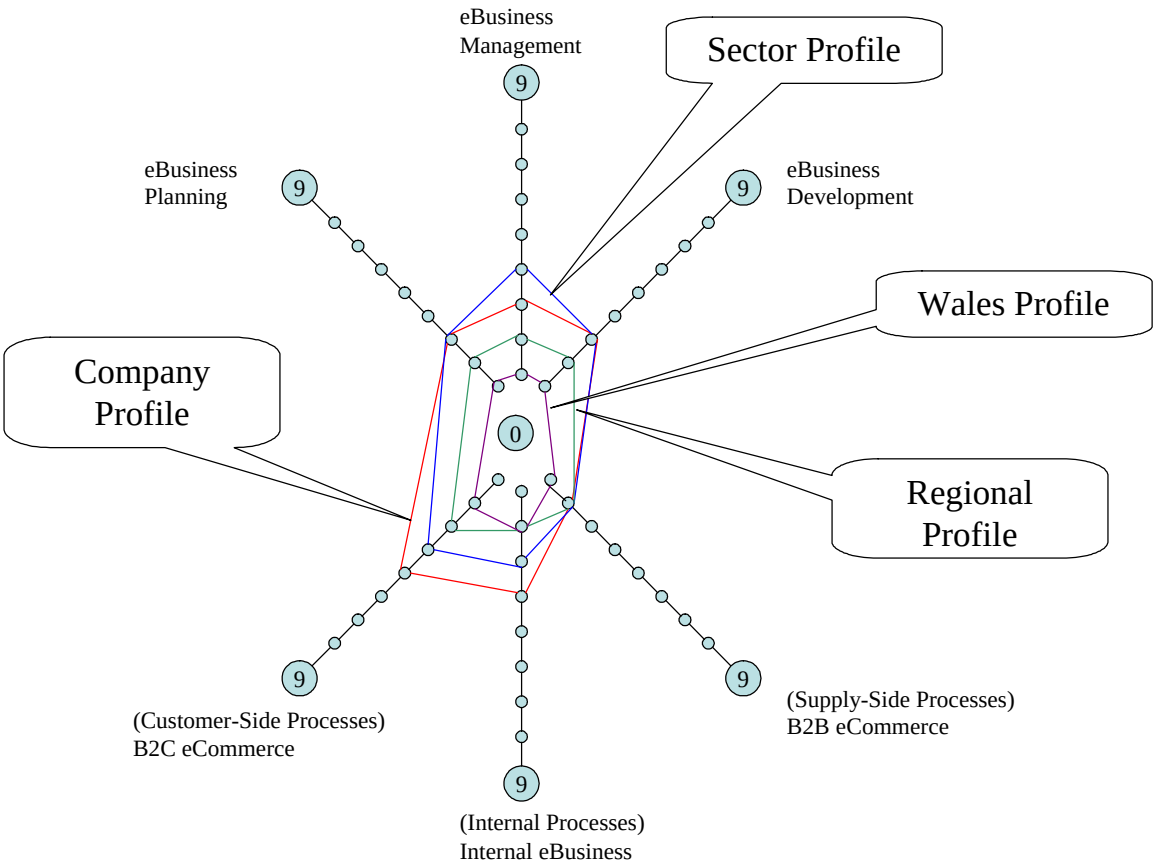


To turn the eBusiness framework into a maturity assessment tool we need some way of scoring a company's experience against a particular knowledge package. In other words, for each dimension on any particular kiviat diagram we will need some way of translating a company's experience of a technology/process mix into a score between 0 and 9. If this is feasible we may then aggregate 'scores' against topic areas. This will allow us to plot a profile for a particular company against the hierarchical set of kiviats; the profile being represented by the area under each polygon formed on a kiviat.

Figure 5 illustrates profiling of a particular company against the top-level kiviat diagram from the framework. A visual comparison with an aggregate profile produced for the industrial sector within

which the company sits is illustrated. The diagram also presents an aggregate profile for the area of Wales in which the company does business and a gross aggregate profile for the whole of Welsh SMEs.

Figure 5: Profiling against the framework



12 CHALLENGES FOR SMEEBUSINESS

From an evaluation of our own work in this area we know that there are a number of key challenges to achieving the vision expressed in section 7 as far as the future of smeeBusiness is concerned. These include:

The inertia of adoption

We know from our own research that the Opportunity Wales programme has skimmed the surface of adoption within Wales (10,000 out of a potential population of 90,000 SMEs in the region). We know from regular reviews we do of the sector that there is still a demand for and need for lower-level eBusiness support such as the basics of setting up an information web-site for companies. One of the key challenges for us is how do we marry this with a necessary wish to help the progressive companies grow further? How do we also marry this need with the wish to impart a greater/broader range of knowledge to the business community?

Segmentation of eBusiness

One of the key criticisms of traditional stages of growth models whether for ICT in general or eBusiness in particular is that they assume that one shape of eBusiness is likely to fit all. Our feeling is that we will probably need different eBusiness models for different 'customer segments'. For instance, the relevance of certain knowledge packages is likely to vary depending on the size of business/ business sector/age of business. Clearly we need to test to see whether the notion of maturity makes sense in such a context? For example, will the eBusiness model appropriate to the large company be relevant to the small company?

Managerial awareness and skills

Our previous research within eCIC has identified a key lack of strategic thinking re. eBusiness opportunity amongst leaders and managers of SMEs in Wales (ECIC 2006). This is perhaps a reflection of the way in which ICT is treated generally by many businesses, as an adjunct to business strategy and particularly focused merely on operational improvement.

eBusiness and Growth

Most of the companies we have dealt with do not evaluate their ICT investment. This makes it difficult for such companies to justify existing investment but more particularly it makes it difficult to demonstrate the potentiality in future eBusiness innovation. We feel that effective evaluation of ICT investment and the management of the benefits of ICT is critical to issues of growth in this area.

The technology/process mix

Electronic Business as we have mentioned a number of times above is a socio-technical phenomenon. The upshot of this is that value may not come in exploiting the most advanced technologies within business. Value may emerge from utilising mainstream technologies innovatively. However, there is a key disjuncture here in that I & E organisations may experience difficulty in funding 'mainstream' technologies.

13 CONCLUSION

At the start of this paper we set a number of objectives. In terms of the relationship between eBusiness and regional development, eCommerce has been seen as a major enabler of regional development in the past. We believe that eBusiness will be the next significant enabler within the SME sector over the next few years. University involvement in eBusiness support to SMEs is likely to be critical to success. But a balance has to be struck between the academic needs of rigorous research and the industrial need for relevant knowledge. As a centre, we have been starting work on using an eBusiness framework as a way of balancing the needs of research with that of knowledge transfer. Such a framework we feel is essential for also highlighting those aspects of eBusiness knowledge that are critical to particular segments of the SME sector. We further believe that building appropriate ways of assessing the maturity of SMEs in the eBusiness area is critical to achieving effective knowledge transfer. It is critical not only to helping us place companies currently but to highlight practical and effective strategies for innovation. These devices are means to help us meet the key challenge for smeeBusiness in the near future - to achieve a step-change in thinking. The sector needs to move from treating ICT as an add-on to an enabling and strategic technology for process innovation.

REFERENCES

Barrette, S. and B. R. Konsynski (1982). "Inter-Organisational Information Sharing Systems." MIS Quarterly(Fall).

Beynon-Davies, P. (2002). Information Systems: an introduction to informatics in organisations. Houndmills, Basingstoke, Palgrave.

Beynon-Davies, P. (2004). e-Business. Houndmills, Basingstoke, Palgrave.

DTI (2004). Business in the Information Age: International Benchmarking Study 2004. London, Department of Trade and Industry.

ECa (2005). i2010: A European Information Society for Growth and Employment, European Commission.

ECb (2002). eEurope 2005: an information society for all. Brussels, European Commission.

ECc (2005). Definition of Micro, Small and Medium-Sized Enterprises, European Commission.

ECIC (2006). eCommerce in Welsh SMEs: the state of the nation report 2004/2005. Cardiff.

Kalakota, R. and M. Robinson (1999). E-Business: roadmap for success. Reading, Mass, Addison-Wesley.

Nolan, R. L. (1990). Managing the Crisis in Data Processing. The Information Infrastructure. Cambridge, Mass., Harvard Business Review.

Porter, M. E. (1985). Competitive Advantage: creating and sustaining superior performance. New York, Free Press.

SBSa (2005). Statistical Press Release, Small Business Service.

SBSb (2004). Statistical Press Release 2004: Small and Medium-Sized Enterprise Statistics for the Regions, Small Business Service.